UCL Main Quad Bicentennial

Arboricultural Impact Assessment and Method Statement

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Issue Status

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Contents

1.0 Introduction

1.1 Background

1.1.1 This Arboricultural Impact Assessment and Method Statement has been prepared by BDP on behalf of University College London to accompany a planning application for the Bicentennial Project. The project will involve works to the Main Quad, Wilkins Building and Gordon Street although this report focuses on the enhancement of the Main Quad, Gower Street, London, WC1E 6AE (hereinafter referred to as the "site").

1.1.2 The report outlines the findings of a survey of all significant trees and groups of trees that may be affected by the development proposals in accordance with BS5837:2012 Trees in relation to design, demolition and construction - Recommendations.

1.2 Location

1.2.1 The site is located in Camden (NGR: TQ2955482276) bound by university buildings, with Gower Street adjacent to the west boundary of the site.

***Figure 1.*UCL Main Quad site location**

1.3 Trees and the Planning Process

National Planning Policy Framework

1.3.1 The National Planning Policy Framework (NPPF, 2024) describes trees as making an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change.

1.3.2 Planning policies and decisions should ensure that opportunities are taken to incorporate trees in developments, that appropriate measures are in place to secure the long-term maintenance of newly planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.

The London Plan 2021

1.3.3 The London Plan is the overall strategic plan for the Greater London area that has to be taken into account when planning decisions are made. Policy G7 Trees and woodlands requires development in London to comply with the following principles:

A. London's urban forest and woodlands should be protected and maintained, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London's urban forest – the area of London under the canopy of trees.
B. In their Development Plans, boroughs should:
   1) protect 'veteran' trees and ancient woodland where these are not already part of a protected site
   2) identify opportunities for tree planting in strategic locations.
C. Development proposals should ensure that, wherever possible, existing trees of value are retained. If planning permission is granted that necessitates the removal of trees there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT or another appropriate valuation system. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.

Camden Local Plan 2017

1.3.4 Local Planning Authorities (LPA) in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a Tree Preservation Order (TPO) or other statutory designation) is a material consideration in determining a planning application.

1.3.5 The Camden Local Plan states that the Council will protect, and seek to secure additional, trees and vegetation. They will:

- resist the loss of trees and vegetation of significant amenity, historic, cultural or ecological value including proposals which may threaten the continued wellbeing of such trees and vegetation;
- require trees and vegetation which are to be retained to be satisfactorily protected during the demolition and construction phase of development in line with BS5837:2012 'Trees in relation to Design, Demolition and Construction' and positively integrated as part of the site layout;
- expect replacement trees or vegetation to be provided where the loss of significant trees or vegetation or harm to the wellbeing of these trees and vegetation has been justified in the context of the proposed development;
- expect developments to incorporate additional trees and vegetation wherever possible.

BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations

1.3.6 BS 5837 provides a framework which sets out how trees should be considered in the planning process and explicitly applies to development where planning consent is not required.

1.3.7 BS 5837 recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This information is then used to produce a Tree Constraints Plan (TCP) illustrating the above and below ground constraints associated with trees (the Root Protection Area (RPA)). The TCP is intended to be used to inform the design process and to identify those trees considered to be a constraint to development due to the quality and value (in a non-fiscal sense).

2.0 Methodology

2.1 Tree Survey Methodology

2.1.1 An arboricultural survey was undertaken on 15 April 2024 by Martin Dilworth (Senior Arboriculturist) in accordance with BS5837:2012. Martin is a suitably qualified arboricultural consultant with 16 years experience, he is a Professional member of the Arboricultural Association, and holds an FdSc in Arboriculture, and the LANTRA Professional Tree Inspection Certificate.

2.1.2 Observations were conducted from ground level with the aid of binoculars, utilising the “Visual Tree Assessment” (VTA) system as outlined in The Body Language of Trees, A Handbook for Failure Analysis Research for Amenity Trees No.4 (Department of the Environment, 1994).

2.2 Individual Trees and General Data Capture

2.2.1 For reference, individual trees are identified with the letter T and associated number on the Tree Schedules and a Tree Constraints Plan. The stem diameter of the trees on site was recorded using a rounded down diameter tape at 1.5m above ground level. Measurements were taken in millimetres. The height of the subject trees was estimated to the nearest metre using a digital clinometer.

2.2.2 Maximum crown spread of the subject tree was measured from the centre of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a ground tape. Crown spread measurements were taken in metres.

2.2.3 Tree age was estimated from visual indicators (such as tree size and appearance of bark) which was taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records and local knowledge.

2.2.4 If direct access to the tree was not possible, estimations from appropriate vantage points were taken. Any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

2.3 Categorisation

2.3.1 In compliance with Table 1 of BS5837:2012 (ref. Appendix C) the trees surveyed have been categorised according to their arboricultural quality and value. A glossary of survey terms can be found in Appendix D - Explanation of Terms.

