RDSC Woburn Square

Tree Survey and Arboricultural Impact Assessment

University College London

60714846

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Quality information

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1 Introduction

1.1 Background

AECOM has been instructed by University College London (The Applicant) to carry out a tree survey and an Arboricultural Impact Assessment of the development proposals at 25 – 26 Woburn Square (hereafter referred to as 'the Site' and 'Proposed Development) in support of a planning application. This report identifies the results of the tree survey and the likely direct and indirect impacts of the Proposed Development along with suitable mitigation measures, as appropriate. The Tree Protection Plan (included within Appendix E) identifies trees to be removed and how retained trees are to be successfully protected.

1.2 Trees and the Planning Process

The National Planning Policy Framework (NPPF) seeks to ensure that new development is sustainable and underlines the importance of Green Infrastructure, of which trees form an integral part. This encompasses a recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaption. The NPPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity. Finally, it specifically identifies veteran and ancient trees and woodland as a highly valuable and irreplaceable habitat.

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 or other statutory designation) is therefore a material consideration.

'*BS5837:2012 Trees in relation to design demolition and construction – Recommendations (BS5837)*' provides a framework which sets out how trees should be considered in this context and also explicitly applies to development where planning consent is not required.

BS5837 recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This is then used to produce a Tree Constraints Plan showing the above and below ground constraints associated with trees. This drawing is used to inform the design process and to allow the retention of good quality trees where appropriate.

An Arboricultural Impact Assessment is then developed to identify the likely direct and indirect impacts of the Proposed Development, and a Tree Protection Plan is prepared to identify trees to be removed or retained and to illustrate how retained trees are to be protected. An Arboricultural Method Statement is often required as a condition of planning consent to detail how sensitive operations are to be achieved in proximity to retained trees. These elements are the minimum normally required for a planning application and are intended to ensure both a sustainable and harmonious relationship between trees and new development.

1.3 Local Policy Context

1.3.1 London Plan

The London Plan (2021)[1] includes specific policies relating to trees. .

Policy G7 Trees and woodlands states:

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

[1] https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

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.

1.3.2 Camden Council

Camden Council's current Local Plan[2], adopted in 2017 provides guidance on how the council will approach Planning Applications which have the potential to impact on established trees. Policy A3 Biodiversity states:

The Council will protect, and seek to secure additional, trees and vegetation. We will:

j. 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;

k. 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;

l. 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;

m. expect developments to incorporate additional trees and vegetation wherever possible.

The Local Plan further outlines the value of trees to the borough in subsequent sections:

6.75 Trees and vegetation are integral to the amenity and character of the street scene, provide connections and habitat for wildlife, offer shade and cooling to improve the local microclimate, reduce the impacts of flooding and filter pollutants from the air. There is a strong representation of native species in Camden reflecting local soil types including trees first planted to support the substantial growth of Camden's built form in the 18th and 19th centuries. Increasing trees and vegetation is an important way of adapting to projected/ future temperature increases linked to climate change.

6.76 The Council will seek the retention of trees and vegetation of significant amenity, historic, cultural or ecological value. This includes trees within the public highway which can potentially be affected by a development. Trees and vegetation are important to the contribution a site and its setting make to townscape character and amenity and have a sense of maturity which may often be lacking from replacement planting. Ancient woodland and ancient or veteran trees found outside ancient woodland are particularly valuable as once lost they can never be replaced. The ancient woodland in Camden forms part of the Hampstead Woods Site of Special Scientific Interest (SSSI).

6.77 Applicants will be required to take measures to the Council's satisfaction to minimise any adverse impacts from development on retained and proposed trees and vegetation. This includes the potential risk of damage arising from demolition or construction works and development which fails to allow sufficient space above and below ground to prevent damage to root systems or facilitate future growth.

6.78 Camden Planning Guidance on design supplementary planning document sets out the information required by the Council to ensure that there is a systematic approach to the safeguarding of trees and vegetation within the development site and on adjacent land (including street trees) both during and following the construction process. We will expect developers to follow the principles and practice set out in 'British Standard 5837:2012 (or as subsequently updated) Trees in relation to design, demolition and construction - Recommendations'.

Camden Council's approach to the use of Tree Preservation Orders is detailed as:

6.79 Tree Preservation Orders (TPOs) are used by the Council to legally protect specific trees or groups of trees that provide public amenity. Cutting, lopping or removing any part of a tree subject to a TPO other than the removal of deadwood requires the Council's consent. Where a planning application relates to trees in conservation areas, the Council will pay special attention to the desirability of preserving or enhancing the character of that area. Where a tree in a conservation area is already protected by a TPO, we will apply the normal procedures and controls

[2] Camden Local Plan - Camden Council

associated with a TPO. In other cases, a notification procedure exists (Section 211) unless an exception applies allowing the opportunity to consider whether to make a TPO on the tree. The felling of protected trees will only be permitted in exceptional circumstances and in accordance with relevant legislation, policy and guidance.

6.80 Where the loss of trees or vegetation of value cannot be avoided or would adversely affect their future growth, the Council will require suitable replacements capable of providing at least equal amenity and ecological value. Where this cannot be achieved on-site, the Council will require a financial contribution towards re-provision. Tree planting should, as a minimum, offset the capacity of trees lost as a result of the development to absorb carbon, taking account of the time needed to reach maturity.

6.81 The Council will also expect developments to incorporate additional trees and vegetation wherever possible as part of the package of biodiversity enhancing measures described above. This should include large species trees where opportunities allow. It is particularly important that new trees and vegetation are provided on sites where this is currently lacking or where this would enhance public areas.

6.82 We will take a 'right tree for the right site' approach which takes account of:

• the amenity value of any trees to be removed,

• ecology, • historic context,

• availability of space,

• soil conditions including hydrogeology,

• potential improvements to air and soil quality,

• reducing the effects of and adapting to climate change; and

• the guidance provided in BS 8545 Trees: from nursery to independence in the landscape – Recommendations'. 6.83 The ability to sustain an attractive treed environment will often be contingent on age and species diversification.

Camden Council Draft New Local Plan 2024[3] which will, in time, replace the earlier Local Plan from 2017; outlines the Council's approach to considering trees in relation to development, it states:

Tree Planting and Protection

11.34 Tree planting is recognised as an important way of reducing carbon emissions through carbon storage. Furthermore, trees provide habitats for wildlife and are important for their visual amenity. Woodland and individual trees can help to maintain air quality, provide shade, aid water attenuation, help to preserve soils and increase biodiversity. They can act as stepping-stones for wildlife throughout the landscape and provide important wildlife corridors within the urban environment. Trees can also make places more attractive and cohesive, encourage increased use of walking and cycling routes and contribute to greater health and well-being.

11.35 The National Planning Policy Framework acknowledges the important contribution that trees make to the mitigation of and adaptation to the effects of climate change, as well as to the character and quality of urban environments. It requires that existing trees are retained wherever possible and that opportunities are taken to incorporate trees in new developments, including through the creation of tree-lined streets and the introduction of measures such as community orchards.

11.36 The Council's Tree Planting Strategy sets out our ambitions to increase tree canopy cover in the borough through the planting of at least 600 trees per year over the period to 2025. Policy NE3 below supports the delivery of the Council's Tree Strategy and sets out our approach to tree planting and protection in Camden.

