BS 5837 Arboricultural Report

& Impact Assessment

at
18 Well Walk
London
NW3 1LD

Dated
13th October 2023

CROWN
Tree Consultancy
Branching out through England and Wales

Contents

1. Introduction

1.1. Instruction

1.1.1. We are instructed by House of Design Architects to:

- Undertake a Tree Survey to BS 5837 at 18 Well Walk and assess all trees potentially within influencing distance of proposed development within the site.
- Plot the trees on a Tree Constraints Plan and record the data in a Tree Data Schedule.
- Provide an overview of the site and any management recommendations.
- Determine if any trees are growing within a conservation area or are protected by a tree preservation order.
- Assess the potential impact of the development proposals and provide guidance as to appropriate mitigation measures.
- Produce an Arboricultural Impact Assessment for submission to the local authority.

1.2. Purpose of this Report

1.2.1. This report is produced according to the guidance and recommendations within *BS 5837: 2012 - Trees in Relation to Design, Demolition, and Construction.* It is tailored to accompany a planning application. It assesses the impact of all proposed construction works on the tree population. Tree removal, canopy pruning, and the impact upon roots from various groundworks are all considered in detail. Best practice mitigation is specified wherever appropriate.

1.2.2. Consideration is also given to the impact of the changed juxtaposition between trees and buildings and how that may influence future tree management.

1.2.3. This document should not be used to inform management decisions relating to liability or risk management. Such decisions should be based on a more detailed inspection of the trees than was carried out for this report.

1.3. References

1.3.1. We have liaised with the project architect and studied topographical surveys and projected ground levels to attain an adequate understanding of the project to enable us to carry out an accurate assessment of the proposals.

1.4. Survey Details

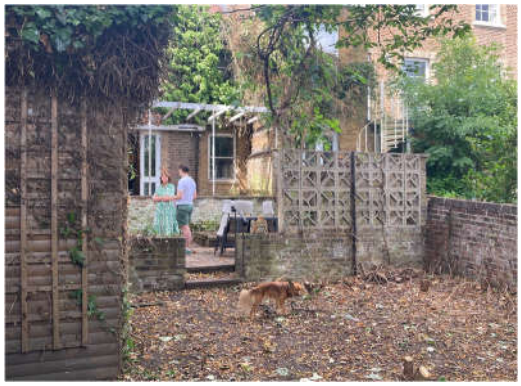
1.4.1. A visual ground-level assessment of all trees was undertaken on the 10th of February 2023 by Ivan Button. No climbed inspections or specialist decay detection were undertaken. Details of how the survey was undertaken can be found in Appendix 1.

1.4.2. The tree locations shown on the accompanying drawings are based on a measured drawing of the site supplied to Crown Tree Consultancy. This drawing had the tree positions already plotted. Where applicable, additional trees have been plotted by us according to measurements taken on-site.

1.5. Author

1.5.1. This report was compiled by Emma Hoyle FDSc (Arboriculture), ED (Forestry & Arboriculture), M. Arbor. A. Details of the author's experience that qualify her to produce such a report are detailed in Appendix 4.

2. Site Overview



2.1. Brief Site Description

2.1.1. Number 18 Well Walk is a residential property with gardens to the front and rear. The front garden is predominantly occupied by hard surfacing.

2.1.2. The rear garden (see Photographs 1-6) is occupied by paving and planting beds with an area of soft ground at the very rear. A detached outbuilding is in the south-eastern corner of the rear garden and a timber structure adjacent to the south-western boundary.

2.1.3. The rear garden is set over different levels; the level of the very rear of the garden is approximately 1.4m lower than the patio at the very rear of the dwelling. Four trees grow within the rear garden including a Bay Laurel (T1), a Holly (T2), a Retention Category B Magnolia (T3) and a Weeping Ash (T4). Trees T1, T2 and T4 are Retention Category C trees.

2.1.4. The site is a rectangular plot measuring approximately 36m by 8m.

2.1.5. The Tree Constraints Plan and Tree Data Schedule (see Appendix 6) should be referred to for descriptions and locations of all trees.

2.2. Coordinates

2.2.1. The site coordinates are 51°33'29.28"N 0°10'26.71"W, and the altitude is approximately 96m above sea level[1].

2.3. Survey Extent

2.3.1. The area indicated below[2] shows the extent of the site.

[1] To access satellite imagery and street views of the site these co-ordinates may be entered into: http://maps.google.co.uk/

[2] Image taken from Google Earth and may not be current.

3. Vegetation Overview (independent of proposals)

This section summarises all the recommendations within the Tree Data Schedule regardless of whether trees are to be retained, felled or pruned to facilitate the proposed development. It does not specify works that may be required to facilitate the development proposals.

3.1. Preliminary Management Recommendations

3.1.1. The trees were all deemed to be in an acceptable condition, and no significant defects were observed. Consequently, no remedial works have been recommended.

3.2. Future Inspections

3.2.1. The table below suggests a schedule of future inspections based on the condition and location of each tree:

Inspection Frequency (years)	Tree Number
0.5	None
1	None
1.5	None
3	T1, T2, T3 and T4

3.2.2. The trees should be inspected sooner if there is a noticeable decline in their condition or following extreme weather events.

3.3. Species Present – Additional Information

3.3.1. The table below contains general information about the tree *species* (rather than the actual tree *specimens*) included in the survey. Its purpose is to assist readers who are unfamiliar with the characteristics of the various species.

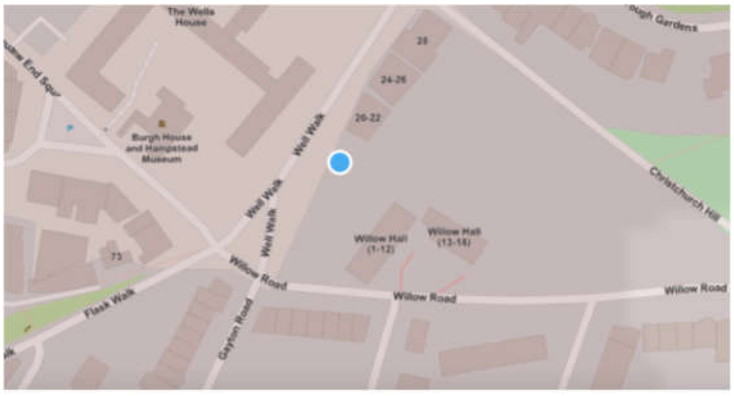
Species	Typical Height at Maturity (m)	Typical Canopy Spread at Maturity (m)	General Notes
Bay Laurel	10	8	Dense evergreen tree native to the Mediterranean area and used to flavour sauces in cooking. Leaves easily identified by their wavy margin and unique smell. Often managed by regular trimming. Usually found as a small, neat tree with a well-structured crown and a domed canopy. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Laurus+nobilis for more info.
Holly	16	12	Evergreen tree native across Western Europe. Many cultivars available, often with variegated leaves. Females produce bright red berries. Good wildlife value. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Ilex+aquifolium for more info.
Magnolia	7	8	Small tree or large shrub, favoured for its large, ornamental flowers. About 80 species and numerous cultivars are available, both deciduous and evergreen. Leaves always untoothed and sometimes very large. Large silky flower buds and berries dangling from unusual 'knobbly cucumber' fruits.
Weeping Ash	34	9	Weeping Ash has straight shoots, like a shower of sleet, from angular branches. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Fraxinus+excelsior for more info.

The figures quoted regarding typical height and canopy spread should be treated as approximate. Actual heights and spreads vary according to several environmental factors such as soil conditions, climate, and the presence of competing vegetation. The figures quoted are not the maximum dimensions that the species may attain.

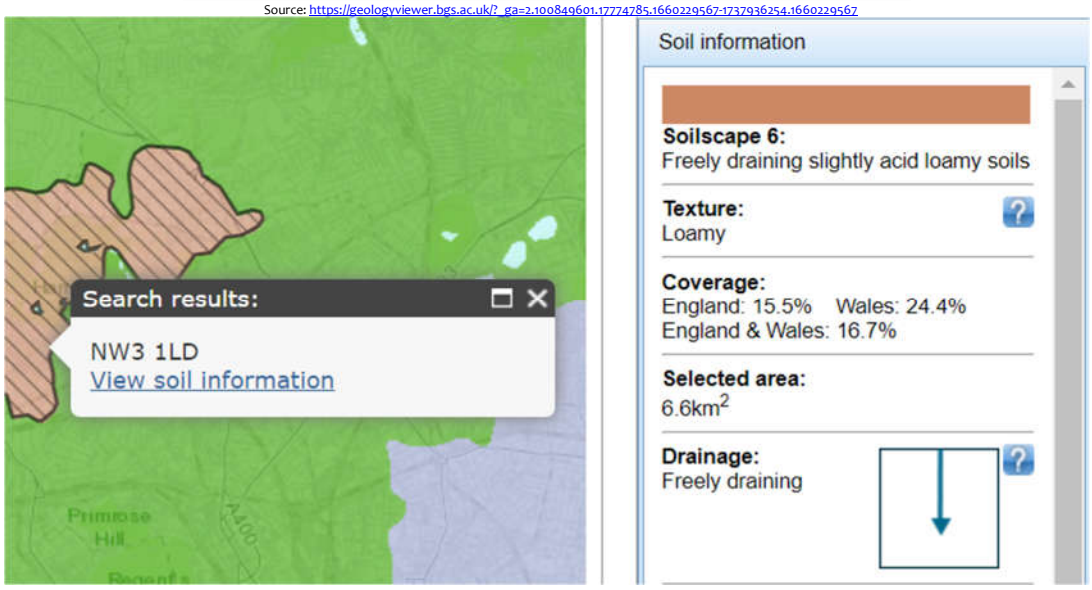
4. Local Geology and Soils

4.1. Desktop Research

4.1.1. Desktop research into local geology based on the postcode **NW3 1LD** obtained the following results:



Source: https://geologyviewer.bgs.ac.uk/?_ga=2.100849601.17774785.1660229567-1737936254.1660229567