2.4 Root Protection Area

2.4.1 The Root Protection Areas (RPA) of the trees were calculated in accordance with Section 4.6.1 in BS: 5837:2012. This is calculated from the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. These are recorded in the tree schedule (ref. Appendix E) and as a circle on the tree constraints plan (ref. Appendix A); and form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the site. The RPA is represented by pink-shaded areas in the Tree Constraints Plan. The shape and size of RPAs can be amended in accordance with Section 4.6.3 in BS: 5837:2012.

2.4.2 Within Section 5.3.1 in BS: 5837:2012 it is stated the default position is that proposed development should not be within the RPA of retained trees, however, where there is an overriding need for construction and associated activity with the RPA of trees arboricultural mitigation should take place to protect the trees.

2.5 Impact Assessment

2.5.1 Following the production of the final scheme design, an Arboricultural Impact Assessment (AIA) has been produced identifying the likely direct and indirect impacts of the proposed development, along with a Tree Impacts & Protection Plan (TIPP) identifying trees to be removed and retained and to illustrate the protection of retained trees.

2.5.2 A detailed Arboricultural Method Statement (AMS) is also often required as a condition of planning consent to outline how sensitive operations are to be undertaken in close proximity to retained trees once final construction designs and practices are known.

2.5.3 These documents and plans are considered the minimum requirement for arboricultural matters within a planning application and are intended to ensure both a long term sustainable and harmonious relationship between existing trees and the proposed development.

2.6 Survey Limitations

2.6.1 For the purposes of BS5837: 2012, only trees with a stem diameter greater than 75mm, (measured at 1.5m above ground level), have been included within the survey. However, it should be noted that some individual trees and shrubs with a stem diameter of less than 75mm were present within the study area.

2.6.2 Only trees within the study area as defined above were assessed. The RPAs are based on a given tree stem diameter taken at 1.5m above ground level with each RPA (ref. Appendix A & E) being calculated from the above ground portions of the tree. It should be recognised that the RPA may not entirely encompass all of the tree's rooting material.

2.6.3 Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

2.7 Statutory Tree Protection

2.7.1 Camden Council were contacted by email on the 18 April 2024 to determine if any trees within the application site were subject to a Tree Preservation Order (TPO) or if the application site was located within a Conservation Area (CA).

3.0 Tree Survey Results

3.1 Statutory Tree Protection

3.1.1 Camden Council have provided confirmation that no trees within the application site are subject to TPOs, however, the site falls within The Bloomsbury Conservation Area (CA).

3.1.2 As the site is within a CA, it is emphasised that the scheduling or carrying out of any works to trees within a CA that are not directly related to the implementation of a detailed (i.e. full) planning permission, will require a six weeks' notice of intention to carry out works upon or to remove trees within a CA.

3.2 Tree Assessment and Categorisation

3.2.1 A total of 20 arboricultural items were recorded within the study area, these were recorded as 20 individual trees (T). The survey data is presented in detail within the Tree Survey Schedule (ref. Appendix E) and illustrated on the Tree Constraints Plan (ref. Appendix A).

3.2.2 Each arboricultural item was assigned to one of four categories, as listed in the Tree Survey Schedules and Table 1 below.

Table 1. Tree Categories Recorded

Tree Category	No. of Individual Trees	No. of Groups of Trees	No. of Hedgerows	No. of Woodlands
Category A (trees of high quality)	4	0	0	0
Category B (trees of moderate quality)	11	0	0	0
Category C (trees of low quality)	5	0	0	0
Category U (trees of poor quality unsuitable for retention)	0	0	0	0
Totals	**20**	**0**	**0**	**0**

4.0 Impact Assessment

4.1.1 Tree Removal Due to Development

4.1.1 There will be no requirement for tree removal to facilitate the scheme.

4.1.2 Adequate protection of the Root Protection Areas (RPAs) of retained trees during construction is essential if their long-term viability is to be assured. RPAs, which are calculated through a method provided in BS5837:2012, are ground areas that should be protected by temporary protective fencing as Construction Exclusion Zones (CEZs) throughout the development process, or by temporary ground protection measures thereby keeping the trees' root zones free from disturbance.

4.2 Works within RPAS

4.2.1 The appraisal identified that the following development works are close to and within retained trees' RPAs and canopies:

- Various proposed hard surfaced areas for access road, footpaths, driveways and car parking encroach within various trees' RPAs.
- Building foundations, new internal access road, footpaths, driveways, fencing, hard and soft landscaping and associated presumed drainage provision are close to or encroach within various trees' RPAs and canopies.

