

BS 5837 Arboricultural Report

& Impact Assessment



at
47 Mount View Road
N4 4SS

Dated
25th November 2024



CROWN
Tree Consultancy

Branching out through England and Wales

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1. Introduction

1.1. Instruction

1.1.1. We are instructed by Vasiliki Symeonidou of Neil Dusheiko Architects to:

- Undertake a Tree Survey to BS 5837 at 47 Mount View Road 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. Survey Details

- 1.3.1. A visual ground-level assessment of all trees was undertaken on the 31st of May 2023 by Carl Lothian. No climbed inspections or specialist decay detection were undertaken. Details of how the survey was undertaken can be found in Appendix 1.
- 1.3.2. 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.

1.4. Author

- 1.4.1. This report was compiled by Carl Lothian BSc (Hons) Arboriculture. Details of the author's experience that qualify him to produce such a report are detailed in Appendix 4.

2. Site Overview

2.1. Brief Site Description

- 2.1.1. Number 47 Mount View Road is a residential property with a garden to the rear.
- 2.1.2. The garden is divided into a north and south section by a fence and gate. The southern section, closest to the house, (see Photographs 7-9) contains mostly small trees and shrubs, with two large pear trees (T1 & T2) along the eastern boundary. Surfaces are primarily grass with some paving. The garden slopes towards the house.
- 2.1.3. The northern section (see Photographs 1-6 & 10) contains 3 Retention Category C trees, (T4, T9 and T10), one Retention Category C group (G12), one Retention Category B tree (T8) and one Retention Category U tree (T13). Surfaces are primarily soft ground and vegetation with some areas of paving. There is a raised, walled, area towards the north of the section.
- 2.1.4. In adjacent properties are a mixture of Retention Category C and Retention Category trees. The Root Protection Areas and canopies of some of these trees extend into the site.
- 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°34'33.15"N 0° 7'2.42"W, and the altitude is approximately 70m above sea level¹.

2.3. Survey Extent

- 2.3.1. The area indicated below² shows the extent of our survey. Our survey included all trees within the curtilage of the rear garden and those adjacent to it.



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 following recommendations are made to maintain the trees in an acceptable condition:
- 3.1.2. T13 is potentially hazardous due to a historic stem failure which has left a major wound. We recommend that this tree is removed to prevent possible damage due to tree or limb failure. This should be prioritised as indicated on the Tree Data Schedule.
- 3.1.3. All other trees were deemed to be in satisfactory condition.

3.2. Work Priority and Future Inspections

- 3.2.1. The table below suggests a schedule for completing the works recommended in the Tree Data Schedule based on the perceived risk:

Work Priority	Definition	Tree Number
Urgent Very High High Moderate Low	As soon as possible	None
	Within 1 Month	None
	Within 3 Months	None
	Within 1 year	T13
	Within 3 years	None

- 3.2.2. 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	All trees surveyed.

- 3.2.3. 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.