Source http://www.landis.org.uk/soilscapes/

4.2. Site Investigations

4.2.1. We are unaware of any specific investigations into soil properties at the site.

4.3. Conclusion and Relevance

4.3.1. Based on the information reproduced in Section 3.1, local soils are assumed to have a loamy texture.

4.3.2. Loamy soils contain a mixture of clay and sand. Soil compaction may occur due to vehicular activity on building sites, so ground protection is recommended wherever vehicles operate. Most tree species will grow well in loamy soils.

4.3.3. Trees of most species are less likely to root deeply in clay soils. Any new surfacing over tree roots should avoid deep excavation and have good load-spreading properties.

5. Statutory Protection – TPOs and Conservation Area Status

Before undertaking most works on trees protected by a tree preservation order[3], consent needs to be formally obtained from the local authority. Where trees are in a conservation area (but not protected by a TPO), works are generally not permitted without first giving the local authority six weeks' notice of intention[4]. Unauthorised works to protected trees, or trees in a conservation area, may result in criminal prosecution and a fine. Where works are required to implement a fully approved development, no such consent or notice is required.

5.1. Desktop Research

5.1.1. We were informed by Rav Curry of London Borough of Camden via email on the 17th of February 2023 that:

- The site lies within the **Hampstead Conservation Area**.
- There are no tree preservation orders affecting trees within the site.
- There are tree preservation orders affecting trees at the immediately adjacent properties. No: 20 Well Walk has a TPO on 1 x Lawson Cypress at the front of the property. No: 16 Well Walk has a TPO on 1 x Lime tree at the front of the property.

5.2. Felling Licences

5.2.1. Felling licences issued by the Forestry Commission are sometimes required before removing trees. However, these licenses are aimed toward woodland and forestry management. Felling licences are NOT required for any of the following:

- Lopping, topping or pollarding.
- Removal of small trees (stem diameter less than 8cm) or fruit trees.
- Works to any trees growing within domestic gardens, orchards, or the Inner London boroughs.
- Operations involving less than five cubic meters of timber in any quarter year.
- Thinning and understorey clearing operations.
- Dangerous trees, nuisance trees, and some diseased trees.
- Where removal is required to enable a fully approved development.

5.2.2. More detailed guidance can be found at https://www.gov.uk/government/publications/tree-felling-getting-permission

5.2.3. Hence a felling licence is **not** required relating to the trees surveyed.

[3] https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas

[4] During this time, the local authority may elect to create a tree preservation order or to inform the applicant that they have no objection to the proposed works. If the local authority does not respond within six weeks, then the intended work may be undertaken. Note: the local authority cannot refuse consent for works to trees within a conservation area; they may only create a tree preservation order if they wish to have further control over what works are undertaken.

6. Planning Policy Context

6.1. National Policy

6.1.1. The National Planning Policy Framework 2021 Policy 12, Paragraph 131 is specifically aimed at urban trees:

> 131. Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined[50], that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), 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 highways officers and 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.

6.1.2. Policy 15, Paragraphs 174, 175, and especially 179 and 180 are aimed at conserving and enhancing the natural environment, habitat and biodiversity. All trees provide some habitat and increase the biodiversity of a site. Native trees such as oaks can support an abundance of algae, lichens, mosses, insects, birds, fungi, reptiles and even mammals.

15. Conserving and enhancing the natural environment

174. Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

175. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[58]; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

Habitats and biodiversity

179. To protect and enhance biodiversity and geodiversity, plans should:

a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[61]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[62]; and

b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

180. When determining planning applications, local planning authorities should apply the following principles:

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[63] and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

181. The following should be given the same protection as habitats sites:

a) potential Special Protection Areas and possible Special Areas of Conservation;

b) listed or proposed Ramsar sites[64]; and

c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

6.2. Regional Policy

6.2.1. The London Plan 2021[5] is the Spatial Development Strategy for Greater London. It sets out a framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth.

6.2.2. The Plan is part of the statutory development plan for London, meaning that the policies in the Plan should inform decisions on planning applications across the capital. Borough's Local Plans must be in general conformity with the London Plan, ensuring that the planning system for London operates in a joined-up way and reflects the overall strategy for how London can develop sustainably, which the London Plan sets out[6].

6.2.3. Chapter 8 relates to the natural environment. Within this chapter, Policies G1 and G2 promote green infrastructure and stress the importance of conserving London's Green Belt. Policies G3 and G4 relate to Metropolitan Open land and Open Space. Whilst trees are an intrinsic part of all of the above; they are not specifically mentioned in these policies.

6.2.4. Policy G5 is relevant to this report as it promotes the greening of London by including the planting of new trees and retaining existing trees where possible.

Policy G5 Urban greening

A Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage.

B Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Table 8.2, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses).

C Existing green cover retained on site should count towards developments meeting the interim target scores set out in (B) based on the factors set out in Table 8.2.

Table 8.2 - Urban Greening Factors

Surface Cover Type	Factor
Semi-natural vegetation (e.g. trees, woodland, species-rich grassland) maintained or established on site.	1
Wetland or open water (semi-natural; not chlorinated) maintained or established on site.	1
Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm – see livingroofs.org for descriptions.[A]	0.8
Standard trees planted in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree – see Trees in Hard Landscapes for overview.[B]	0.8
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code 2014.[C]	0.7
Flower-rich perennial planting – see RHS perennial plants for guidance.[D]	0.7
Rain gardens and other vegetated sustainable drainage elements – See CIRIA for case-studies.[E]	0.7
Hedges (line of mature shrubs one or two shrubs wide) – see RHS for guidance.[F]	0.6
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0.6
Green wall –modular system or climbers rooted in soil – see NBS Guide to Façade Greening for overview.[G]	0.6
Groundcover planting – see RHS Groundcover Plants for overview.[H]	0.5
Amenity grassland (species-poor, regularly mown lawn).	0.4
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014.[I]	0.3
Water features (chlorinated) or unplanted detention basins.	0.2
Permeable paving – see CIRIA for overview.[J]	0.1
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	0

6.2.5. Further guidance on the UFG has been prepared by the Greater London Authority and can be found here: https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/urban-greening-factor-ugf-guidance A UGF calculator tool has also been prepared to help applicants calculate the score of a scheme and present the score as part of their application.

6.2.6. Policy G6 promotes biodiversity and access to nature, though trees are not specifically mentioned.

6.2.7. Policy G7 is of most relevance to this report as it specifically relates to trees and woodlands:

Policy G7 Trees and woodlands

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[7]. 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.

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

[6] https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/london-plan-2021

[7] Category A, B and lesser category trees where these are considered by the local planning authority to be of importance to amenity and biodiversity, as defined by BS 5837:2012

6.1. London Borough of Camden's Local Policy

6.1.1. The Camden Local Plan sets out the Council's planning policies in order to ensure Camden continues to have robust, effective, and up-to-date policies that respond to changing circumstances. The Local Plan is a key document in Camden's Development Plan. The Council's decisions on planning applications should be taken in line with its development plan unless there are significant matters that indicate otherwise. The Local Plan was adopted in July 2017 and covers the period up to 2031.

6.1.2. Within the Local Plan, the core policy relating to trees and vegetation is detailed in Section 6: *Protecting Amenity*. Policy **A3 - *Biodiversity*** supports the *London Biodiversity Strategy* and the *Camden Biodiversity Action Plan.* It is intended to ensure Camden's growth is accompanied by an enhancement in the borough's biodiversity. Trees increase the biodiversity of a site, so Policy A3 is paramount. Policy A3 is replicated below:

Policy A3 Biodiversity

The Council will protect and enhance sites of nature conservation and biodiversity. We will:

a. designate and protect nature conservation sites and safeguard protected and priority habitats and species;
b. grant permission for development unless it would directly or indirectly result in the loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species;
c. seek the protection of other features with nature conservation value, including gardens, wherever possible;
d. assess developments against their ability to realise benefits for biodiversity through the layout, design and materials used in the built structure and landscaping elements of a proposed development, proportionate to the scale of development proposed;
e. secure improvements to green corridors, particularly where a development scheme is adjacent to an existing corridor;
f. seek to improve opportunities to experience nature, in particular where such opportunities are lacking;
g. require the demolition and construction phase of development, including the movement of works vehicles, to be planned to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species;
h. secure management plans, where appropriate, to ensure that nature conservation objectives are met; and
i. work with The Royal Parks, The City of London Corporation, the London Wildlife Trust, friends of park groups and local nature conservation groups to protect and improve open spaces and nature conservation in Camden.