Draft Policy NE3 – Tree Planting and Protection states:

A. The Council will seek to protect existing trees and secure additional tree planting in the borough. The Council will:

[3] Camden Local Plan 2023

i. resist the loss of a tree, group of trees, area of woodland and/or vegetation of significant amenity, historic, cultural, and/or ecological value on, or adjacent to, a development site. The Council will also resist proposals which may threaten the continued wellbeing of such trees as specified above;

ii. make Tree Preservation Orders (TPO's) when necessary to protect specific trees, groups of trees, or woodlands, in the interests of amenity and biodiversity;

iii. ensure that where trees are to be retained on developments, these are positively integrated into the design and layout of the proposed scheme;

iv. require trees and vegetation, that are to be retained, to be satisfactorily protected both during and following the demolition and construction phase of development, in line with BS5837:2012 'Trees in relation to Design, Demolition and Construction';

v. require replacement trees and/or vegetation to be provided where the loss or harm to the wellbeing of significant trees and/or vegetation has been justified in the context of the proposed development;

vi. prioritise securing replacement trees and vegetation on-site. Where it can be demonstrated to the Council's satisfaction that replacement trees and vegetation cannot be provided on-site, a financial contribution will be secured to enable the planting and subsequent maintenance of replacement trees and vegetation off-site;

vii. require developments to incorporate additional trees and vegetation wherever possible, as part of a detailed landscaping scheme for the site. A detailed landscaping scheme and landscape management plan must be submitted for all major developments, including, but not limited to, details of the trees and vegetation to be planted, and proposals for how the landscaping scheme will be managed and maintained over the lifetime of the development. Tree protection

11.37 The Council will seek the retention of trees and vegetation of significant amenity, historic, cultural or ecological value. This includes trees within the public highway and on adjacent land to development sites which can potentially be affected by a proposed development. Trees and vegetation are important to the contribution that a site and its setting make to townscape character, and amenity, and have a sense of maturity which may often be lacking from replacement planting. Ancient woodland and ancient or veteran trees found outside ancient woodland are particularly valuable, as once lost they can never be replaced. The ancient woodland in Camden forms part of the Hampstead Woods Site of Special Scientific Interest (SSSI).

11.38 Applicants will be required to take measures, to the Council's satisfaction, to minimise any adverse impacts from development on retained and proposed trees and vegetation as far as possible. This includes the potential risk of damage arising from demolition or construction works, and development, which fails to allow sufficient space above and below ground to prevent damage to root systems or facilitate future growth.

11.39 All design elements of a development should be arranged to ensure a good relationship between the development and trees to be retained and planted, to ensure new planting has space to develop and mature, and existing trees continue to grow and flourish, without causing harmful nuisance for the occupants of the scheme or surrounding community.

11.40 Camden Planning Guidance on design sets out the information required by the Council to ensure that there is a systematic approach to the safeguarding of trees and vegetation within the development site and on adjacent land (including street trees) both during and following the construction process. The Council will expect developers to follow the principles and practice set out in 'British Standard 5837:2012 (or as subsequently updated) Trees in relation to design, demolition and construction - Recommendations'.

Tree Preservation Orders

11.41 Many trees in the Borough are covered by a Tree Preservation Order (TPO). A Tree Preservation Order is made by the Council to legally protect a specific tree or group of trees that provide public amenity or are of cultural or historic significance. The principal effect of a TPO is to prohibit the cutting down, uprooting, topping, lopping, wilful damage, or wilful destruction of trees without consent.

11.42 As part of the consideration of a planning application the Council will consider whether a TPO is needed. Members of the public can also draw the Council's attention to trees or groups of trees they consider to be important to the area and suitable for a TPO.

11.43 Works to trees with a TPO, above or below ground, require the Council's permission. Works to a tree with a TPO that is needed to enable the implementation of a planning permission are dealt with as part of a planning application. The Council can also require existing trees, including those that are not the subject of a Tree Preservation Order, to be protected and retained, using planning conditions. The Council also has powers to use 'conditional TPOs' which can be applied prior to planting.

Replacement trees

11.44 Where the felling of either protected or significant trees has been demonstrated to be unavoidable, the Council will seek replacement planting on-site of an appropriate size, number and species in an appropriate location. There will be occasions where it may not be possible for trees – or trees providing the same amenity or biodiversity benefits – to be replaced on-site because of the footprint of proposed new buildings. It will always be the Council's priority for any significant trees lost to be replaced within the curtilage of the development.

11.45 Where it demonstrated to the Council's satisfaction that this is not feasible, we will expect equivalent benefits to those provided by existing trees and vegetation to be secured. This will be achieved through securing a commuted sum where the cost of replacement planting is calculated according to its CAVAT (Capital Asset Value for Amenity Trees) value. This is a way of calculating the value of trees in monetary terms and is a widely used approach to ensure that realistic replacement and / or compensation is provided. The CAVAT value allows for contributions, positive and negative, of the tree's location, relative contribution to amenity value (including the numbers of people that interact with the tree) and appropriateness, as well as functionality and life expectancy. The basic value is modified by a consideration of the impact of these factors to determine the quantum of general amenity benefit. Applicants may be required to fund independent inspection and valuation of trees to establish CAVAT values.

11.46 The Council will use these commuted sums to fund tree planting in the immediate area where this is possible through the planting of trees on Council owned land such as highways, parks, housing estates and nature reserves. The funding may also be used to deliver tree planting on other large private developments in the local area. This funding will be expected to cover maintenance costs, and will be secured by a S106 agreement.

Tree planting

11.47 Section 197 of the Town and Country Planning Act 1990 places a duty on the Local Planning Authority to secure the planting of new trees. Camden's Tree Planting Strategy 2020-2025 aims to increase canopy cover in Camden by a minimum of 3.7% by 2045. This will partly be delivered by increasing planting on private land, and by helping developers and residents to make informed choices in relation to the planting of trees. Applicants should seek opportunities to restore and enhance planting throughout the site as part of their landscaping scheme. The Council will take a 'right tree for the right place' approach with the aim of delivering an attractive treed environment with age and species diversification. This will also ensure that trees have the optimum conditions for establishment and longevity for future generations to enjoy. The landscaping or planting scheme should take into account the impact of trees when they are fully grown and provide sufficient replacement trees to mitigate the loss of canopy cover where appropriate.

11.48 There are a range of factors that applicants should be aware of when considering new tree planting, including:

- *The amenity value of any trees to be removed. • Ecology – the Council will expect new trees and vegetation to increase the biodiversity value of the site. • Historic context – trees should take account of the existing qualities of the site and complement the surrounding architecture and the historic landscape character, recognising the evolution and use of the site, the local character and important views.*

- *Availability of space – this should take account of both Root Protection Areas and buffer zones, as identified by the Tree Constraints Plan and Arboricultural Impact Assessment. The impact of different tree species on buildings above and below ground and ancillary structures, such as boundary walls, should be considered. The planting plan will be required to also consider the potential for trees, over their lifetime, to give rise to unacceptable loss of light to habitable rooms and consider necessary clearances for CCTV, street lighting and overhead cables and high/large vehicles. Trees should be planted in positions which permit a tree to grow to maturity without inhibition of form.*

- *Soil conditions including hydrogeology – ensuring there is sufficient soil volume, the right soil type and drainage in order that roots can grow and function properly.*

- *Potential for improvements to air and soil quality. • Adapting to climate change – taking opportunities to improve a site/area's sustainability and function. Applicants should also consider the ability of trees/ vegetation to withstand drought and extreme weather, and changes in the prevalence of pathogens.*

- *Long-term resource consumption - the level of input required for the management and maintenance of trees and the effect this has on lifespan.*

- *Advice in BS 8545 Trees: from nursery to independence in the landscape – Recommendations.*

11.49 The Council will expect a detailed landscaping scheme for all major developments, as set out in Camden's 'Local Area Requirements'. Further guidance on what a landscaping scheme should include is set out in Camden Planning Guidance for Trees. The Council will secure a planting plan or landscaping scheme through a Section 106 agreement. Information on Camden's wider tree population is set out in Open Data [hyperlink: Camden Tree Statistics] and will be a useful resource for applicants to inform planting schemes.

Tree maintenance

11.50 It is important that there is a robust management regime for newly planted trees and landscaping schemes to ensure that trees and vegetation are able to reach maturity and deliver maximum benefits and functions over their life course. Maintenance requirements and method of aftercare management should be considered during the design stage (e.g. ensuring there is access for maintenance, storage of materials on-site and availability of sources of water). This will also ensure that the overall sustainability of the planting scheme is acceptable, and that trees and vegetation do not become a nuisance.

11.51 The Council will expect the detailed landscaping scheme or planting plan to include a landscape management plan. This will ensure that all planting on site is sustainable and adequately maintained in line with BS8545 for sufficient duration. This will be secured by a planning condition or in a Section 106 agreement.

11.52 Where developments are creating new public open spaces, funding for ongoing maintenance should be considered and provided in any new tree planting scheme. The Council will seek a financial contribution to cover maintenance costs.

1.4 Methodology

The tree survey has been based on the topographical survey plan provided.