4.2.2 The calculated RPAs of the incursions are presented in Table 2.

Table 2. Root Protection Area Incursions

Element of Proposal with Potential to Impact Upon Retained Trees	Trees Impacted	Proposed Special Measures	Relevant BS5837 Section(s) to be Adhered to	Information Required or Provided and Relevant Specialist
Construction of new hard and soft Landscaping within trees RPA	All retained trees	▪ New hard surfaces for footpaths and hard landscaping within RPA of trees to be constructed using a three-dimensional cellular confinement system in order to avoid root loss and damage due to ground excavation and/or compaction. ▪ Remaining soft surfaces of tree RPA to be afforded adequate protection using temporary fencing and/or ground plates. ▪ All site operations involving plant with booms, jibs and counterweights to be planned in advance to prevent contact with retained trees and works adjacent to trees conducted under the supervision of a banksman, under arboricultural direction, to ensure that adequate clearances from retained trees is maintained. ▪ All proposed landscaping to be carried out within and close to retained trees' RPAs should be carried out in strict accordance with the guidance detailed in section 8 of BS5837:2012. ▪ All fence post excavations are to be carried out manually, using hand held tools only. Due to the highly alkaline leachate produced during the curing of wet concrete, which can have a detrimental effect on tree roots and overall tree health, an impermeable liner is to be installed in each fence post hole that is located within tree RPAs. ▪ No vehicular or plant access within retained trees' RPAs under soft surfaces.	7.3, 7.5	Supplier of 3D system to supply detailed installation specification and construction methodology.

4.2.3 Any excavation within the RPA of a tree must be supervised by an Arboricultural Clerk of Works (ACoW).

4.2.4 All proposed landscaping to be carried out within and close to retained trees' RPAs should be carried out in strict accordance with the guidance detailed in Section 8 of BS5837:2012.

4.3 Installation Of Three-Dimensional Cellular Confinement System

4.3.1 For areas without existing surfacing, carefully remove any loose material from the soil surface by hand, ensuring no excavation into existing soil levels unless approved by the supervising arboriculturist.

4.3.2 For areas with vegetation, any necessary excavations to remove turf and surface vegetation must first be approved by the supervising arboriculturist.

4.3.3 All new surfacing should be set back at least 50 cm from tree trunks and buttress roots, unless otherwise agreed by the supervising arboriculturist.

4.3.4 Level any low points on uneven surfaces using an agreed granular material such as sand or stone.

4.3.5 New surfacing typically requires an evenly graded sub-base layer, which can be adjusted to accommodate any high points using granular, permeable materials such as crushed stone or sharp sand.

4.3.6 Tree roots and grass roots generally do not occupy the same soil volume at the surface. Therefore, removing an established turf layer up to 5 cm deep is unlikely to harm trees.

4.3.7 However, this may not be feasible in areas without grass, as tree roots may extend all the way to the soil surface. In some cases, deeper excavation might be possible depending on local conditions; any planned excavation beyond 5 cm will be assessed by the supervising arboriculturist.

4.4 Increase in ground levels and circles around stems of trees

4.4.1 The proposed increase in ground levels and surfaces around the retained trees should be resistant to or tolerant of deformation by tree roots, and should be set back from the stem of the tree and its above-ground root buttressing by a minimum of 500 mm to allow for growth and movement. Resulting gaps may be filled using appropriate inert granular material which remains gas- and water-permeable throughout its design life.

4.4.2 The new proposed raised ground levels within the RPAs can be achieved by using several layers of Cellular Confinement System without compromising the health of the trees. Specification and construction methodology to be provided by 3D system supplier.

4.5 Installation of Screw Piles

- Hand digging using hand tools / Air lance to expose roots- adjust location of piles to avoid cutting roots greater than 2.5cm diameter, sever smaller roots cleanly using sharp tools under arboricultural supervision.
- Ground protection plates to be used for 3T machine to install piles.
- Apply damp hessian or mulch to exposed roots to prevent desiccation.

Piling Operations

- Utilize piling rigs with minimal ground pressure to prevent soil compaction.
- Maintain a safe working distance from retained tree trunks and major roots.
- Ensure all piling works comply with approved arboricultural recommendations.

Reinstatement and Protection

- Backfill excavated areas carefully with appropriate material to avoid root damage.
- Remove ground protection only after completion of all construction activities.

4.6 Facilitation pruning

4.6.1 Based on the information currently available, trees T1 and T2 will require crown lifting to give approximately 3m clearance over new parking bays.

4.6.2 Trees T4, T5, T9 and T10 will require selective branch removal to give clearance to install a temporary canopy.

4.6.3 Requirements for access facilitation pruning should be discussed at a pre-commencement meeting with the project arboriculturalist.

4.6.4 All tree works should be completed prior to the commencement of any development or construction vehicles/plant entering either site. It is recommended that all tree works are carried out in accordance with BS3998:2010: Tree Work - Recommendations.

4.7 General Construction Precautionary Measures

4.7.1 Adequate protective fencing as outlined in the AMS should be installed around all retained trees, where practical, before any materials and machinery are brought on-site.

4.7.2 Site operations involving plant with booms, jibs and counterweights should be planned in advance to prevent contact with retained trees. All operations involving such plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from the retained trees is maintained.

4.7.3 All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside RPAs. No discharge of potential contaminants should occur within the RPA of a retained tree stem or where there is a risk of run off into RPA.