Trees and vegetation

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.

6.1.3. Policy A3 further discusses trees and vegetation and provides additional guidance from Section 6.75 onwards. Screenshots are produced overleaf.

Trees and vegetation

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.

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).

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.

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'.

Replacement and additional planting

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.

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.

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'.

The ability to sustain an attractive treed environment will often be contingent on age and species diversification.

6.1.4. Trees are also mentioned in Policy **A5 - *Basements***, which is replicated below:

Policy A5 Basements

The Council will only permit basement development where it is demonstrated to its satisfaction that the proposal would not cause harm to:

a. neighbouring properties;
b. the structural, ground, or water conditions of the area;
c. the character and amenity of the area;
d. the architectural character of the building; and
e. the significance of heritage assets.

In determining proposals for basements and other underground development, the Council will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability in the form of a Basement Impact Assessment and where appropriate, a Basement Construction Plan.

The siting, location, scale and design of basements must have minimal impact on, and be subordinate to, the host building and property. Basement development should:

f. not comprise of more than one storey;
g. not be built under an existing basement;
h. not exceed 50% of each garden within the property;
i. be less than 1.5 times the footprint of the host building in area;
j. extend into the garden no further than 50% of the depth of the host building measured from the principal rear elevation;
k. not extend into or underneath the garden further than 50% of the depth of the garden;
l. be set back from neighbouring property boundaries where it extends beyond the footprint of the host building; and
m. avoid the loss of garden space or trees of townscape or amenity value.

Exceptions to f. to k. above may be made on large comprehensively planned sites.

The Council will require applicants to demonstrate that proposals for basements:

n. do not harm neighbouring properties, including requiring the provision of a Basement Impact Assessment which shows that the scheme poses a risk of damage to neighbouring properties no higher than Burland Scale 1 'very slight';
o. avoid adversely affecting drainage and run-off or causing other damage to the water environment;
p. avoid cumulative impacts;
q. do not harm the amenity of neighbours;
r. provide satisfactory landscaping, including adequate soil depth;
s. do not harm the appearance or setting of the property or the established character of the surrounding area;
t. protect important archaeological remains; and
u. do not prejudice the ability of the garden to support trees where they are part of the character of the area.

The Council will not permit basement schemes which include habitable rooms and other sensitive uses in areas prone to flooding.

We will generally require a Construction Management Plan for basement developments.

Given the complex nature of basement development, the Council encourages developers to offer security for expenses for basement development to adjoining neighbours.

Protection of gardens and trees

As set out in Policy A3 Biodiversity, the Council will protect green areas including gardens and retain and protect trees of significant amenity value and which make a positive contribution to the character and appearance of a conservation area. Basement development should be designed to retain and protect gardens and trees.

The protection of garden space to support large canopy trees is of particular importance near to open spaces. Basement development should be designed to avoid damage to trees both on or adjacent to the site, including street trees and the root protection zones needed by these trees. Where there are trees on or adjacent to the site, the Council will require an arboricultural report to be submitted as part of a planning application. Further information on protection of trees is available in our supplementary planning document Camden Planning Guidance on design.

6.1.5. Within Section 7 of the Local Plan, Policy **D1: Design** and **D2: *Heritage***, both make reference to trees.

6.2. Supplementary Planning Guidance (SPG) Documents

6.2.1. SPGs are additional material considerations when determining planning applications, and they provide guidance for developers and landowners. The following document has significant relevance to this report:

- ***Camden Planning Guidance - Trees:*** This document was published in March 2019 and is accessed here: https://www.camden.gov.uk/documents/20142/4823269/Trees+CPG+March+2019.pdf/985e3c70-d9a5-6ded-a5a3-3c84616f254d.

6.2.2. This guidance applies to all developments, regardless of their size, that is at risk of affecting trees or where new trees are to be planted. This guidance supports the following Camden Local Plan policies:

- D1: Design.
- A1: Managing the impacts of development.
- A2: Protection and provision of open spaces.
- A3: Biodiversity.
- CC2: Adapting to climate change.
- C1: Health and wellbeing.

6.2.3. Camden also has Planning Guidance relating to Biodiversity. Trees are loosely discussed throughout the document. The Camden Planning Guidance: Biodiversity, can be accessed using the following link: https://www.camden.gov.uk/documents/20142/4823269/Biodiversity+CPG+March+2018.pdf/daf83dad-d68d-6964-99b4-aef65d639304.

7. Arboricultural Impact Assessment

7.1. Overview

7.1.1. It is proposed to demolish the existing outbuildings from the rear garden, construct a new single outbuilding on a slightly larger footprint in the rear garden, install a rear extension to the main dwelling and undertake landscaping works in the rear garden, as indicated on the drawings in Appendix 6. The existing layout is indicated in black, and the footprint of the proposed layout is indicated in pink.

7.1.2. The table below summarises the potential impact on trees due to various activities.

Activity	Trees Potentially Affected
Tree Removal: Retention Category A	None
Tree Removal: Retention Category B	None
Tree Removal: Retention Category C	T1 and T2
Tree Removal: Retention Category U	T5
Tree Pruning	T3
RPA: Dwelling Extension Foundations	None
RPA: Outbuilding Foundations	T6
RPA: New Surfaces	T3, T4 and T6
RPA: Underground Services	None Anticipated
RPA: Change of Ground Levels	T3, T4 and T6
RPA: Soil Compaction	Trees adjacent the construction area (preventable by installing tree protection measures)

7.1.3. Other potentially damaging activities often associated with construction sites include demolition or the careless use of plant machinery, hazardous materials, or fires. All of the above potential impacts are considered in detail throughout this Section.

7.2. Tree Removal

7.2.1. All trees to be removed are indicated on the Impact Assessment Plan and are listed below:

7.2.2. **Retention Category A:** Our survey did not identify any Retention Category A trees.

7.2.3. **Retention Category B:** It is proposed to retain all Retention Category B trees.

7.2.4. **Retention Category C:** It is proposed to remove T1 (a Bay Laurel) and T2 (a Holly).

7.2.5. These trees are located within a rear garden and are not visible from public vantage points. Consequently, they have a low amenity value, and their removal shall not have a significant impact on the visual amenity of the locality.

7.2.6. **Retention Category U:** It is proposed to remove T5.

7.2.7. This tree is recommended for removal regardless of development proposals due to its poor condition.

7.2.8. Details specific to each tree can also be found in the Tree Data Schedule.

7.3. Mitigation Planting

7.3.1. The site offers opportunity to plant new vegetation as part of a post-development landscaping scheme.

7.4. Impact on Tree Canopies

7.4.1. It is proposed to trim the overhanging foliage of T3 away from the proposed (and existing) outbuilding. This shall require the removal of very small branches and foliage. Such minimal pruning shall not have a significant impact on tree health and will increase clearance for demolition and construction activity. The pruning works should be undertaken sympathetically (working to BS 3998: 2010 guidelines).

7.4.2. All other tree canopies shall be unaffected by the proposals.

7.5. Impact on Tree Roots

Dwelling Extension Foundations:

7.5.1. The foundations for the rear dwelling extension do not encroach within the Root Protection Area of any retained tree. Consequently, no restrictions on foundation design or implementation are considered necessary from an arboricultural perspective.

Outbuilding Foundations:

7.5.2. It is proposed to demolish the existing outbuildings from the rear garden and install a new single outbuilding on a slightly larger footprint at the rear of the garden.

7.5.3. The foundations for the increased footprint of the proposed outbuilding will extend into a tiny portion of the theoretical Root Protection Area of T6. Less than 2% of the Root Protection Area shall be affected (see the Impact Assessment Plan). The potential impact is considered to be very minor and within tolerable limits.

7.5.4. To ensure minimal impact on tree roots, a shallow raft or slab foundation is proposed. The following restrictions are proposed:

- Excavation shall be limited to a maximum depth of 250mm to facilitate the installation of a raft/slab foundation.
- Only hand tools shall be used for the excavation.
- The raft/slab may be supported on narrow diameter (micro) piles. Before installing such piles, their location should be determined by trial pits excavated to a depth of 600mm using hand tools. Trial pit dimensions should not exceed 300mm x 300mm. If any roots in excess of 50mm diameter are encountered, or an abundance of roots in excess of 25mm, the pile should be relocated.
- If roots in excess of 25mm diameter are encountered close to the edge of the excavation, they should be retained wherever possible and protected with damp sacking during times that they are unearthed. Any roots that need to be severed shall be neatly pruned using clean, sharp secateurs.

7.5.5. By adopting this method of installation, it will be possible to retain significant roots and ensure that the root system will be able to supply the canopy with the required water and nutrients. Hence, it is considered that the proposal shall not result in any long tern detrimental impact on the health of T6.