The majority of trees were not included on the topographical survey plan and have been plotted indicatively with reference to site features and publicly available aerial photography. Such trees have been marked with an '*' on the Tree Survey Schedule included as Appendix B. As such all positions for these trees must be considered to be indicative only and the relative distances of features must be measured out on the Site as required.

The survey was otherwise conducted in accordance with the requirements of *BS5837.*

The initial fieldwork was undertaken on 21st May, during which dimensional data and observational information were collected. A diameter tape measure was used to measure stem diameters where feasible.

The fieldwork informing this report has comprised a preliminary, non-intrusive, visual survey undertaken from ground level with the specific intention of evaluating the quality and benefits of trees on the Site. All trees apart from T4 were located beyond boundary walls and were not fully accessible. Such trees have therefore been considered from within accessible parts of the site and dimensions and attributes have been estimated.

Where further inspection is deemed appropriate to ascertain the condition of the tree or other arboreal features, this has been identified within the preliminary management recommendations. Average dimensions or dimensional ranges have occasionally been used, where appropriate, to best describe features.

The Root Protection Area (RPA) is the notional extent of what is considered to be the key rooting area for tree health and function. This is generally depicted as a circle but can be amended to a polygon with an equivalent area in accordance with Section 4.6.2 of BS5837 where the RPA is likely to have developed asymmetrically. The RPA of all surveyed trees is depicted as a circle and no RPAs have been amended.

A Tree Constraints Plan showing the position of trees and the spatial constraints associated with them is included as Appendix A of this report, which corresponds with the Tree Survey Schedule presented in Appendix B.

The tree categorisation process recommended by BS5837:2012 is summarised in the table below and corresponds with the tree canopy outline shown on the Tree Constraints Plan (Appendix A) and the information in the Tree Survey Schedule (Appendix B).

Table 1: BS5837:2012 Tree Categorisation process

Category	Definition
A	High quality, minimum of 40+ years remaining contribution
B	Moderate quality, minimum of 20+ years remaining contribution
C	Low quality, minimum of 10+ years remaining contribution
U	Unsuitable for retention, <10 years remaining contribution
1	Arboricultural value
2	Landscape value
3	Conservation or cultural value

2 General Arboricultural Principles

2.1 General Principles

Trees are dynamic living organisms which provide essential benefits to society and the wider environment. Any Proposed Development with the potential to impact on trees must take into consideration the value of trees on the Site; the impact of any proposed activity along with any potential future conflicts on the Site. Suitable measures to safeguard retained trees or mitigate the loss of trees (to be removed) will need to be fully considered and may be subject to a condition of planning consent.

Tree branches and roots frequently grow across site boundaries and off-site trees can pose a significant constraint, and should be carefully considered when assessing the developable space within a site.

2.2 Below Ground Constraints

Below ground tree roots and the soil environment in which they grow need to be protected if the tree is to be retained. Trees grow in association with fungi and other soil organisms which are of key importance to tree health. Roots are essential for anchorage, the uptake of water and nutrients, and the storage of energy (carbohydrates) for the future growth and function of the tree.

Roots can be damaged by physical severance or wounding (e.g. following excavation of the soil) which can lead to the development of decay and a decline in vitality and/or instability. Raising the soil level can bury tree roots at a depth where suitable conditions for growth are less available. Toxic materials discharged into the soil (such as cement-based aggregates, fuel and chemicals) can lead to root death and dysfunction. Soils can be compacted to levels inhospitable to tree growth with even a single pass of machinery, regular pedestrian traffic or the storage of plant and materials. Relieving compaction can be problematic and may require costly remedial works. Changes in drainage/water levels can also have significant long-term impacts for tree health.

The effects of these incursions may take many years to manifest, with a resulting decline in amenity value and potentially the death or failure of the tree. It should be noted that older trees are particularly sensitive to damage and changes in conditions.

The Root Protection Area (RPA) is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. This area is deemed to be particularly important for tree stability, growth, function and health. However, roots may extend far greater distances, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients). It

is generally accepted that tree roots are predominantly located in the upper 1000mm of soil; however, roots may develop at deeper levels where conditions allow.

RPAs are calculated as per BS5837: 2012 Annexe C, D and Section 4.6 in the BS 5837 2012 Document.

The RPA of the existing tree stock is an important material consideration when considering site constraints and planning development activities. The RPA of significant trees on the Site are shown on the Tree Constraints Plan (Appendix A).

The default position must be that all development, including any associated services will occur outside the RPAs of retained trees. Where this is unavoidable, it may be appropriate to use special measures to install structures, services or surfacing within RPAs which allow the protection of roots and soil structure which are essential for tree growth and keep any incursion to a minimum.

Further steps to improve or increase the useable rooting area available to the tree may also be required.

2.3 Soils

On shrinkable clay soil, tree growth can lead to the differential movement of structures as moisture is removed from the soil during the growing season. Soils must be carefully assessed, and any foundations must be installed following the recommendations of National House Building Council (NHBC) Standards Chapter *4.2: Building Near Trees (2024)* to avoid potential future damage. Where trees which predate existing structures are to be removed, this can result in heave as the soils are re-wet.

The advice of a suitably qualified engineer must be obtained to inform any potential issue of heave. Specific advice in relation to this issue is beyond the scope of this report.

2.4 Above Ground Constraints

Tree stems and branches can restrict available space on a site. Damage or wounding (including excessive pruning) can significantly reduce the amenity contribution of the tree and may lead to the development of dysfunction and decay, with significant long term implications for tree health. The future impact of existing trees should be carefully considered, including individual species characteristics (such as potential future size, fruit fall, shade etc.) and how the tree will interact with any proposed development and future land use. Annual tree growth can lead to direct damage if stems/branches (or roots) come into physical contact with structures and this must also be taken into consideration.

2.5 Trees and Risk in the Context of Development

Tree owners/managers have a legal duty to prevent foreseeable harm. It is generally accepted that this duty can be fulfilled by undertaking proactive inspections of significant trees to identify obvious defects and by taking appropriate remedial action or gaining further advice as appropriate.

Further guidance is available from the National Tree Safety Group[4].

The tree survey carried out as the basis of this report is primarily for planning purposes, focusing on the quality and benefits of the trees and is not specifically designed to assess the safety of trees on the Site. However, when obvious issues have been identified recommendations have been included in the Tree Survey Schedule.

The Construction (Design and Management) Regulations (2015) states that developers and contractors have responsibilities for health and safety as a result of their actions. Should trees be left in an unstable or hazardous condition the Health and Safety Executive (HSE) could seek to prosecute those responsible along with the potential for further Civil claims for damages.

2.6 Trees and Wildlife

Full consideration must be given to the presence of species protected under the Wildlife and Countryside Act (1981 - as amended), the Countryside Rights of Way Act (2000) and the Conservation of Habitats and Species Regulations (2017), in particular the presence of bats and nesting birds. It is recommended that wherever possible,

[4] National Tree Safety Group (NTSG),2011. Common sense risk management of trees. Forestry Commission.

significant tree/hedge works take place outside of the typical bird nesting season of March to September. The advice of a suitably qualified Ecologist is recommended in relation to any potential impacts on protected species.

2.7 Tree Works

Any tree surgery recommendations contained within this report are to be undertaken in accordance with BS3998: 2010 Tree work – Recommendations (BS3998) by suitably qualified and insured contractors. Significant pruning works are best undertaken when trees are dormant or outside periods of high functional activity to reduce the overall impact on energy available to the tree for growth and processes. In general, the optimum period for works is between November to February and July to August (subject to the presence of protected species) when the tree is less active and better placed to respond to wounding and a reduction in leaf area.

3 Field Work Observations

3.1 The Site

The study area is shown on the Tree Constraints Plan included within Appendix A 60714846-ACM-XX-XX-AB-TPP-001 of this report.

The Site is located to the rear of 25 and 26 Woburn Square between Torrington Square and Woburn Square in Bloomsbury, London.

The rear garden areas are not currently utilised and appeared to be periodically managed but generally unappealing as outdoor space and unsuitable for staff or guests.

The rear gardens are likely to be formed of made-up ground, which is at different levels between the rear of Woburn Square and the rear outdoor areas of Torrington Square.

3.2 The Trees

Nine trees have been included within the survey. Only a single tree, bay (*Laurus nobilis*) T5 is within the Site of the Proposed Development.