4.7.4 All proposed landscaping to be carried out within and close to retained trees' RPAs should be carried out in strict accordance with the guidance detailed in section 8 of BS5837:2012.

4.8 Underground Utilities and Drainage

4.8.1 The installation of underground utilities in close proximity to trees can cause serious damage to their roots. As such, it is essential that utilities be routed outside RPAs unless there is no other available option. Where RPAs cannot be avoided then guidelines set out in the National Joint Utilities Group publication 'Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2) – Operatives Handbook' should be followed (e.g. trenches of a very limited width to be hand dug or the use of directional drilling).

4.9 Site Supervision - Roles and Responsibilities

4.9.1 Before development begins, all personnel responsible for overseeing development-related tasks must be provided with the contact information of the Tree Consultant. The site manager is responsible for reporting any tree-related concerns, including any deviations from the Arboricultural Method Statement (AMS), directly to the Tree Consultant. The Tree Consultant will then visit the site and offer recommendations to the site manager on how to address the situation effectively.

4.9.2 The Tree Consultant will conduct site inspections throughout the duration of the work to ensure adherence to the AMS and any relevant planning conditions regarding trees. After each site inspection, the Tree Consultant will prepare a monitoring report that outlines any issues encountered, breaches of the agreed working methods, or violations of tree-related planning conditions, along with suggested measures for resolving those problems or breaches.

5.0 Discussion and Conclusions

5.1.1 A total of 20 arboricultural items were recorded within the study area as follows:

- Four individual trees were graded Category A (trees of high quality);
- Eleven individual trees and one group of trees were graded Category B (trees of moderate quality);
- Three individual trees were graded Category C (trees of low quality);
- Two individual trees were graded Category U (trees unsuitable for retention).

5.1.2 All Category A and B trees as described in Appendix E Tree Schedules should be given priority consideration for retention during any future development which should take full account of above and below ground constraints, as shown on the Tree Constraints Plan.

5.1.3 An appraisal of the proposal documentation provided to date identified that no trees would require removal for the construction of the development as proposed

5.1.4 The appraisal identified various elements of the development that are proposed within and close to the RPAs and canopy spreads of several retained trees. As such, various special working and protection methods and materials have subsequently been proposed in accordance with current government guidance.

5.1.5 Details of construction materials and methodologies to be provided by the architect and Supplier of 3D system.

5.1.6 Adequate protective fencing as outlined in the Arboricultural Method Statement should be installed around all retained trees, where practical, before any materials and machinery are brought on-site.

5.1.7 There should be no materials stored or dumped and no vehicular or plant movement within ant trees RPA to minimise the risk to the trees from soil compaction.

5.1.8 All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside RPAs. No discharge of potential contaminants should occur within the RPA of a retained tree stem or where there is a risk of run off into RPA.

5.1.9 Government guidance recommends that, where considered expedient by the LPA, an AMS and Tree Protection Plan (TPP) be prepared detailing construction issues pertinent to retained trees in relation to the development under consideration. Essentially, the AMS and TPP describe, in detail, the procedures, working methods and protective measures to be used in relation to retained trees in order to ensure that they are adequately protected during the construction process.

5.1.10 In order to ensure that any such special working methods are followed, and that the retained trees are adequately protected throughout the development process, the production of and adherence to an AMS and TPP can be conditioned to a planning approval for delivery as a component the reserved matters application.

5.1.11 This document encloses a Preliminary Arboricultural Method Statement outlining tree protection measures.

6.0 References

British Standards Institution (2010) BS 3998:2010, Tree Work Recommendations.

British Standards Institution (2012) BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.

British Standards Institution (2014) BS 8545:2014 Trees: From Nursery to Independence in the Landscape – Recommendations.