New Surfaces:

7.5.6. Landscaping works are proposed in the rear garden. At the very rear of the garden, in the vicinity of T3, T4 and the Root Protection Area of T6, turf / soft landscaping is proposed which shall maintain good rooting conditions for retained trees. Only hand tools should be used for levelling any existing ground. Excavation should be limited to the removal of loose ground/topsoil only.

7.5.7. Where existing paving is to be replaced/installed over Root Protection Areas (T6), excavation should also be limited to the removal of any existing surface and its sub-base. Any new paved surfaces (and their associated sub-base) should also be permeable to ensure tree roots are not starved of oxygen and rainwater.

Underground Services:

7.5.8. We are not aware of any new underground services that are to be installed through Root Protection Areas.

7.5.9. Wherever possible, new underground services should be located outside of RPAs. Where this is not possible, the project arborist should be consulted prior to any excavation. Trenching for underground services is one of the most damaging activities on construction sites, and NJUG guidelines[8] should be followed in accordance with a site-specific Arboricultural Method Statement.

Changes in Ground Levels:

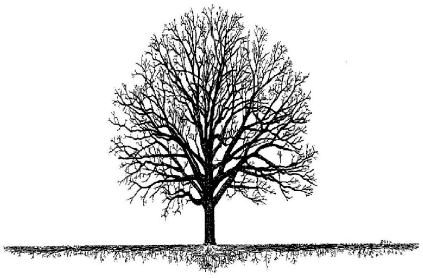
7.5.10. Alterations of ground levels are proposed as part of the landscaping works in the rear garden to create a terraced garden. Alterations of ground levels are proposed over the Root Protection Areas of T3, T4 and T6; proposed levels and a cross-sectional diagram are shown on the accompanying Impact Assessment Plan.

7.5.11. A small portion of the RPA of T6 may be affected by the lowering of existing ground levels; however, due to the existing topography of the site, and foundations of the existing outbuildings and garden walls, no significant tree roots are anticipated in this area at shallow depths. Consequently, so long as the restrictions specified in Section 7.5.7 are employed, the potential impact on T6 is considered to be very minor.

7.5.12. No changes of ground levels within 0.5m of any retained tree stem should occur. Ground levels should not be altered by any more than that stated on the accompanying drawings associated with this application, without consulting the project arborist and, if necessary, gaining approval from the local authority tree officer.

Soil Compaction:

7.5.13. The majority of tree roots lie within the upper soil horizons. This is because the availability of oxygen decreases with depth, and roots need to breathe to stay alive. In addition, nutrients are more readily available in the form of organic matter close to the soil surface.



7.5.14. Healthy soils contain about 25% air space between solid particles. Increased loading of the soil caused by construction activity causes air to be squeezed out as the soil becomes compacted, preventing roots from breathing. Even an increase in pedestrian activity may cause some soil compaction.

7.5.15. It is important therefore that ground compaction and soil disturbance over Root Protection Areas should be avoided during the construction phase. This may be done by installing protective fencing and ground protection measures.

7.6. Demolition Activities

7.6.1. In order to avoid inadvertent damage to roots, branches or stems, care shall need to be taken when demolishing or removing the existing outbuildings close to T3 and T6. Hand tools should be used for demolishing these structures; any walls, surfaces and/or foundations should be carefully pulled onto the existing footprint and removed carefully.

7.6.2. Adequate tree protection methods should be specified in an Arboricultural Method Statement, and approved by the local authority before demolition takes place. Areas should be designated for the storage of debris.

7.7. Waste and Materials Storage

7.7.1. All hazardous materials (including cement and petrochemical products) will need to be controlled according to COSHH regulations in order to ensure there is no detrimental impact on tree health. Provision shall need to be made to ensure that cement spillage avoids all Root Protection Areas.

[8] NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Issue 2

7.7.2. Areas designated for the storage of building materials and waste products will need to be approved by the local authority. Root Protection Areas should be avoided. Where this is not possible, suitable ground protection measures will need to be installed.

7.8. Cabins and Site Facilities

7.8.1. Consideration should be given to the location of any site welfare facilities in terms of potential impact on trees. Where it is proposed to install cabins or site facilities in Root Protection Areas, the project arborist should be consulted, and approval obtained from the local authority.

7.8.2. There is limited room for the siting of cabins and storage of materials / spoil during the construction phase so the logistics of the development shall need to be well organised to ensure that there is adequate space outside of the Tree Protection Zones for construction activity.

7.9. Boundary Treatments

7.9.1. We are not aware of any alterations proposed to the existing boundary features that might impact trees.

7.10. Impact of Retained Trees on the Development

7.10.1. The existing outbuilding is located slightly further away from the nearest retained tree (T6) than the existing outbuilding is located. Consequently, the proposal shall result in an improved juxtaposition between trees and buildings.

7.10.2. The outbuilding is not considered to be a living space so the shade cast by the trees is not considered to be relevant from a planning perspective.

7.10.3. The foundations and any new surfaces should be designed to accommodate all potential impacts due to future tree rooting activity. These include potential vegetation related subsidence, vegetation related heave, and lifting of surfaces / light structures due to direct root pressure.

7.11. Summary

7.11.1. Two Retention Category C trees and one Retention Category U tree are to be removed from the rear garden.

7.11.2. One tree requires minimal pruning to increase clearance from the proposal.

7.11.3. Foundations are proposed within the Root Protection Area of one tree. However, the small extent of RPA affected coupled with the sympathetic foundation design shall ensure no detrimental impact.

7.11.4. All new surfacing within RPAs shall be installed sympathetically and with minimal excavation.

7.11.5. The proposal does not significantly alter the current juxtaposition between the buildings and the retained trees, so there shall be no post-development pressures to overly-prune or remove them.

7.11.6. So long as suitable protection measures are implemented during demolition and construction stages, I see no arboricultural reasons why the proposal should not proceed.

7.12. Arboricultural Method Statement

7.12.1. BS 5837 recommends that a detailed methodology is agreed in the form of an Arboricultural Method Statement, which shall ensure that trees are well protected during the construction phase. This should detail all tree protection measures and limitations on construction activity. All of the issues raised within this Impact Assessment should be covered by the Method Statement.

8. Photographs

Refer also to the Tree Constraints Plan for photo locations.

Photo 1.

Photo 2.

Photo 3.

Photo 4.

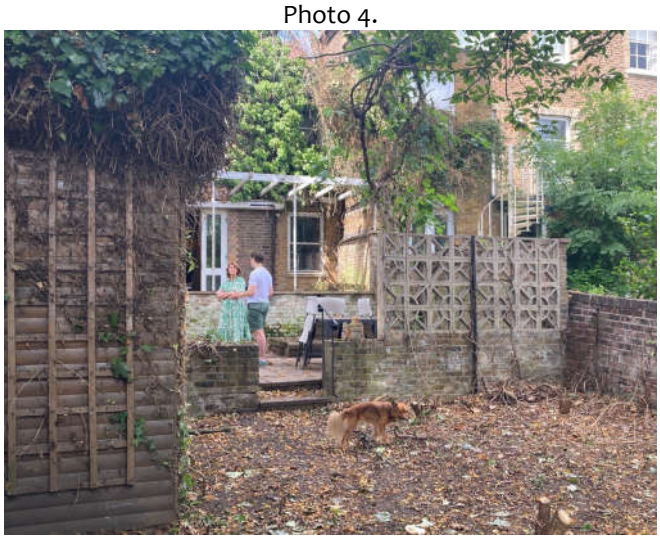


Photo 5.

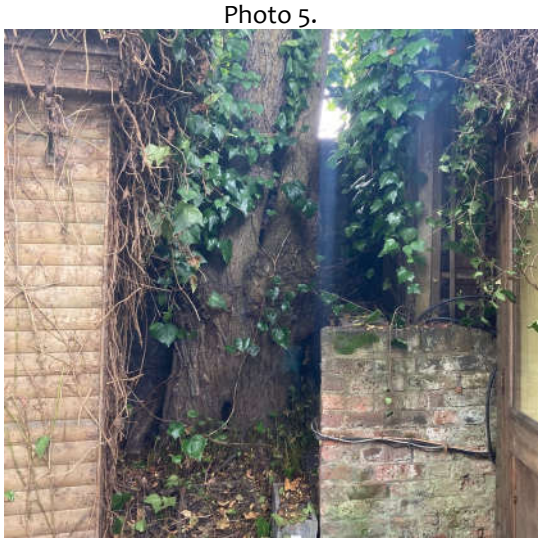


Photo 6.

Appendix 1: BS 5837: 2012 – Guidance Notes

This Standard prescribes the principles to be applied to achieve a satisfactory juxtaposition of trees and structures. It sets out to assist those concerned with trees in relation to design, demolition and construction to form balanced judgements.

It acknowledges the positive contribution trees may offer to a site, as well as the negative aspects of retaining inappropriate trees. It addresses the negative impacts that construction activity may have upon trees and offers mitigation strategies to minimise these impacts.

The Standard suggests a three stage approach to ensure best practice is followed when developing close to trees:

A1.1 Stage 1: Survey Details and Notes

A ground level visual survey was undertaken. No climbed inspections or specialist decay detection were undertaken. Only trees with a stem diameter over 75mm, which lie within the site boundary or relatively close to it, were included.