The trees identified by the survey are predominantly mature or semi mature and in good condition although regularly reduced in size due to the limited available space between the buildings. Species present includes bay, sycamore (*Acer pseudoplatanus*) and London plane (*Platanus x acerifolia*).

The most significant trees included within the survey are the London planes both within the rear outdoor area between Woburn Square and Torrington Square and those in the Woburn Square Garden.

Site photography can be found in Appendix C located to the rear of this report.

3.3 Statutory and Non-Statutory Designations

3.3.1 Statutory Designations

The Site is located within the Bloomsbury Conservation Area. As such all trees with a stem diameter greater than 75mm (measured at a height of 1.5m) within this area are subject to statutory protection, equivalent to that of a Tree Preservation Order. This includes all trees identified within this report.

AECOM contacted Camden Council on 3rd May 2024 and sycamore T1 and London plane T2 were confirmed as being subject to a Tree Preservation Order.

A felling licence may be required by the Forestry Commission to fell more than $5m^3$ in any calendar quarter (subject to relevant exceptions including trees in gardens, designated public open spaces or churchyards). As the trees on site are in public open space (Woburn Square Garden) or in garden areas, a felling licence is not considered likely to be required.

Full planning consent is an exemption from the need to apply for consent for works to trees protected by a Tree Preservation Order, the need to give notice of the intention to undertake works within a Conservation Area and the need to apply for a Felling Licence with the Forestry Commission (to fell more than $5m^3$ per calendar quarter). Prior to any tree works the status of trees to be removed or pruned must be verified with the LPA and the Forestry Commission as appropriate.

3.3.2 Non-Statutory Designations

AECOM checked Magic Map[5] on 3rd May 2024 for the presence of any non-statutory designations relating to trees such as ancient woodland or Deciduous Woodland (included within the Priority Habitat Inventory) and none were found within or immediately adjacent to the Site.

AECOM also checked the Woodland Trust Ancient Tree Inventory[6] for the presence of any recorded notable, veteran or ancient trees within or immediately adjacent to the Site and none were identified.

3.4 Tree Valuation

Trees are highly valued features which provide a broad range of essential benefits to both rural and urban landscapes including managing flood water, improving air quality, buffering extremes in temperature, capturing carbon and improving both physical and psychological wellbeing.

There are a range of tree valuation methodologies available. The asset value of the individual trees included within the detailed tree survey has been calculated in monetary terms using the Capital Asset Value for Amenity Trees (CAVAT) system (Full Method). Many local authorities in the UK use this system to inform decision making and compensation valuations in relation to publicly owned trees and the method is specifically suggested in the New London Plan as an appropriate approach to determine tree value in relation to development. The CAVAT value of trees to be removed to facilitate the Proposed Development are detailed in the Tree Survey Schedule in Appendix B.

The following describes how the CAVAT value is derived:

'CAVAT works by calculating a unit value for each square centimetre of tree stem, by extrapolation from the average cost of a range of newly planted trees. In the Full Method this basic value is adjusted to reflect the degree of benefit that the tree provides to the local population. The adjustment is designed to allow the final value to reflect realistically the contribution of the tree to public welfare through tangible and intangible benefits'. (Chris Neilan. 2010 http://ltoa.org.uk/component/docman/cat_view/98-capital-asset-value-for-amenity-trees-cavat).

4 Tree Related Constraints and Opportunities

The Tree Constraints Plan (Appendix A) shows the area of constraints associated with the trees on the Site. As identified within the drawing key, the green shaded area shows the extent of tree canopies, the canopy outline colour indicates the quality category of the tree and the dashed black line is indicative of the RPA, which is the nominal area of tree roots which are generally considered essential to tree health and function. Roots are likely to extend outside of this point but beyond the RPA extent tree roots are not considered a significant constraint.

The default position is generally that all new features and associated works be located outside of areas where trees are to be retained.

4.1 Tree Categorisations as per BS5837:2012

The trees on the Site have been assigned to a quality category as per BS5837:2012, which relates to their arboricultural, landscape and cultural/conservation value.

[5] https://magic.defra.gov.uk/MagicMap.aspx
[6] https://ati.woodlandtrust.org.uk/tree-search/

Category C trees are shown by a grey canopy outline on the Tree Constraints Plan (Appendix A). This means they are of relatively low quality and would not normally be considered a significant constraint to future development. However, these trees may still provide some useful value and should be considered for retention where they do not pose a significant constraint to the Proposed Development.

Category B trees (blue canopy outline) are described as being of moderate quality and it is generally desirable to retain trees of this standard and incorporate them within the Proposed Development wherever feasible.

Category A trees (green canopy outline) are classified as being of high quality and trees of this nature should be retained and incorporated into the design of the Proposed Development due to the high level of benefits they provide.

Category U trees (red canopy outline) are trees with less than ten years of reasonable useful life expectancy or those in such poor condition that they should be removed, regardless of any development activity. Trees of this nature represent no constraint to development.

The table below summarises the number of trees in each category recorded within or adjacent to the Site.

Table 2 Summary of trees in each quality category.

Quality Category	A	B	C	U
Number of trees	3	5	0	1

5 The Proposed Development

The Proposed Development is detailed on the Rear Garden – Proposed Landscape Plan (37-L-P-100) included as Appendix D. It includes plans for a garden which is to be used by visitors staying in the Rare Dementia Support Centre and has been designed following consultation with patients and their primary carers. The final design has been adapted to reduce the difficulties experienced by patients in navigating spaces which have visual obstacles, or which are visually complex and which contain repeating patterns. The final garden design is something that will be ideally suited to the needs of the patients and carers using the centre.

6 Arboricultural Impact Assessment

6.1 Purpose

This impact assessment sets out the likely principal direct and indirect impacts of the Proposed Development on the trees on or immediately adjacent to the Site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for trees to be removed, where appropriate.

A brief summary of trees to be removed, tree works and incursions related to the Proposed Development are detailed within the table below.

Table 3: Summary of Removals, Incursions and Pruning to Facilitate the Proposed Development

Impact	Category A	Category B	Category C	Category U
Trees to be removed to facilitate the Proposed Development	0	T5	0	
Total	**0**	**1 individual tree**	**0**	**0**
Trees which may require some incursion into their construction exclusion zone to allow the Proposed Development.	0	T3 & T6	0	T4
Total	**0**	**2 individual trees**	**0**	**1 Individual tree**

Impact	Category A	Category B	Category C	Category U
Trees to be pruned to facilitate the Proposed Development	0	0	0	0
Total	**0**	**0**	**0**	**0**

6.2 Trees to be Removed

One individual tree is to be removed to facilitate the Proposed Development. This is a single individual bay treeT5, valued at £4,307 using the CAVAT system; this is classed as moderate quality (Category B).

The tree to be removed is within the site boundary. The removal of T5 is required due to a direct conflict with the Proposed Development and to avoid inappropriate tree retention where it is considered to be undesirable due to its size in such an enclosed space. The proposed garden is intended to provide an enjoyable outdoor space for sufferers of rare forms of dementia. The design of the space would be difficult to achieve without the removal of the tree which currently dominates a large part of the garden area.

T5 is growing less than a metre from the rear of the building with its crown enveloping a large part of the rear of the building and as such is considered to be generally unsuitable for longer term retention regardless of the proposals.

All of the remaining recorded trees can be retained and protected.

6.3 Replacement Tree Planting

Tree removal will be mitigated with a high quality scheme of new tree planting more befitting of the tight spatial constraints on Site. The landscaping works are detailed in the Rear Garden - Proposed Landscape Plan (Appendix D) . These landscaping plans represent an opportunity to enhance the quality, benefits and resilience of trees on the Site. The landscape plans detail three replacement trees. It is understood that the trees will be multi-stem Chinese dogwood (*Cornus kousa*) at 2-3 metres in height. Owing to the lack of available, consistent information on the expected number of stems and their diameters the following calculations have been based on the trees as *standards*: 8 – 10cm stem circumference (3cm diameter) and 2 – 3m in height.

The below table shows the expected CAVAT values of each new tree as they mature. This assumes an initial diameter of 3cm and a modest growth rate of 6cm increase in diameter every ten years (0.6cm increase annually).