Camden Local Plan, Camden Council, 3 July 2017

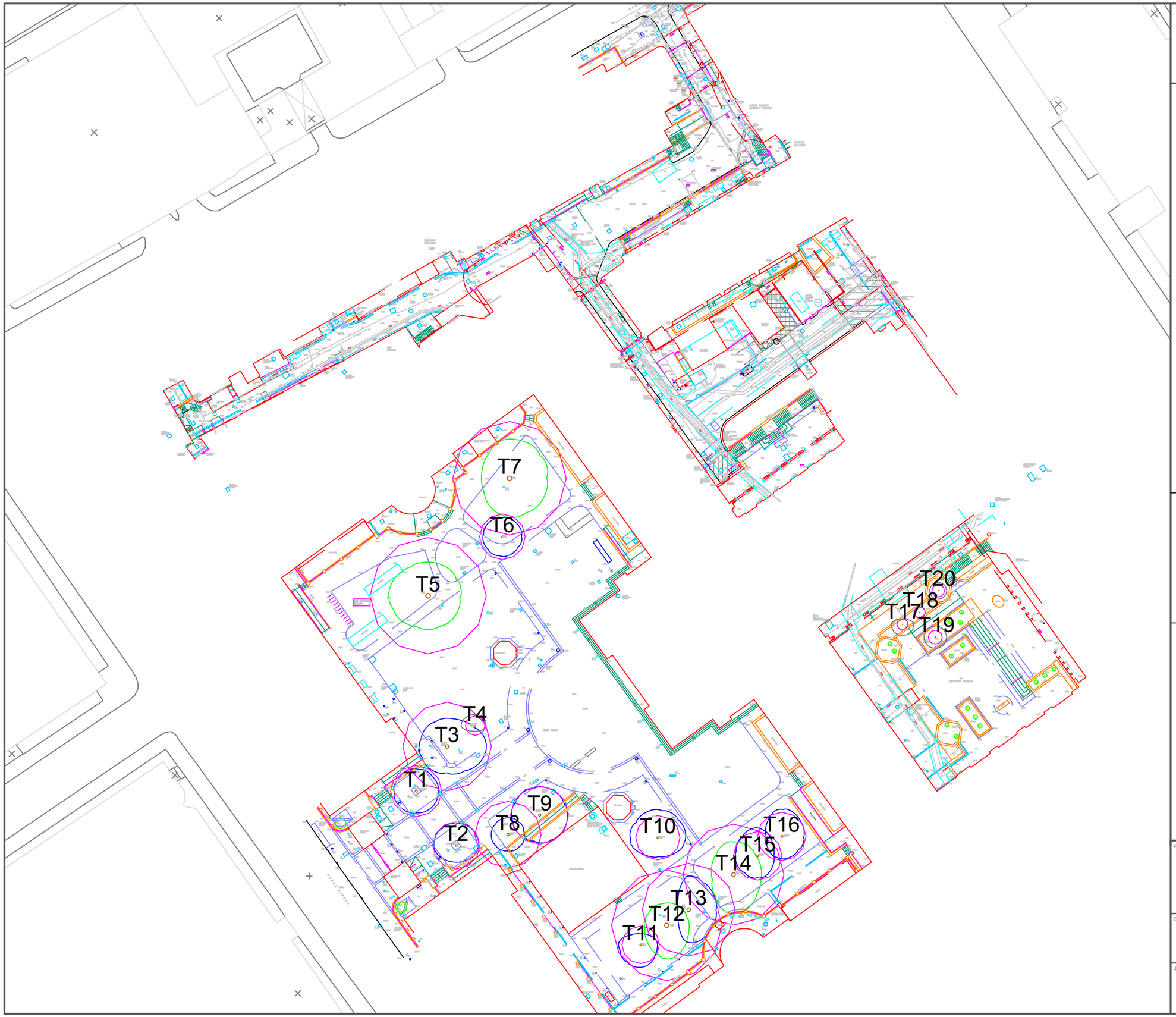
Mattheck, C. and Broeler, H. DETR (1994) The Body Language of Trees: A Handbook for Failure Analysis Research for Amenity Trees No.4. (Department of the Environment, 1994).

National Joint Utilities Group (2007). Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2) – Operatives Handbook.

National Planning Policy Framework, Ministry of Housing, Communities and Local Government, December 2024

The London Plan 2021, Greater London Authority, March 2021

Appendix A - Tree Constraints Plan



Legend

Tree Categorisations:

Those to be Considered for Retention:

Category 'A' Tree/Group/Hedge
Those of a High Quality with an Estimated Remaining Life Expectancy of at Least 40 Years

Category 'B' Tree/Group/Hedge
Those of a Moderate Quality with an Estimated Remaining Life Expectancy of at Least 20 Years

Category 'C' Tree/Group/Hedge
Those of Low Quality with an Estimated Remaining Life Expectancy of at Least 10 Years, or Young Trees

Those Unsuitable for Retention:

Category 'U' Tree/Group/Hedge
Those 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

Root Protection Areas (RPAs):

RPAs
Area(s) of Ground Around Trees that Should be Protected Throughout Development Works with Protective Fencing to form a Construction Exclusion Zone - see Appended Temporary Protective Fencing Specification