Where applicable, trees with significant defects have been highlighted and appropriate remedial works have been recommended. However, this report should not be seen as a substitute for a full *Safety Survey* or *Management Plan* which are specifically designed to minimise risk and liability associated with responsibility for trees.

Wherever practicable dimensions were obtained using diameter tapes, logger's tapes, distometers and clinometers. Where obstacles prevent accurate measurement, dimensions are estimated. Trees on privately owned third party are surveyed from the best available vantage point and observations relating to the condition of these trees should be treated accordingly. All height measurements should be regarded as approximate.

Data is recorded for each tree and is presented in a Tree Data Schedule. Each tree is allocated a ***Retention Category*** according to its size, amenity value, condition and safe useful life expectancy. The categories are allocated independently of development proposals. Our interpretation of the Retention Categories is explained below:

A1.1.1 Retention Categories

A Category: Trees of high quality and amenity value. Usually, mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

B Category: Trees of moderate quality and amenity value. Usually these are maturing trees or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

C Category: Trees of low quality or small specimens with a relatively low amenity value. These trees are not considered to be a material planning constraint and their removal will generally be seen as acceptable in order to facilitate development.

U Category: Trees of such low quality that their removal is recommended regardless of development proposals.

Occasionally trees are borderline and do not fall neatly into one of the categories A, B or C. In such cases we apply a superscript (**+/-**) such that:

C^{+} Indicates borderline C/B, though Category C is deemed to be most appropriate.

B^{-} Indicates borderline C/B, though Category B is deemed to be most appropriate.

The British Standard suggests that each of the A, B and C categories may be further subdivided (A1, A2, A3, B1, B2, B3 etc) such that subcategory 1 denotes mainly arboricultural values, subcategory 2 denotes mainly landscape values and subcategory 3 denotes mainly cultural values (including conservation). Multiple subcategories may be used.

Our experience suggests that these subdivisions lack clarity and can be confusing. Within this report subcategories are **not** denoted. Where appropriate, the use of phrases such as '*Part of a formal group'*, or '*Has a high ecological value'*, *or 'Offers good screening to the site'* are incorporated into the observation section of the Tree Data Schedule. We believe this conveys all relevant landscape and cultural information without any confusion.

Tree Constraints Plan (TCP). This indicates the position, crown spread, Retention Category and Root Protection Area of each tree. It is used to inform where development may proceed without causing damage to trees.

Root Protection Area (RPA). This is the area around each tree likely to contain the majority of roots. It should ideally remain undisturbed to avoid a detrimental impact on tree health. For single stemmed trees It is calculated according to the formula "radius of RPA" = "12 x stem diameter". Where a tree has more than one stem, the equivalent-single-stem diameter is usually recorded. This is calculated by adding the squares of the stems and then finding the square root of this total. The radius of the Root Protection Area is then calculated by multiplying the equivalent-stem-diameter by 12.

Shade Constraints. The previous Standard (BS 5837 2005) suggested that shade constraints should be indicated on the TCP. This are denoted as a circle-segment drawn northwest to due east with a radius equal to the height of the tree. These do not represent the actual shade pattern which varies through the seasons. Rather, they indicate the area most shaded by the tree throughout the course of the year. Ideally habitable room windows should be located outside of these shade constraints. Where we consider it appropriate, we will include shade constraints information on our Impact Assessment Plan or Proposed Layout Plan.

A1.2 Stage 2: Arboricultural Impact Assessment

After the initial survey and the production of the Tree Constraints Plan, arborists and designers are encouraged to work together to establish a design proposal with minimal impact on the high quality trees. An assessment should be made of all possible impacts including the impact that the trees may have upon the proposal. The arborist may recommend mitigation strategies to minimise these impacts and help achieve a more harmonious juxtaposition between buildings and trees.

A1.3 Stage 3: Arboricultural Method Statement

This type of report specifies the measures necessary to protect trees against damage from construction activity. The Method Statement should be written in a manner that it may be conditioned and enforced by the local authority upon granting of planning permission. The site manager should be familiar with all aspects of the Method Statement and should ensure that all persons working on the site are aware of those aspects which appertain to their work. This includes service installation engineers and operators of plant machinery.

Appendix 2: Survey Methodology

Ground level visual surveys are carried out using the *Visual Tree Assessment* technique described by Mattheck and Broeler (1994) and endorsed by the Arboricultural Association (LANTRA Professional Tree Inspection course, 2007).

Structural condition is assessed by inspecting the stem and scaffold branches from all angles looking for weak branch junctions or symptoms of decay. Particular attention is paid to the stem-base. Cavities are explored using a metal probe in order to assess the extent of any decay. If this is not possible further inspection is recommended in the form of a climbed inspection or using specialist decay detection equipment.

The physiological condition is assessed by inspecting the stem, branches and foliage for symptoms of disease. The overall vigour of the tree is also taken into account.

Where significant defects are observed, recommendations are made according to a scale of priority in order to reduce the likelihood of structural failure. The position of the tree and its potential targets are taken into account.

Measurements are obtained using a diameter tape, clinometer, distometer and loggers tape. Where this is not practical measurements are estimated.

Some trees are surveyed as groups, though this is usually avoided close to areas likely to be developed.

Finally, a *Retention Category* is allocated as described in Appendix 1.1.1.

Appendix 3: Glossary of Tree Data

This section explains the terms used in the **Tree Data Schedule** (see Section 3 and Appendix 6).

A2.1 General Observations

Numbering System: Each item of vegetation has its own unique number prefixed by a letter such that T1=Tree 1, G2=Group 2, H3=Hedge 3 and W4=Woodland 4, S5=Shrub 5.

Age Categories:

Young	Usually less than 10 years old.
Semi-Mature	Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy).
Early-Mature	Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy).
Mature	Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy).
Veteran	A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
Over Mature	As for veteran except management is not considered worthwhile.

Species: Common names and Latin names are given.

Height: Measured from ground level to the top of the crown.

Stem Diameter: Taken at 1.5m above ground level where possible. On multi-stemmed trees this measurement may be taken at ground level, though usually an indication of the number of stems and average diameter is given, e.g. 3 x 30cm.

Crown Height: Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

Tree Diagram: This scaled drawing is computer generated based on measurements taken for stem diameter, crown height and spread, and overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of the tree.

Crown Spread: Measured N, E, S & W, taken from the centre of the stem and usually rounded up to the nearest metre.

Observations: If a tree's position is considered to be relevant it will be commented upon (e.g. overhanging a children's play area). Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more detail at the end of this section.

Recommendations: Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

Priority Scale: Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:

Urgent	To be carried out as soon as possible.
Very High	To be carried out within 1 month.
High	To be carried out within 3 months.
Moderate	To be carried out within 1 year.
Low	To be carried out within 3 years.

Inspection Frequency: An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves, or in summer when leaves may obscure branches within the upper crown.

Vigour: An indication of growth rate and the tree's ability to cope with stresses:

High	Having above average vigour.
Moderate	Having average vigour.
Low	Having below average vigour.
Very Low	Tree is struggling to survive and may be dying.

Physiological Condition:

Good	Healthy and with no symptoms of significant disease.
Fair	Disease present or vigour is impaired.
Poor	Significant disease present or vigour is extremely low.
Very Poor	Tree is dying.

Structural Condition:

Good	Having no significant structural defects.
Fair	Some defects observed though no high priority works are required.
Poor	Significant defects found. Tree requires monitoring or remedial works.
Very Poor	Major defects which will usually require significant remedial works or tree removal.

Amenity Value:

Very High	Exceptional specimen, observable by a large number of people.
High	Attractive specimen, observable by a significant number of people.
Moderate	One of the above factors is not applicable.
Low	Unattractive specimen or largely hidden from view.

Life Expectancy: The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).

Retention Category: These are explained in detail in Appendix 1.

A2.2 Evaluation of Defects

Cavities, wounds, deadwood etc are all evaluated as follows:

Major	Such that structural integrity is, or will become, compromised and the tree is, or will inevitably become, hazardous.
Significant	A defect that may over time become a major defect, though not necessarily so. This will depend on the vigour of the tree and its ability to deal with decay etc.
Minor	A defect thatis unlikely to develop into a major defect.

Appendix 4: Author's Qualifications

Qualifications & Experience of Ivan Button N.C.H. (Arb), FDSc (Arb), BSc (Hons), P.G.C.E., M. Arbor. A.

Early Career

Before and whilst attending college and university (1983 – 1990) Ivan worked as a gardener and also within the building industry where he received training in a broad range of building skills. In 1989 Ivan obtained a BSc (Hons) in psychology at Leeds University followed by a P.G.C.E at The University of Wales in 1990. After one year of teaching, he returned to the construction activity and worked on new builds, refurbishments and groundworks until 1995.

Arboriculture

In 1996 Ivan obtained a NCH (Arboriculture) at the University of Lincoln and became a member of the Arboricultural Association. He then received further arboricultural consultancy training with Peter Wynn Associates for one year before establishing a tree surgery and landscaping business in 1998.