Table 4: Summary of the CAVAT value proposed new tree planting at ten year intervals following planting

Year	Stem diameter (cm)	CAVAT Value Per Tree (£)	Total CAVAT Value (3 Trees)
1	3	70	£189
10	9	626	£1,818
20	15	1,738	£5,118
30	21	2,342	£6,933

Based on the above estimates, the three replacement trees can be expected to provide an equivalent value to T5 (which is valued at £4,307) within circa 18 years and would be more suited to the constrained nature of the Site and small garden setting.

6.4 Tree Works

No additional works to retained trees are likely to be required. All tree work is to follow the principles of *BS3998: 2010 Treework – Recommendations* and must be carried out by suitably qualified and insured contractors. The Arboricultural Association provides a list of contractors who meet these requirements which can be found at www.trees.org.uk.

Should the requirement for additional tree works be identified, this will be discussed with an arboriculturist, and no works will be undertaken without the consent of the Local Planning Authority (LPA).

6.5 Incursions within the RPA or Canopy Spread

The proposed landscape scheme contains changes to the ground within the RPA of a magnolia (T3), sycamore (T4), and a London plane (T6). Without measures to protect the RPAs of these trees, the works could result in damage to roots and the wider rooting area. However, these potential issues can be mitigated and reduced to within acceptable levels with the protection measures as they are outlined within the Tree Protection Plan in Appendix E.

Installation of hard surfacing in these areas, with the associated removal of existing paving and the top layers of soil has the potential to damage roots and the rooting environment through mechanical damage, excavation, compaction of the rooting environment and from the leaching of harmful chemicals into the soil.

The use of the space by patients with visual forms of dementia precludes the use of some materials which may make the space visually complex. Visual complexity and repeating patterns from small unit paving can be disorientating, and joints can appear as steps. These visual obstacles make navigating a garden space extremely difficult for patients. As the core aim of the garden at the Rare Dementia Support Centre is to maximise usability for this specific group of people and play to their retained cognitive strengths, this user input has been foundational to the design strategy for the proposed path.

In addition, the tight space and height of surrounding buildings, raised outdoor spaces and nearby trees, limits the option of raising the levels to install no dig surfacing.

In this situation, a limited width floating concrete raft, constructed directly onto the soil surface, may be acceptable for patient and carer access of the garden. The design should not include any strip foundations or strip-dug supports.

Where the path is to be located the existing wearing course should be removed using hand tools. All roots over 25mm diameter should be retained. A sand layer should be installed wherever the subbase cannot be retained and edge shuttering used to contain the lateral spread of the concrete. Where the concrete is poured directly, precautions must be taken to ensure that chemicals cannot leach from the concrete and contaminate the soil. This can be achieved by using an impermeable liner.

The result will be a single level concrete path that will be cast in-situ. This minimises the need for joints and keeps the surface as visually simple as possible. It will also be completely hard and smooth, removing the possibility for joints, level changes or bits of gravel potentially causing someone to possibly trip or feel unstable.

Surface removal work and installation of new surface will be supervised by an arboriculturist.

New areas of hard surfacing will occupy far less than the 20% of the RPA limit, as set out in Section 7.4.2.3 of BS5837.

Where hard surfacing is removed within RPAs of retained trees ground protection boards should be used to avoid compaction from pedestrian movement, until new surfacing is installed.

These measures are illustrated in the Tree Protection Plan in Appendix E and in the outline Tree Protection Measures section in Appendix F.

No building materials will be stored within the RPAs of neighbouring trees and no machinery will be used for landscaping due to the inaccessible nature of the Site.

6.6 The Future Impact of Retained Trees

The retained trees are largely located outside of the Site boundary. However, it is likely that the trees in neighbouring outdoor areas will have some impacts on the future use of the Site which should be considered:

Retained trees will require periodic inspection to assess their structural condition and safety. Occasional removal of dead wood or other remedial works to address significant defects may be required in areas of frequent access. This is unlikely to be overly onerous and will be the responsibility of the tree owner. This will not represent a significant change from the current situation on the Site.

All trees adjacent to the Site are broadleaved and will drop leaves and fruits in autumn and will produce flowers in the spring. This can affect the use of adjacent land and can block gutters where tree branches overhang roofs. The proposals involve bringing the outdoor space back in to use. The effect of the dropping of leaves, seeds and fruits is unlikely to be any greater as a result of the proposed landscaping. Gutter guards or equivalent can be used to prevent leaf ingress into guttering if required and leaf fall and other detritus associated with trees can be addressed via regular maintenance.

The Site will be shaded by surrounding trees. However, more significant is the shade cast by surrounding structures. This will not represent a significant change from the existing situation.

Trees within the Site will require ongoing maintenance and assessment by a competent person to ensure that any risks from tree failure are managed in accordance with best practice. All tree works recommended as a result of the preliminary tree survey of the Site which considered trees in the context of the current use of the Site (these works are included as preliminary management recommendations in the Tree Schedule in Appendix B of this report) should be actioned within the recommended timescales.

6.7 Tree Protection

Retained trees are vulnerable to damage from construction activities which can include physical damage to stems and branches following impacts with plant. Root severance following trenching, root death or dysfunction following damage to soil structure (caused by the movement of people or machinery on unsurfaced ground) or via the spillage of materials toxic to tree health. The default position is that the RPA and canopy spread of trees to be retained will form an effective Construction Exclusion Zone.

For the landscape proposals in these rear gardens, works will be undertaken within the RPAs of T3 and T6. Tree protection fencing and temporary ground protection measures will not be appropriate for the landscape works (due to their nature, requiring access to soil for planting etc). The stems and canopies of retained trees are outside of the boundary of the Site and existing walls and fencing will provide suitable protection. Where gaps exist in the fencing, an effective barrier formed of barrier tape and road pins (as outlined in Appendix F.1), will be sufficient.

Protection will be afforded to these trees by the use of low impact installation methods and by using low impact materials.

Where the wall is to be reinstated in the RPA of T6, the existing footings should be retained and used as the basis for the reconstructed wall. Where this is not possible the footings should be removed by hand and the existing trench used. If the trench requires increase in size, this should be done by hand, taking care not to damage any roots that are encountered. If concrete is to be used in the footings, the trench should first be lined with an impermeable sheeting to prevent leaching of corrosive chemicals into the surrounding soil which cause damage to roots and the rooting environment

All excavation works within the RPA will be by hand.

Outline tree protection measures are considered in Appendix F of this report. An Arboricultural Method Statement is often required as a condition of planning consent to set out the phasing of site operations, the finalised tree protection measures for the Site and to provide detail on how sensitive elements of work are to be achieved in proximity to retained trees. Issues to be addressed by the Method Statement are listed in the Conclusion of this report.

6.8 Site Organisation, Storage and Use of Materials, Plant and Machinery.

All construction site facilities including areas for storage will be located outside of the RPA or crown spread of retained trees, including those not specifically covered in this report. Space is likely to be constrained on the Site and will need to be carefully considered. The Construction Exclusion Zones identified on the Tree Protection Plan must be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.

The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders sand and herbicides) and can result in the death of tree roots and beneficial soil organisms and can have a significant impact on the future health and appearance of the tree.

The storage of materials and arising's can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

For these reasons the storage of materials and any washing, mixing or refuelling will take place in agreed allocated areas at least 5m from the edge of the RPA of retained trees. Where this is not possible due to the small size of the working area, a bunded mixing area must be located as far from the RPA of retained trees as the Site allows and all waste collected and disposed of at a licensed waste facility.

Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

Particular care is required where high sided vehicles, long reach machinery and plant with jibs, booms and counterweights are to operate with in proximity to retained trees (specifically T7-T9 in Woburn Square Gardens). A banksman will be used where the movement of plant or long reach machinery occurs within 5m of any part of a retained tree to ensure no damage is sustained.

6.9 Tree Planting

Existing areas of unsurfaced ground must be protected during the clearance and hard landscaping / construction phases if they are to be re-used for new plantings. Protection can be achieved using fit for purpose ground protection measures as set out in BS5837:2012 Section 6.2.3 or by creating a fenced exclusion zone. Where protection is not feasible, soil amelioration or replacement works will be required to ensure suitable growing conditions for new trees to fully establish.

Where new trees are to be planted, the minimum planting distances detailed in Annexe A, Table A.1 of BS5837:2012 should be adhered to, to prevent direct damage to services and structures from future tree growth.