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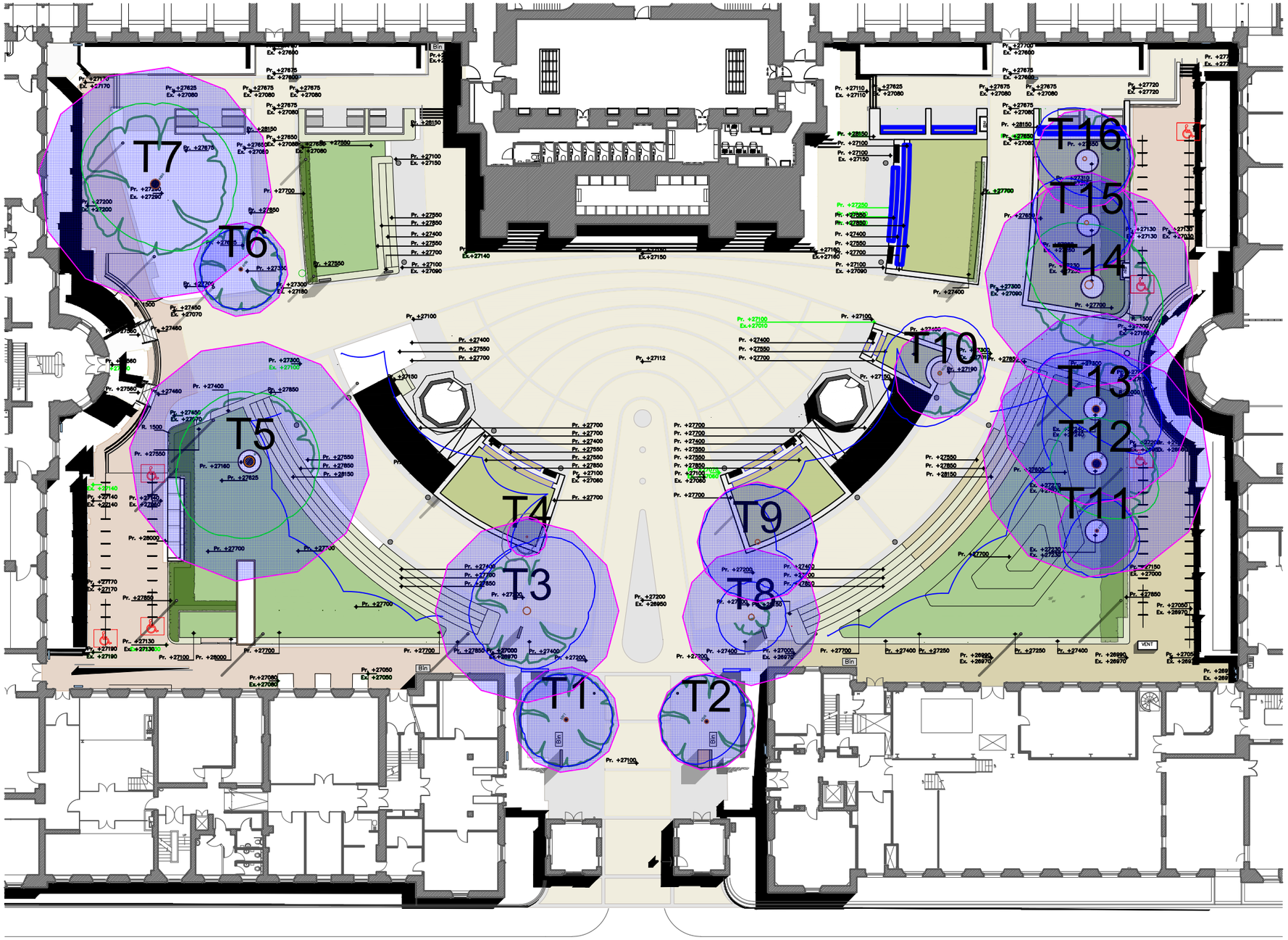
PROJECT
UCL Bloomsbury Campus

DRAWING TITLE
Tree Constraints Plan

DATE
16/04/24

JOB NUMBER
TBC

Appendix B - Tree Impacts & Protection Plan



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Category 'C' Tree/Group/Hedge
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Category 'U' Tree/Group/Hedge
Those 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

RPAs
Area(s) of Ground Around Trees that Should be Protected Throughout Development Works with Protective Fencing to form a Construction Exclusion Zone - see Appended Temporary Protective Fencing Specification

Root Protection Area Encroachment of existing soft surfaces:

- New hard surfaces for footpaths and hard landscaping within RPA of trees to be constructed using a three-dimensional cellular confinement system in order to avoid root loss and damage due to ground excavation and/or compaction
- Adequate protective fencing and ground protection as outlined in the AMS should be installed around all retained trees, where practical, before any materials and machinery are brought on-site.
- The new proposed raised ground levels within the RPAs can be achieved by using several layers of Cellular Confinement System without compromising the health of the trees.
- Excavation within the RPA of a tree must be supervised by an Arboricultural Clerk of Works (ACoW).

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PROJECT

UCL Bloomsbury Campus

DRAWING TITLE

Tree Impacts Plan

DATE

13/02/25

JOB NUMBER

TBC

Appendix C - Table 1 of BS5837

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those 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	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			Red
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Green
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Blue
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

Appendix D - Explanation of Terms

Allocated sequential reference number

Tree ('T'), Group ('G'), Woodland ('W') or Hedge ('H') reference number - refer to plan and to numbered tags where applicable.

Common name

The common or vernacular name is generally the widely known name in the regional language.

Height

In metres, to half nearest metre. In the case of Groups and Woodlands the measurement listed is that of the highest tree.

Stem diameter

In millimetres, to nearest 10mm - measured and calculated as per Annex C of BS5837:2012.