In 2005 Ivan commenced full time employment with JCA Ltd, an Arboricultural Association registered consultancy where he soon adopted a senior role responsible for five consultants. During this time, he obtained a FDSc (Arboriculture) at the University of Lancashire, which he passed with distinction.

Since 2013, Ivan has been the Director and Principal Consultant of Crown Consultants Ltd which provides Arboricultural Reports for the purposes of Development, Safety, Management, Mortgage, Subsidence, Mitigation and Litigation. In 2015, he acted as tree officer for Barnsley Council and has since provided consultancy services to other local authorities.

He has obtained the LANTRA *Professional Tree Inspector* Qualification promoted by the Arboricultural Association and recognised as appropriate for all levels of tree inspection.

He is a long-standing member of the Consulting Arborist Society and has obtained CAS accreditations for Tree Inspection, Planning, Mortgage Reports (Subsidence Risk Assessment) and for his expert witness work.

At the time of writing, he has written approximately thirty CPR compliant reports (civil and criminal) covering a range of subjects including Subsidence Damage, Personal Injury, Direct Root Damage, Professional Negligence, TPO Breaches.

He has given written and oral evidence.

Ivan is a long-standing professional member of the Arboricultural Association and the International Society of Arboriculture.

He is a licensed Quantified Tree Risk Assessment user.

Ivan has undertaken Bond Solon expert witness training and has obtained the University of Cardiff Expert Witness certificate.

Between 2008 and 2017 he was registered as a Sweet and Maxwell Checked Expert Witness.

Qualifications & Experience of Emma Hoyle FDSc (Arboriculture), ED (Forestry & Arboriculture), M. Arbor. A.

Emma is a qualified Arboricultural Consultant educated to Level 5 in Arboriculture at Askham Bryan College, is a professional member of the Arboricultural Association and is a LANTRA accredited *Professional Tree Inspector*. She has worked for Crown Consultants since 2015 and has since written numerous reports relating to all aspects of arboriculture including; planning and development, vegetation related subsidence, tree preservation orders and tree risk assessment. Emma regularly attends seminars and events in order to keep abreast with current knowledge and best practise in Arboriculture.

Prior to becoming an arboricultural consultant, Emma worked for two reputable tree surgery firms from 2008 and became an NPTC Qualified tree surgeon after completing a Level 3 Extended Diploma in Forestry and Arboriculture at Askham Bryan College. Emma also has experience in other areas of arboriculture such as forest clearance, tree planting, tree maintenance and landscaping.

Qualifications & Experience of Joe Taylor - MArborA, FdSc (Arboriculture)

Joe began his career in Arboriculture as a tree surgeon/climber. During his time as a tree surgeon, Joe has achieved City & Guilds NPTC qualifications in Chainsaw Maintenance and Cross Cutting, Tree Climbing and Rescue, Safe Use of Manually Fed Wood-chipper and Supporting Colleagues Undertaking Tree Related Operations.

Joe obtained a Foundation Degree in Arboriculture at Askham Bryan College in 2015 which he passed with merit. Joe is a professional member of the Arboricultural Association, the International Society of Arboriculture and the Royal Forestry Society and regularly attends industry related seminars in order to keep abreast of industry best practice.

Studying at Askham Bryan College reinforced Joe's passion for trees and drove his enthusiasm to learn more. Learning how trees interact with their surrounding environment and their importance within our urban and rural landscapes highlighted an interest in pursuing a career in consultancy.

Since working for Crown Consultants Joe has undertaken numerous surveys and produced numerous reports for the purpose of planning (BS 5837), tree condition surveys, subsidence risk assessments, root surveys and decay detection investigations.

Appendix 5: Further Information

Building Near Trees – General

National Joint Utilities Group publication # 10 (1995), *Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees. Downloadable at www.njug.demon.co.uk/pdf/NJUG%20Publication10.pdf*

NHBC Standards Chapter 4.2., *Trees and Buildings.*

Horticulture LINK project 212. (*University of Cambridge,* 2004), *Controlling Water Use of Trees to Alleviate Subsidence Risk.*

Tree Planting and aftercare

See www.trees.org.uk/leaflets.php# for downloadable leaflets on selecting a garden tree, planting, aftercare and veteran tree management.

British Standards

BS 5837: 2012. Trees in Relation to Design, Demolition and Construction – Recommendations.
Bs 3998: 2010. Recommendations for Tree Work.
BS 3936: 1992. Nursery Stock. Part 1: Specification for Trees and Shrubs.
BS 3936: 1992. Nursery Stock. Part 10: Specification for Groundcover Plants.
BS 4043: 1989. Transplanting Root-balled Trees.
BS 8004: 1986. Foundations.
BS 8103: 1995. Structural design of Low-Rise Buildings.
BS 8206: 1992. Lighting for Buildings.
BS 8545:2014. Trees: From nursery to independence in the landscape – Recommendations
BS 3882: 2015. Topsoil.
BS 4428: 1989. General Landscaping Operations (excluding hard surfaces).

Permission to do Works to Protected Trees / Tree Law

Forestry Commission (Edinburgh, 2003), *Tree Felling – Getting Permission.* Country Services Division - Forestry Commission. Downloadable at www.forestry.gov.uk/website/pdf.nsf/pdf/wgsfell.pdf/$FILE/wgsfell.pdf

Transport and the Regions (Department of the Environment, 2000), *Tree Preservation Orders, A Guide to the Law and Good Practice.* Downloadable at www.communities.gov.uk/publications/planningandbuilding/tposguide

C. Mynors, *The Law of Trees, Forests and Hedgerows* (Sweet and Maxwell, London, 2002)

Communities and Local Government website with numerous downloadable documents, from:
http://www.communities.gov.uk/planningandbuilding/planning/treeshighhedges/

Lighting Levels

P.J. Littlefair, *B.R.E. 209: Site layout planning for daylight and sunlight A guide to good practice.* B.R.E. Bookshop, London.

British Standards Institution. Code of practice for day lighting. *British Standard* BS 8206: Part 2 (1992).

Chartered Institution of Building Services Engineers. *Applications manual: Window Design* (London, 1987).

NBA Tectonics. A study of passive solar housing estate layout. *ETSU Report* S-1126. Harwell, Energy Technology Support Unit (1988).

I.P. Duncan; D. Hawkes, Passive solar design in non-domestic buildings. *ETSU Report* S-1110. Harwell, Energy Technology.

P. J. Littlefair, Measuring Daylight, *BRE Information Paper 23/93 f3.50.* (Advises on measuring daylight under the real sky or an artificial sky, allowing for the changing nature of sky light).

High Hedges

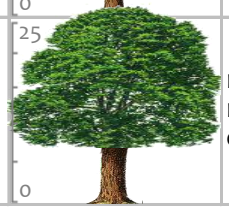
Communities and Local Government website with numerous downloadable documents, from:
http://www.communities.gov.uk/planningandbuilding/planning/treeshighhedges/

Tree Specific Websites

www.crowntrees.co.uk	Crown Consultants site containing useful information
www.trees.org.uk	Arboricultural Association
www.rfs.co.uk	Royal Forestry Society of England, Wales and N. Ireland
www.treehelp.Info	The Tree Advice Trust
www.woodland-trust.org.uk	The Woodland Trust
www.treecouncil.org.uk	The Tree Council

Appendix 6: Tree Data Schedule and Drawings

The Tree Data Schedule and any drawings accompanying this report follow this page. They are also provided as separate documents for ease of printing and screen viewing.

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m) 9 0 9	Notes	Recommendations (Independent of any development proposals) Priority / Inspect Freq (yrs)	Vigour Physiological Condition Structural Condition	Amenity Value Life Expectancy (yrs) Retention Category
T1	Early-Mature **Bay Laurel** Laurus nobilis.	11	3	36	N 2 W 1.5 E 3.5 S 4		Position: Immediately adjacent neighbours extension. Form: Multi-stemmed at 2.5m with an unbalanced crown. History: Occasional pruning wounds due to crown lifting (now healed). **Defects: No significant defects.**	No action required. n/a / 3	High Good Good	Low 10-20 C
T2	Young **Holly** Ilex aquifolium.	5.5	2	12	N 1.5 W 0.5 E 3 S 1		Position: Narrow brick planter. Form: Leaning kinked stem. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required. n/a / 3	Moderate Good Good	Low <10 C
T3	Early-Mature **Magnolia** Magnolia sp.	8	2.5	30	N 5 W 4.5 E 5 S 5		Position: Situated within the rear garden. Form: Twin-stemmed at ground level with a well-formed crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Recorded stem diameter is equivalent for two stems (20cm, 22cm).	No action required. n/a / 3	Moderate Good Good	Moderate 40+ B
T4	Semi-Mature **Weeping Ash** Fraxinus excelsior 'pendula'.	5	2	27	N 1.5 W 1.5 E 3.5 S 2.5		Position: Situated within the rear garden. Form: Multi-stemmed at 4m with a weeping habit. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required. n/a / 3	Moderate Fair Fair	Low <10 C
T5	Mature **Lime** Tilia sp.	28	6	65	N 6 W 3 E 8 S 4		Position: Situated within the rear garden. Form: Twin-stemmed at 5m with a balanced crown. History: Occasional pruning wounds due to crown reduction. **Defects: Major cavity at ground level to 2m.** Other: Stem bulges at 1.5m so diameter taken at 2m.	Remove. High / N/A	Moderate Good **Very Poor**	Moderate <10 **U +**
T6	Mature **Lime** Tilia sp.	28	8	90	N 10 W 12 E 7 S 10		Position: Situated on third party land. Form: Multi-stemmed at 3m with a slightly unbalanced crown. Other: Limited inspection, dimensions estimated.	No action required. n/a / 3	High Good Fair	Moderate 20-40 B