New tree planting should be implemented in accordance with the guidance set out in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations.

6.10 Services

No information in relation to services has been made available at this stage. However, the landscaping works are not expected to result in changes to underground services.

Where existing services become redundant within the RPA of a retained tree, the default position must be that they be decommissioned and left in situ. Where this is not feasible the following principles are to be observed.

Existing services are to be removed by winching out from an access/inspection chamber located outside of an RPA. It may be acceptable to fill redundant pipe work with an inert material or undertake pipe bursting where necessary within the RPA of retained trees.

Excavation to install services has the potential to result in unacceptable root severance which could result in instability, dysfunction or the death of trees. Repeated incursions are particularly damaging and must be avoided by bundling services wherever possible.

The default position will therefore be that all services be routed outside of the RPA of retained trees. The following general principles will apply and where services must be routed within the RPA of a retained tree this process will be subject to a detailed method statement with approval from the Planning Authority. The principles of the National Joint Utilities Group (NJUG) Volume 4 guidance must be adhered to.

All services must be bundled as far as possible and installed within RPAs using hand/compressed air excavation (e.g. for shallow service runs) or trenchless techniques such as impact moling (thrust boring) with all access pits and inspection chambers being located outside of the RPA. The route must run as far from the main stem of a retained tree as possible and must be at a minimum depth so that the upper 1m of the soil profile is undisturbed. The depth of the run may need to be adjusted to account for soil type and species variation and this must be determined subject to the advice of an arboriculturist.

This operation must take place as specified in a Method Statement. Any water pipes must be constructed so as to be resistant to ingress by tree roots (both existing trees, and newly planted trees) which could include the use of root barriers where appropriate.

7 Conclusions

The Proposed Development will require the removal a single bay tree (*Laurus nobilis*) T5, classed as moderate quality (Category B), with a CAVAT value of £4,307. The loss of this tree and its associated value will be mitigated with the new plantings within the garden which will provide an equivalent CAVAT value within 18 years and will be must better suited to the Site. The tree to be removed is not visible from public vantages due to the position within an enclosed outdoor area between buildings. T5 is within the Site boundary and under the management of the applicant.

Three trees, T3, T4 and T6 have RPAs within the garden area. The roots of these trees will require protection to avoid causing damage to the roots which could lead to the decline of the retained trees. The measures required for their protection are outlined within the Appendix F and their locations specified in the Tree Protection Plan in Appendix E.

The Site is within a Conservation Area. For standalone tree works, Camden Council should be given six weeks notice of the intention to fell or prune trees. The Council should either respond to inform the applicant whether an objection is raised and the tree has been protected by TPO or, if six weeks has passed since the Council received the notification, the tree work can go ahead.

However, full planning consent is an exemption from the need to apply for consent for works to trees protected by a Tree Preservation Order or the need to give notice of the intention to undertake works within a Conservation Area.

Where tree removal cannot be avoided the London Plan policy G7 must be taken into consideration, which requires adequate replacement tree planting based on the existing value of the benefits of the trees to be removed. An assessment of CAVAT values for the removed tree (T5) and replanting proposals have been included in section 6.2. Replacement planting would provide an equivalent value to the removed tree within 18 years.

The removal of the bay is required to enable the landscaping works to be undertaken. This tree has outgrown the small amount of available space and should be removed in order to avoid inappropriate tree retention close to the building. The tree could only be managed through ongoing and onerous tree surgery which would likely leave the tree looking unattractive and would detract from the landscaping objectives for the Site.

Tree loss can be mitigated with a robust and high-quality landscaping scheme with small trees and shrubs which are more in scale with the available space on Site, as detailed in the Landscape Proposal Plan. This represents an opportunity to create a useable and enjoyable outdoor space for visitors to the Rare Dementia Support Centre. The replacement trees will be smaller and better suited to the small enclosed garden area.

References

British Standards Institution (BSI), BS5837:2012. Trees in relation to design, demolition and construction – Recommendations. BSI

British Standards Institution (BSI), BS3998:2010. Tree work – Recommendations. BSI

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Camden Council (2017) Camden Local Plan

Camden Council (2024) Draft New Local Plan

Greater London Authority (GLA) (2021), London Plan – The Spatial Development Strategy for Greater London

National House Building Council (NHBC) Standards, (2024). Chapter 4.2: Building Near Trees

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

National Tree Safety Group (NTSG), 2011. Common sense risk management of trees. Forestry Commission.

The Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework (NPPF).

Appendix A Tree Constraints Plan

Author: JR Designer: LH Checked: #CH# Approved: #AP#

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GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
3. * INDICATES A TREE / GROUP WHOSE POSITION IS APPROXIMATE AS BASED UPON AERIAL PHOTOGRAPHY AND ON SITE OBSERVATIONS.
4. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM ARBORICULTURAL REPORT.
5. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.
6. AERIAL IMAGERY COURTESY OF ©2024 Microsoft Corporation©2024 Maxar ©CNES (2024)Distribution Airbus DS
7. DRAWING REFERENCES:
   Woburn Square Topographical Survey - CH.dwg

KEY

- T# — **FEATURE ID TAGS** *(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)*
- **SITE BOUNDARY**
- **A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(HIGH QUALITY & VALUE)*
- **B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(MODERATE QUALITY & VALUE)*
- **C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(LOW QUALITY & VALUE)*
- **U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(UNSUITABLE FOR RETENTION)*
- RPA — **ROOT PROTECTION AREAS (RPA)** *(AS DEFINED BY BS 5837:2012)*
- **APPROXIMATE SHADING ARC** *(AS DEFINED BY BS 5837:2012)*

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Appendix B Tree Survey Schedule

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
T1*	Sycamore (*Acer pseudoplatanus*)	18	400#	4	2	4	4		5	Good	M	Fair	No access			20+	B2	
T2*	London plane (*Platanus x acerifolia*)	19	500#	3	5	5	5	1.0/W	3	Good	M	Fair	No access			20+	B1	
T3*	Magnolia (*Magnolia sp*)	6	280#	3	3	3	3			Good	SM	Fair	No access			20+	B1	
T4*	Sycamore (*Acer pseudoplatanus*)	7	360	2.5	2.5	2.5	1.5	3.0/E	4	Fair - Poor	SM	Fair	Apparently self-seeded sycamore. Growing very close to air conditioning and other external building services. Multiple stumps in stem pruned to prevent interference with services. Topped leaving all branches truncated with no growth points. Unsuitable for retention in this location. No visibility to public.			<10	U2	
T5	Bay (*Laurus nobilis*)	7	320	3	3	3	3	3.0/E	2	Good	M	Good - Fair	Growing close to building. Canopy touching corner of building. Roots disrupting garden patio surface. Wound in west side of stem at ca. 1m.		Fell	20+	B2	
T6*	London plane (*Platanus x acerifolia*)	16	1150#	4	4	4	4	4.0/W	10	Fair - Poor	M	Good - Fair	Large, mature tree growing in confined central outdoor space between multistory buildings. The tree has been recently heavily reduced / high pollarded to contain crown spread. Some new shoots growing from truncated branch ends however works have left an extremely thinned out canopy.	Reinspect in 1 year		20+	B1,3	
T7*	London plane (*Platanus x acerifolia*)	19	950	7	3	7	7	5.0/E	3	Good	M	Good	Large tree overhanging the road away from a park. Canopy restricted to south but broad in other directions. Large amount of fibre buckling in northwest underside of stem with			40+	A1,2,3	

Tree ID	Species	Est Height (m)	Stem Diameter (mm)	Canopy				First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Works Required to Facilitate Proposed Development	Estimated Remaining Contribution in Years	Category	Root Protection Area Radius (m)
				N	S	E	W											
													pronounced adaptive growth on tension side.					
T8*	London plane (*Platanus x acerifolia*)	27	1150	6	7	7	6	4.0/E	3	Good	M	Good	Large tree close to playground, park, or university building and road. Large life belt formed at buttress with signs of fibre bucking above.			40+	A1,2,3	
T9*	London plane (*Platanus x acerifolia*)	25	1210	2.5	8	7	6	4.0/E	3	Good	M	Good	Bifurcated at ca. 3m. Conjoined canopy with neighbour to north means SWE canopy is extended. Some evidence of fibre bucking below 1st union. Normal for species. Growing in planting bed by playground within university grounds and by park and road.			40+	A1,2,3	