Crown spread

Measured (or estimated where considered appropriate) from the four cardinal points (north, east, south and west) to give a visual representation of the crown.

Life Stage

Young – Trees in the first fifth of full life expectancy.

Semi-mature – Trees in the second fifth of full life expectancy.

Early-mature – Trees in the third fifth of full life expectancy.

Mature – Trees in the fourth fifth of full life expectancy.

Over Mature – Trees having reached full life expectancy and trees in natural decline.

Veteran – Trees of interest biologically, culturally and aesthetically because of their age.

Stem Diameter

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level.

Crown Spread

Average measured in metres using a ground tape where possible.

Canopy Clearance

Existing height above ground level, in metres, of first significant branch and of canopy at lowest point – to inform on crown to height ratio, potential for shading, etc.

Physiological Condition

Measure of the tree'(s)' overall vitality, i.e. D = Dead, P = Poor, M = Moderate, G = Good.

Comments

Relating to the tree'(s)' overall condition and any other pertinent factors including structural defects, current and potential direct structural damage, physiological decline, poor form, etc.

Estimated Remaining Contribution

In years as per BS5837:2012 (i.e. <10, 10+, 20+, 40+).

Category Grading

Tree retention value listed as U, A, B or C - in accordance with BS5837:2012 Table 1.

Root Protection Area in m²

Calculated area around the tree that must be appropriately protected throughout the development process in order avoid root damage.

Root Protection Area Radius

In metres measured from the centre of the stem to the line of tree protection.

#

Where trees are located off-site, or are inaccessible for any other reason, and accurate measurements or other information cannot be taken then the information provided is estimated and is duly suffixed with a “#” symbol.

Appendix E - Tree Survey Schedule

Table E1. Arboricultural Data Table

TREE NO.	SPECIES	HEIGHT (M)	DBH (MM)	CROWN SPREAD				HEIGHT OF C.C	AGE	COMMENTS	ERC	CATEGORY	RPA (M^2)	RPA RADIUS (M)
				N	E	S	W							
T1	Lime	16	370	4	4	4	4	2	EM	Girdling roots at base of stem.	20+	B1	62	4.4
T2	Lime	16	340	4	4	3	4	3	EM	Recently crown reduced. Roots lifting tree grate.	20+	B1	52	4.1
T3	Ginkgo	17	640	5	7	5	5	2	M	Twin stemmed at 2m with tight fork union.	20+	B1	185	7.7
T4	Tulip tree	9	140	2	2	1	2.5	2	SM	Crown suppressed on south west side by adjacent tree.	10+	C1	9	1.7
T5	Lime	20	840	6	6	6	7	3	M	Stem bifurcated at 2.5m.	40+	A1	319	10.1
T6	Lime	12	330	3.5	3.5	3.5	3.5	3	SM	Recently crown lifted.	20+	B1	49	4
T7	Lime	22	820	7	7	7	5	2	M	Old pruning wounds on stem.	40+	A1	304	9.8
T8	Ginkgo	16	480	3	3	3	3	3	EM	Recently crown reduced.	20+	B1	104	5.8
T9	Ginkgo	17	420	5	5	5	5	2	EM	Old pruning wounds.	20+	B1	80	5
T10	Indian bean tree	5	320	5	5	3.5	5	2	EM	Commemorative tree. Crown reduced on south side.	20+	B1	46	3.8
T11	Lime	13	270	2	3	4	4	3	EM	Natural kink in stem at approximately 3.5m.	20+	B1	33	3.2

TREE NO.	SPECIES	HEIGHT (M)	DBH (MM)	CROWN SPREAD				HEIGHT OF C.C	AGE	COMMENTS	ERC	CATEGORY	RPA (M^2)	RPA RADIUS (M)
				N	E	S	W							
T12	Lime	21	800	4	4	6	4	3	M	Old pruning wounds.	40+	A1	289	9.6
T13	Lime	19	670	6	5	6	2	3	M	Natural lean towards east. Old pruning wounds.	20+	B1	203	8
T14	Lime	18	730	6	5	7	4	3	M	Slight lean in stem towards south.	40+	A1	241	8.8
T15	Lime	15	350	5	3	4	4	3	EM	Stem bifurcated at approximately 3m.	20+	B1	55	4.2
T16	Lime	15	350	5	4	4	3	3	EM	No signs of ill health or significant structural defects.	20+	B1	55	4.2
T17	Cherry	3	80	1	2	2	2	2	Y	Located in raised planter.	10+	C1	3	1
T18	Cherry	3	80	1	1	1	1	2	Y	Located in raised planter.	10+	C1	3	1
T19	Cherry	3	100	2	2	2	2	2	Y	Located in raised planter.	10+	C1	5	1.2
T20	Cherry	3	90	1.5	1.5	1.5	1.5	2	Y	Located in raised planter.	10+	C1	4	1.1

Appendix F - Preliminary Arboricultural Method Statement

Overview

This Preliminary Arboricultural Method Statement provides generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process.