Tree Data Schedule

Reference C = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) W / N / E / S	Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals) Priority	Inspect fres (yrs)	Vigour: Physiological Condition / Structural Condition	Amenity Value: Life Expectancy (yrs) / Retention Category
T1	Early-Mature **Bay Laurel** Laurus nobilis.	11	3	36	W 1.5 / N 2 / E 3.5 / S 4		Position: Immediately adjacent neighbours extension. Form: Multi-stemmed at 2.5m with an unbalanced crown. History: Occasional pruning wounds due to crown lifting (now healed). **Defects: No significant defects.**	No action required.	n/a	High / Good / Good	Low / 10-20 / C
T2	Young **Holly** Ilex aquifolium.	5.5	2	12	W 0.5 / N 1.5 / E 3 / S 1		Position: Narrow brick planter. Form: Leaning kinked stem. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	Moderate / Good / Good	Low / <10 / C
T3	Early-Mature **Magnolia** Magnolia sp.	8	2.5	30	W 4.5 / N 5 / E 5 / S 5		Position: Situated within the rear garden. Form: Twin-stemmed at ground level with a well-formed crown. History: No evidence of significant pruning. **Defects: No significant defects.** Other: Recorded stem diameter is equivalent for two stems (20cm, 22cm).	No action required.	n/a	Moderate / Good / Good	Moderate / 40+ / B
T4	Semi-Mature **Weeping Ash** Fraxinus excelsior 'pendula',	5	2	27	W 1.5 / N 1.5 / E 3.5 / S 2.5		Position: Situated within the rear garden. Form: Multi-stemmed at 4m with a weeping habit. History: No evidence of significant pruning. **Defects: No significant defects.**	No action required.	n/a	Moderate / Fair / Fair	Low / <10 / C
T5	Mature **Lime** Tilia sp.	28	6	65	W 3 / N 6 / E 8 / S 4		Position: Situated within the rear garden. Form: Twin-stemmed at 3m with a balanced crown. History: Occasional pruning wounds due to crown reduction. **Defects: Major cavity at ground level to 2m.** Other: Stem bulges at 1.5m so diameter taken at 2m.	Remove.	High / N/A	Moderate / Good / Very Poor	Moderate / <10 / U +
T6	Mature **Lime** Tilia sp.	28	8	90	W 12 / N 10 / E 7 / S 10		Position: Situated on third party land. Form: Multi-stemmed at 3m with a slightly unbalanced crown. Other: Limited inspection, dimensions estimated.	No action required.	n/a	High / Good / Fair	Moderate / 20-40 / B

Statutory Protection

We were informed by Rav Curry of London Borough of Camden via email on the 17th of February 2023 that:

- The site lies within the **Hampstead Conservation Area**.
- There are no tree preservation orders affecting trees within the site.
- There are tree preservation orders affecting trees at the immediately adjacent properties. No: 20 Well Walk has a TPO on 1 x Lawson Cypress at the front of the property. No: 16 Well Walk has a TPO on 1 x Lime tree at the front of the property.

Photographs

Photo 1.

Photo 2.

Photo 3.

Photo 4.

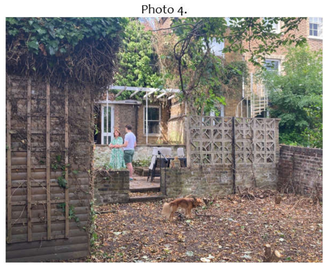


Photo 5.

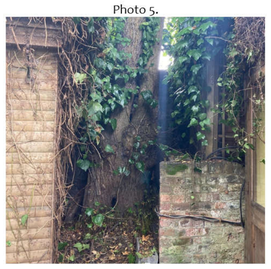
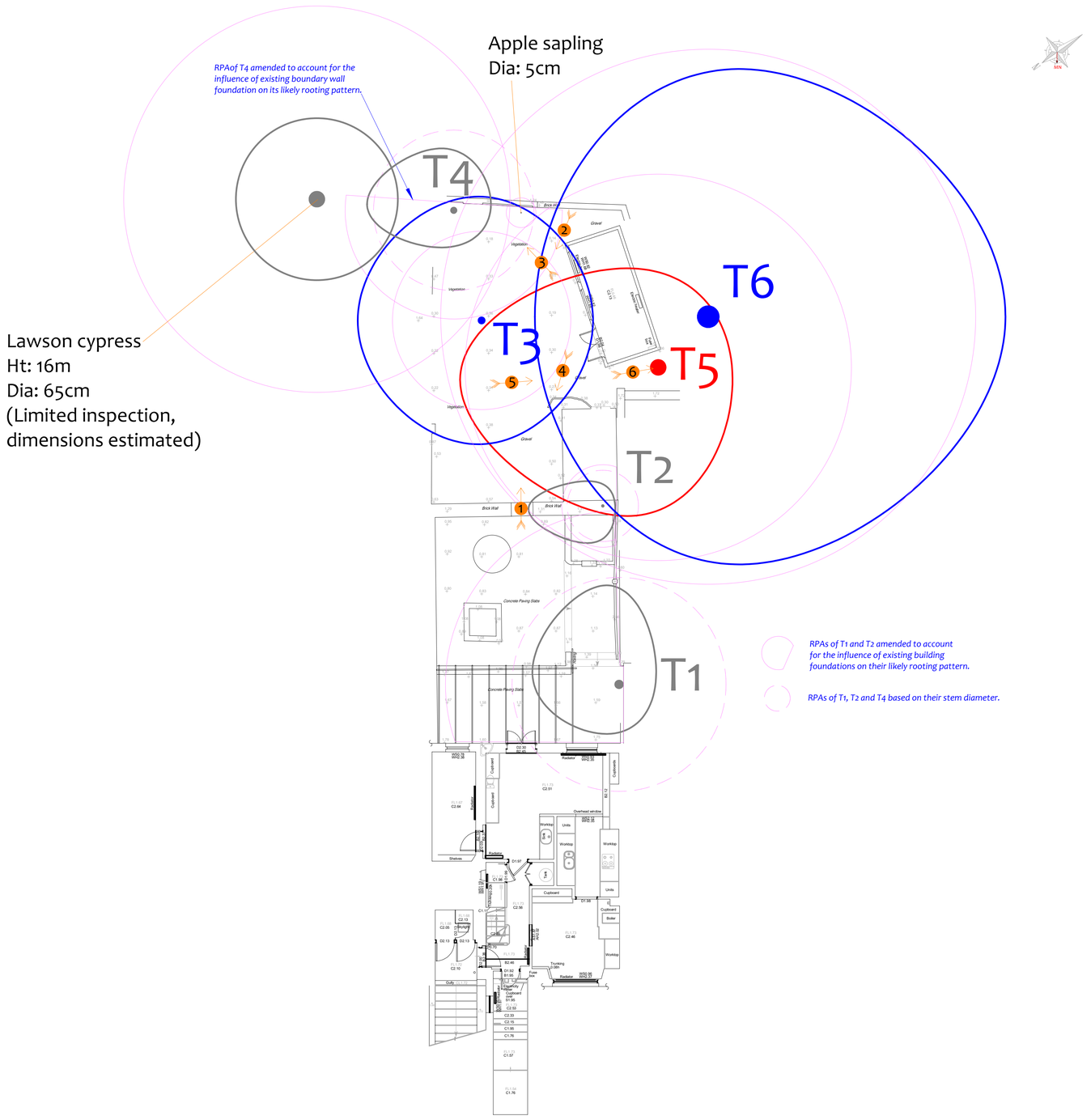


Photo 6.



Drawing No:	CCL 11403A	/ TCP	Rev: 2
Title:	Tree Constraints Plan (Existing Layout)		
Site:	18 Well Walk NW3 1LD		
Scale:	1:100	Paper Size:	A1

CROWN
Arboricultural Consultants
01422 316660

Tree Retention Categories
Stems & canopies shown

Category A tree	Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.
Category B tree	Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees
Category C tree	Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
Category U tree	Trees unsuitable for retention due to their very poor condition.

Tree Constraints Plan

Status: Final

BS 5837 Root Protection Area (radius = 12xstem diameter)

Root Protection Area needing amendment due to site conditions, e.g. presence of exising road or building.