Key to Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group/W=Woodland	
Species	Common name followed by botanical name shown in *italics*	
RPA	Root Protection Area (As defined by BS5837)	
Stem diameter	Diameter of main stem, measured in millimetres at 1.5 m above ground level. (MS = Multi-stem tree measured in accordance with BS5837 Annexe C)	Av / Average: indicates an average representative measured dimension for the group or feature
Spread	The width and breadth of the crown. Estimated on the four compass points in metres.	
Crown clearance	The estimated height (in metres) above ground level of the lowest significant branch attachments.	
#	Estimated dimensions	
*	Indicates estimated position of tree (not indicated on topographical survey).	
Category	Categorisation of the quality and benefits of trees on the Site as per Table 1 and 2 of BS5837:2012. 1=Arboricultural quality/value 2=Landscape quality/value 3=Cultural quality/value (including conservation)	
	A=High quality/value 40yrs+ (light green). B=Moderate quality/value 20yrs+ (mid blue) C=Low quality/value min 10yrs/stem diameter less than 150mm (grey). U=Unsuitable for retention (dark red).	
Life stage	**Young (Y):** Newly planted tree 0-10 years. **Semi-Mature (SM):** Tree in the first third of its normal life expectancy for the species (significant potential for future growth in size). **Early Mature (EM):** Tree in the second third of its normal life expectancy for the species (some potential for future growth in size) **Mature (M):** Tree in the final third of its normal life expectancy for the species (having typically reached its approximate ultimate size). **Over Mature (OM):** Tree beyond the normal life expectancy for the species. **Veteran (V):** Tree which is of interest biologically, aesthetically or culturally because of its condition, size or age.	
Structural condition	**Good:** No significant structural defects **Fair:** Structural defects which can be resolved via remedial works. **Poor:** Structural defects which cannot be resolved via remedial works. **Dead:** Dead.	
Physiological condition	**Good:** Normal vitality including leaf size, bud growth, density of crown and wound wood development. **Fair:** Lower than normal vitality, reduced bud development, reduced crown density, reduced response to wounds. **Poor:** Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species. **Dead:** Dead **Fair/Good** = Indicates an intermediate condition **Fair – Good** = Indicates a range of conditions (e.g. within a group)	

Preliminary management recommendations	Works identified during the tree survey as part of sound arboricultural management, based on the current context of the Site (where relevant reference has been made to tree management based on the potential future context of the site).
Works to facilitate the development	Tree works identified as necessary to facilitate the Proposed Development following a desk top analysis of the proposals in relation to tree constraints.

Appendix C Site Photography

Figure 1: The canopy of T5 growing into the rear of the building.

Figure 2: T4 is a badly pruned sycamore growing in an unsustainable location close to outdoor services.

Figure 3: T6 is a heavily managed London Plane growing in an enclosed courtyard.

Figure 4: In neighbouring properties and in view of the garden area are two large trees, T1 and T2.

Appendix D Development Proposals

0 1 2m

N

3x concrete bases for condensers: Cumulative area circa 1.7m2

Timber fence to screen and house condensers and garden equipment. Total length 2m. Height approx. 3.0m

Steel benches with blue powder coating RAL Colour 5015 (TBC)

Timber trellis along rear garden wall. Length 13.5m Height approx. 0.60m

Remove existing tree

Bib-tap connected to mains

Close up existing opening. Reclaimed bricks to match

Cable tray for condenser units

Proposed handrail fixed to building

Steps:
- Woodkirk Buff - Sawn - 3m2
- Reclaimed brick risers to match walls.

Concrete path surface cast in-situ (6.5m2). Carried through under chair lift.

slot drain

Water feature 1

Bench 1 (1.2m2)

Cornus kousa var. chinensis multi-stem 2.0-3.0m

Water feature 2

Bench 3 (0.5m2)

Gravel (5m2)

Concrete path surface cast in-situ (18.0m2)

Water feature 3

Bench 2 (1.5m2)

Cornus kousa var. chinensis multi-stem 2.0-3.0m

Cornus kousa var. chinensis multi-stem 2.0-3.0m

LL900 Outdoor Platform Lift

Proposed brick wall and coping: Reclaimed bricks to match building. 1.1m High railing on top of open section if required by building control.

perforate pipe at base of lower level plant bed leading to drain. IL=-0.35

Plant beds: Cumulative area of all beds = 18m2

Existing concrete surface

Proposed handrail fixed to building

Existing steps

Existing wall. White paint removed with dry-ice.

Proposed plant bed cut into exiting concrete surface. 0.30m topsoil depth.

Levels: 0.00 = 23.20 from existing survey

R0.100

1.200

1.100

1.205

1.160

1:80 fall

1.47

1.50

existing

24.79

24.78

24.90

24.65

23.25

23.27

23.17

23.14

0.00

Notes:
- Do not scale from drawing.
- Any discrepancies to be reported to landscape architect.
- Measurements to be taken on site priory to ordering and construction.
- To be read in conjunction with all other relevant drawings and specification.

REV	COMMENT	DATE
P01	No.25 existing wall and steps retained	06.06.2024
P02	Steps and levels	07.06.2024

PROJECT:
RDSC Woburn Square

DRAWING TITLE:
Rear Garden Layout

STATUS:
Planning - Stage 3

DRAWING NO.	37-L-P-100
REVISION	P02
DATE	08.05.2024
SCALE	1:50 at A3

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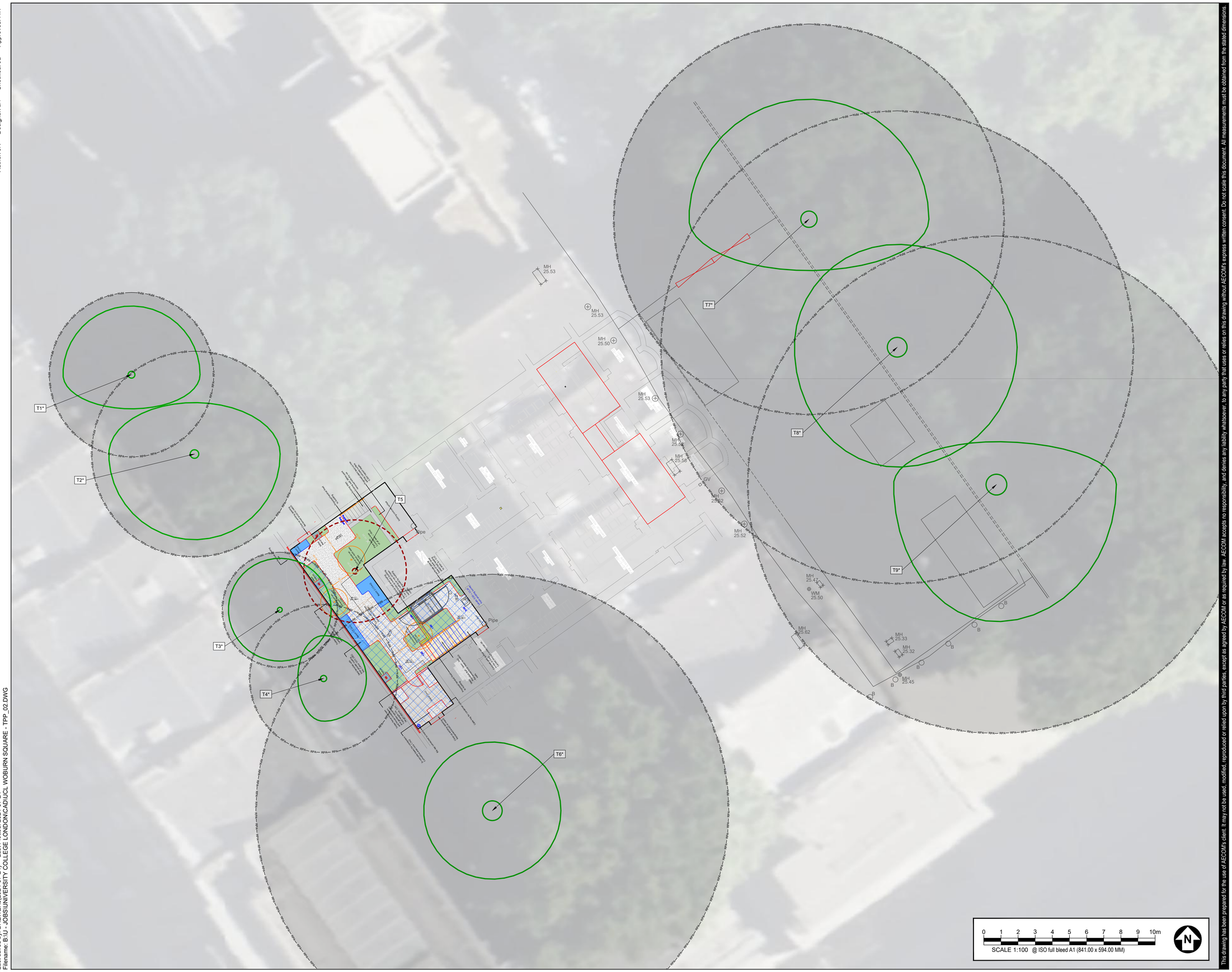
Appendix E Tree Protection Plan