Timing of Works

The phasing of works must be carried out in accordance with Table E1.

Table E1. Timing of Works

Stage	Works
1	Site induction
2	Install temporary tree protection fencing
3	Inspection by arboriculturist
4	Carry out construction works, subject to precautionary measures
5	Remove tree protection fencing once works complete
6	Final inspection by arboricultural consultant

Site Induction

Prior to works commencing, all contractors must attend a site induction. All contractors will be briefed on arboricultural concerns arising from the development proposals, including tree root protection areas (RPAs). This method statement must be made available to all contractors working on the site.

Tree Protection Fencing

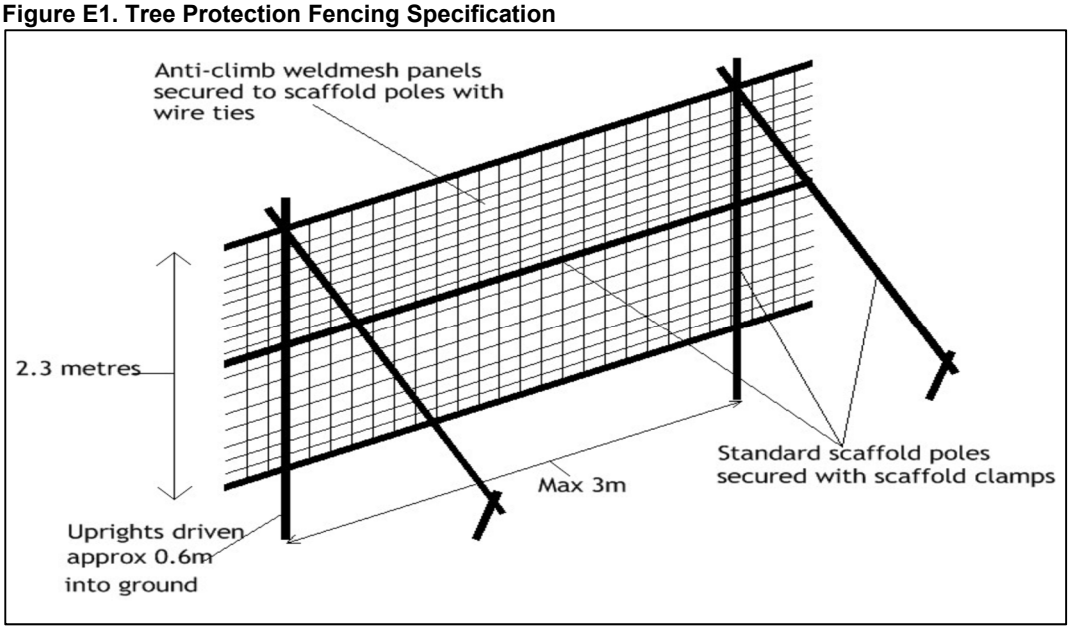
Prior to machinery entering the site, it will be necessary to ensure that all trees are adequately protected. This will require the installation of temporary of tree protection fencing.

Tree protection fencing will consist of a vertical scaffold framework, well braced to resist impacts. The vertical poles must be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels will be fixed (see Figure E1).

Laminated waterproof A3 signs will be fixed securely to fencing panels on each enclosure at 9 m intervals. The signs must clearly read: ‘Protected Tree Zone, no storage or operations within fenced off areas’.

Once the construction works have been completed, the tree protection fencing may be removed. This must be done with care to ensure that no damage to trees is caused.

Figure E1. Tree Protection Fencing Specification



General Precautionary Measures

Prior to works commencing, a site storage area will be designated, which must be outside of the RPAs of trees. No materials hazardous to tree health, such as oil, bitumen or cement will be stored within RPAs of trees. Where possible this area should be extended to 10 m away from the tree protection fencing.

Where there is a risk of polluted water runoff into RPAs, heavy duty plastic sheeting and sandbags will be used to contain any spillages and prevent contamination. No fires will be lit within 20 m of the protective fencing.

If any breach in the tree protection measures occurs it is the site manager's responsibility to report this to an arboricultural consultant so the appropriate measures may be taken.

Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by an arboriculturist to be protected during development, including site clearance and construction work, through the use of barriers and/or ground protection fit-for-purpose to ensure the successful long-term retention of a tree. The area within the construction exclusion zone is to be regarded as sacrosanct and the fencing shall not be taken down or relocated at any time.

All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity whatsoever must occur within these areas.
- No tree works, without the written consent from the Local Authority.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures. *
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.

- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

**Sales Cabins or site huts, provided they are of the Jack Leg type, can be sited to act as ground protection for the duration of the construction.*

General Construction Activity

Since the canopies of retained trees may be in close proximity to areas of crane operation, the following restrictions will apply:

- All cranes will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.
- All materials will be stored within designated areas and no materials shall be stored within any RPA.

Hazardous Materials

Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.

Example of Protective Fencing Signs