Root Protection Area having been amended to account for for site conditions

T1 = Tree No 1 G2 = Group No 2 H3 = Hedge No 3

1 Photo 1

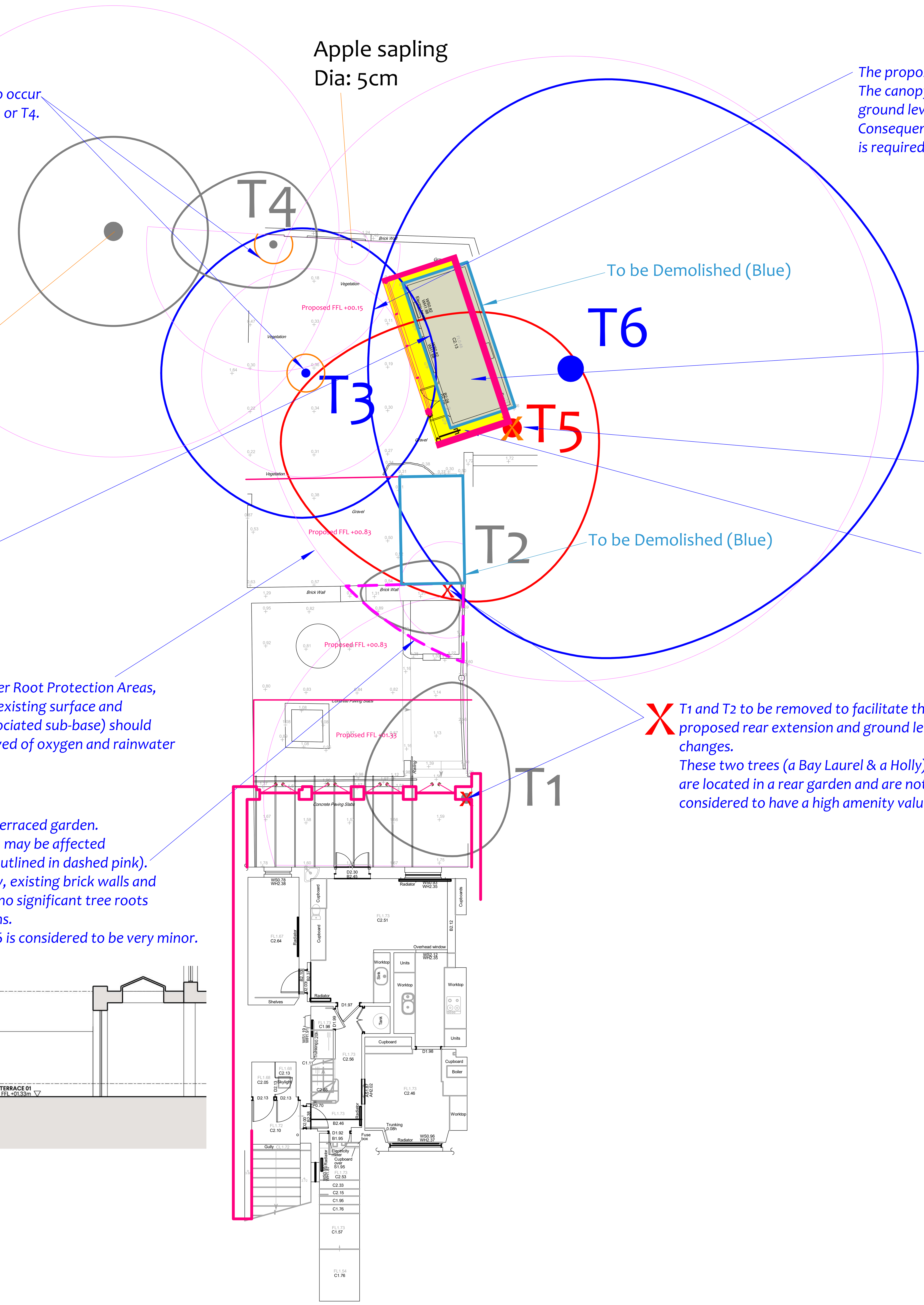
MN = Measured North:

Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.

Tree Ref.	Species	Height (m)	Root Protection Area Radius (m)	m²	Square (m)
T1	Bay Laurel	11	4.3	59	7.7
T2	Holly	5.5	1.4	7	2.6
T3	Magnolia	8	3.6	41	6.4
T4	Weeping Ash	5	3.2	33	5.7
T5	Lime	28	7.8	191	13.8
T6	Lime	28	10.8	366	19.1

Proposed Layout (Pink)

No ground level alterations to occur within 0.5m of the stem of T3 or T4.



Lawson cypress
Ht: 16m
Dia: 65cm
(Limited inspection, dimensions estimated)

Very light pruning of outer tertiary branches may be required to T3 to ensure clearance for construction of the outbuilding. Such pruning shall have no impact on the trees health or amenity value.

Where existing paving is to be replaced/installed over Root Protection Areas, excavation should be limited to the removal of any existing surface and its sub-base. Any new paved surfaces (and their associated sub-base) should also be permeable to ensure tree roots are not starved of oxygen and rainwater

Ground levels are to be altered to create a terraced garden. A small portion of the theoretical RPA of T6 may be affected by the lowering of ground levels (see area outlined in dashed pink). However, due to to the existing topography, existing brick walls and structures within, and adjacent to the site, no significant tree roots are anticipated in this area at shallow depths. Consequently, the potential impact upon T6 is considered to be very minor.

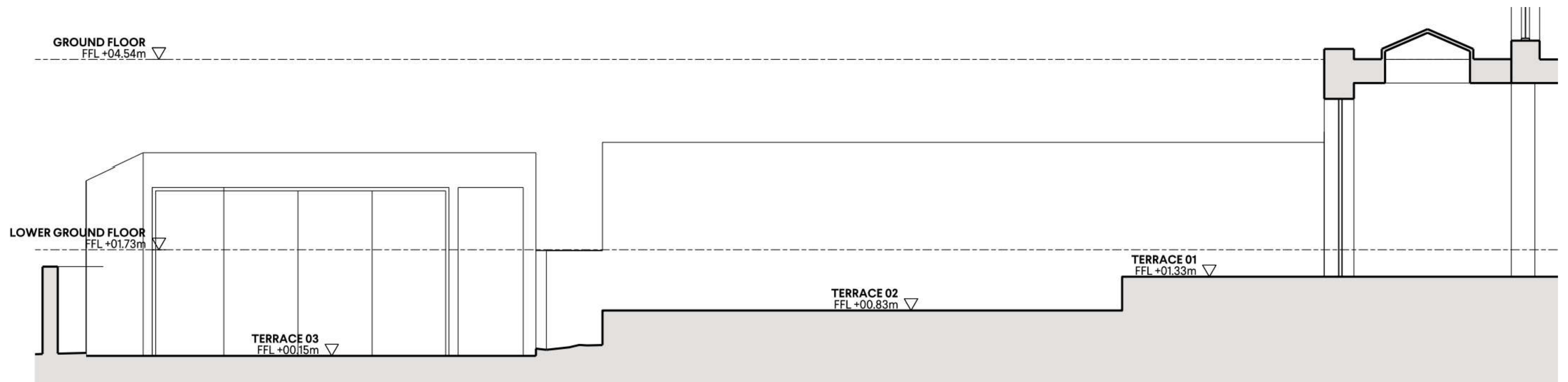
The proposed outbuilding is 3m tall. The canopy of T6 begins at 8m above ground level. Consequently, no facilitative pruning is required to T6.

RPA of T6 already occupied by an existing outbuilding.

T5 is recommended for removal regardless of the development proposals (due to its poor condition).

The existing outbuilding is to be demolished, the existing concrete slab removed and a new outbuilding installed in its place on a slightly larger footprint. Less than 2% of the RPA of T6 shall be affected by the increased footprint of the outbuilding. Such an incursion is considered to be very minor. It is recommended to limit the depth of excavation to 250mm and install the structure on a shallow, raft or slab foundation. Micro-piles may be installed to support the raft/slab, so long as they are positioned to avoid any tree roots in excess of 50mm.

T1 and T2 to be removed to facilitate the proposed rear extension and ground level changes. These two trees (a Bay Laurel & a Holly) are located in a rear garden and are not considered to have a high amenity value.



Cross sectional drawing of the proposed rear garden.

Drawing No: CCL 11403 / IAP Rev: 1
Title: Impact Assessment Plan
Site: 18 Well Walk, NW3 1LD
Scale: 1:100 Paper Size: A1

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Tree Retention Categories
Stems & canopies shown

- Category A tree — Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.
- Category B tree — Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees
- Category C tree — Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
- Category U tree — Trees unsuitable for retention due to their very poor condition.

Impact Assessment Plan

Status: Final - for submission

BS 5837 Root Protection Area (radius = 12xstem diameter)

Root Protection Area needing amendment due to site conditions, e.g. presence of exising road or building.

Root Protection Area having been amended to account for for site conditions

T1 = Tree No 1   G2 = Group No 2   H3 = Hedge No 3

X Tree to be removed to facilitate the proposal

X Tree to be removed due to its low quality

Proposed pruning

MN = Measured North:

Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.

Tree Ref.	Species	Height (m)	Root Protection Area		
			Radius (m)	m²	Square (m)
T1	Bay Laurel	11	4.3	59	7.7
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T3	Magnolia	8	3.6	41	6.4
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T6	Lime	28	10.8	366	19.1