Author: JR Designer: LH Checked: JB Approved: AW



AECOM

PROJECT

RDSC WOBURN SQUARE

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GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
3. * INDICATES A TREE / GROUP WHOSE POSITION IS APPROXIMATE AS BASED UPON AERIAL PHOTOGRAPHY AND ON SITE OBSERVATIONS.
4. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM ARBORICULTURAL REPORT.
5. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.
4. AERIAL IMAGERY COURTESY OF ©2024 Microsoft Corporation©2024 Maxar ©CNES (2024)Distribution Airbus DS
5. DRAWING REFERENCES:
   Woburn Square Topographical Survey - CH.dwg
   Woburn Square RDSC 37-L-P - DWG 2024 07 23 Issue.dwg

KEY

- **FEATURE ID TAGS** *(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)*
- **SITE BOUNDARY**
- **EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE RETAINED**
- **EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE REMOVED**
- **ROOT PROTECTION AREA OF RETAINED TREES** *(AS DEFINED BY BS 5837:2012)*
- **TREE PROTECTION FENCING**
- **CONSTRUCTION EXCLUSION ZONE** *(TRACKING OF PLANT, MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREE HEALTH)*
- **CONSTRUCTION WORKING ZONE** *(MANAGED CONSTRUCTION PROCESSES PERMITTED IN ACCORDANCE WITH THE PRINCIPLES SET OUT WITHIN THE ARBORICULTURAL IMPACT ASSESSMENT)*
- **PROPOSED DEVELOPMENT LAYOUT** *(BASED UPON DRAWING REFERENCES LISTED IN THE GENERAL NOTES SECTION)*
- **NO DIG, CELLULAR CONFINEMENT SYSTEM WITH PERMEABLE SURFACE**

ISSUE/REVISION

P02	24.07.24	SECOND ISSUE
P01	18.06.24	FIRST ISSUE
I/R	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60714846

SHEET TITLE

TREE PROTECTION PLAN (SHEET 01)

SHEET NUMBER **REV.**

60714846-ACM-XX-XX-AB-TPP-001 P02

Last saved by: BREWERJ (2024-07-24) Last Plotted: 2024-07-24
Filename: B:\U - JOBS\UNIVERSITY COLLEGE LONDON\CAD\UCL WOBURN SQUARE - TPP_02.DWG

Appendix F Outline Tree Protection Measures

F.1 Outline Tree Protection Measures

Barrier Tape Fencing Specification:

Due to the context and scale of the Site and the considerable distance from areas of significant site works an alternative specification of fencing is to be adopted. This will comprise of hi visibility orange barrier tape fixed in place with road pins or treated wooden stakes at a maximum spacing of 4m (carefully positioned to avoid any services or significant tree roots).

An example of this style of fencing is included below.

Figure 8: Example of hi-visibility barrier tape fencing secured with timber stakes (Image supplied by Honesty & Faith Hardware Products Co. Ltd).

Protective fencing and ground protection shall stay in place until all development operations have been completed and the prior consent of the LPA Tree Officer and/or an arboriculturist has been obtained.

F.2 General guidance for the management of exposed roots

Excavation must only take place within the RPA of a retained tree with the prior agreement of an arboriculturist and the Local Authority Tree Officer. All excavation must be undertaken using hand tools or compressed air (such as an air spade).

The following general principles will apply:

- Individual or small groups of roots less than 25mm in diameter will be retained where possible but can be severed with a sharp tool such as secateurs or pruning saws to leave a clean cut end (ideally 100mm back from the face of the excavation to account for future regrowth) where they pose an obstruction.
- Where roots are encountered which are larger than 25mm in diameter or where significant groups of smaller roots are found, the advice of an arboriculturist must be sought to decide an appropriate course of action (following consultation with the Local Authority Tree Officer where appropriate).
- Roots must only be exposed for the minimum period possible. In the interim period any exposed roots must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light (which can result in the death of roots). Backfill for excavations should utilise the parent material and must not be significantly compacted.

F.3 Storage, use and mixing of materials

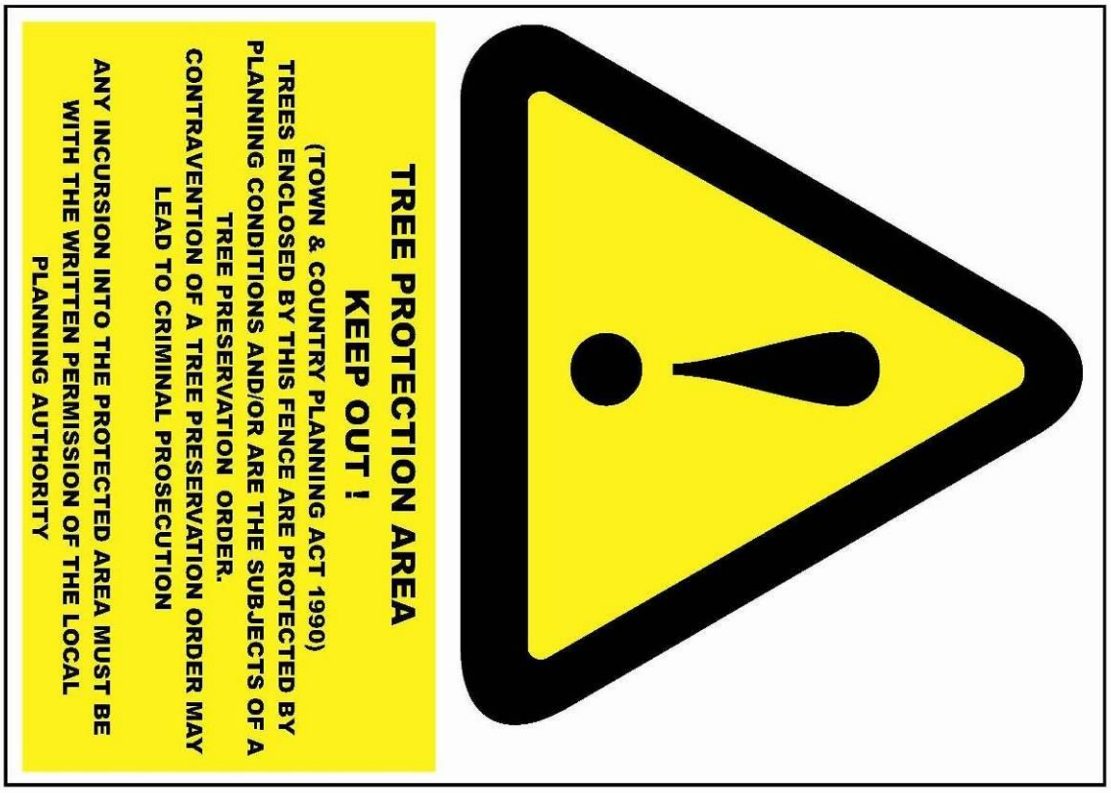
The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders sand and herbicides), can result in the death of tree roots and beneficial soil organisms; and have a significant impact on the future health and appearance of trees.

The storage of materials can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

For these reasons the storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 5m from the edge of the RPA of retained trees.

Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

Appendix G Tree Protection Signage (Example)



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