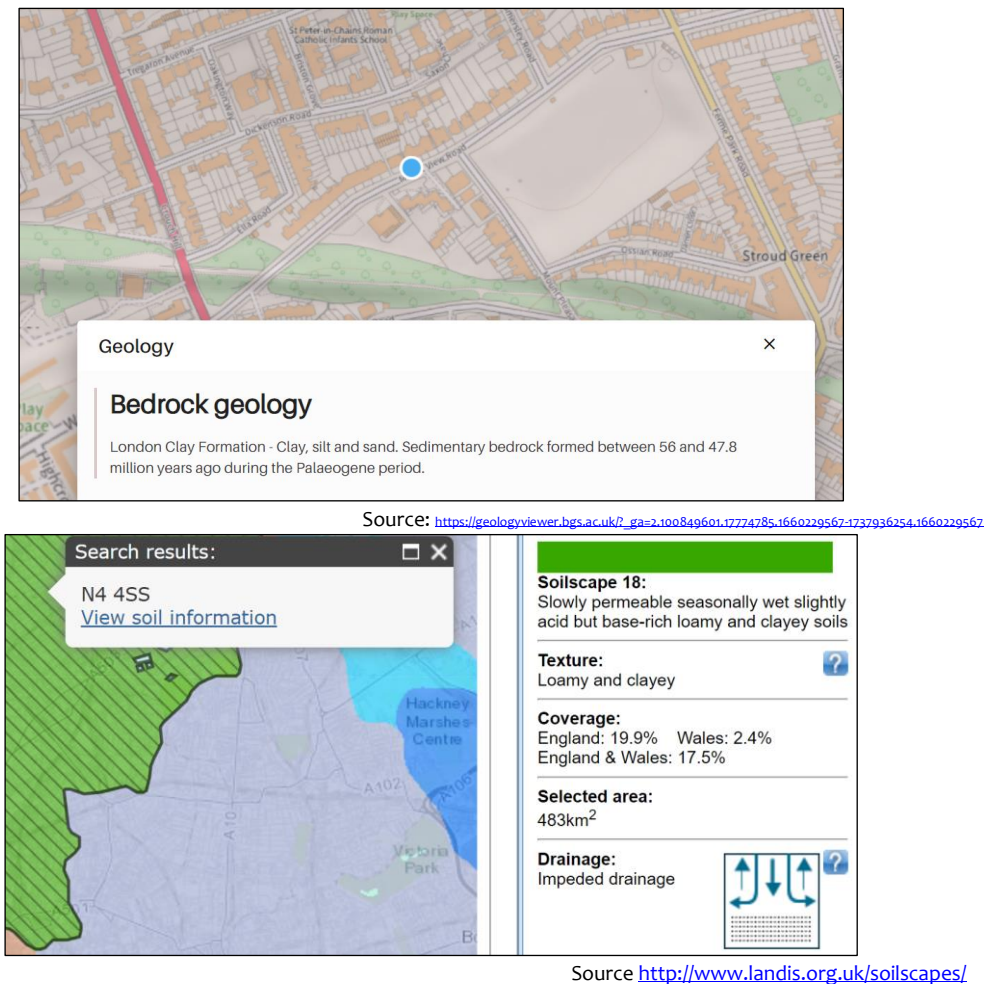
Species	Typical Height at Maturity (m)	Typical Canopy Spread at Maturity (m)	General Notes
Cherry	8	10	Many cultivars available, bred for their abundance of spring flowers, edible cherries or ornamental bark (e.g. Tibetan Cherry). Usually white or pink flowering, often in very early spring. Usually with a single bole to around 2.5m and multi-stemmed thereafter. Most varieties have excellent autumn colour.
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.
Horse Chestnut	25	18	Deciduous tree native to Albania and N Greece. Naturalised throughout the UK. Iconic landscape tree. Susceptible to attack by Bleeding Canker, as well as Leaf Miner and Leaf Blotch. Should be inspected regularly if located close to high public use areas. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Aesculus+hippocastanum for more info.
Lawson Cypress	40	10	Erect, narrowly conical evergreen tree native to Southwest Oregon and N. W. California. Introduced to Britain in the 1850's and now a common tree in gardens and parks. Makes an excellent dense hedge. Many varieties are available including golden and miniature varieties. Easily distinguished from Leyland cypress by the presence of small cones. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Chamaecyparis+lawsoniana for more info.
Lime	25	12	Very common street tree. Several species exist; the one most often found in woods is 'common lime' which produces a mass of suckers at the stem base, making it very cheap to propagate. Limes have non-symmetrical heart shaped leaves which are much loved by aphids (hence the sticky honeydew on cars parked beneath). Limes are tolerant of heavy pruning and are often managed as pollards. Old limes tend to support a lot of small dead branches. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Tilia+x+europaea for more info.
Pear	8	8	Deciduous tree native across Europe and W Asia. Hundreds of cultivars available due to its popular fruit. White flowers in spring along with bright green foliage. More upright growth habit than most apples.
Silver Birch	16	10	Deciduous native tree. A pioneer species requiring good lighting levels that will readily colonise open ground. Relatively short lived and surpassed in woodland by dominant species such as oak and beech. Attractive white bark and graceful, delicate form make this a popular garden tree. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Betula+pendula for more info.
Sycamore	25	16	Deciduous tree native to S. Europe, widely naturalised in the UK. Often regarded as a weed species due to its invasive nature and ability to tolerate most conditions. Responds well to pruning. Not a good tree to park beneath in summer due to the sticky sap secreted by aphids. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Acer+pseudoplatanus 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 N4 4SSobtained the following results:



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

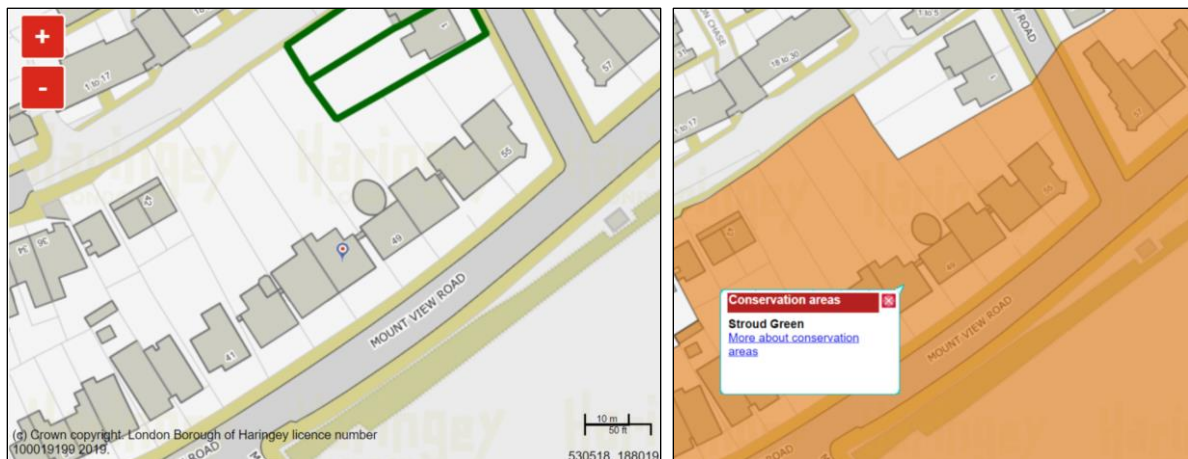
- 4.3.1. Based on the information reproduced in Section 3.1, local soils are assumed to have a loamy and clayey texture.
- 4.3.2. Loamy soils contain a mixture of clay and sand. Soil compaction may occur due to vehicular activity on building sites, so ground protection is recommended wherever vehicles operate. Most tree species will grow well in loamy soils.
- 4.3.3. Clay soils may be especially prone to compaction and slurring caused by general construction activity. Both of which significantly impair root function. This must be guarded against using boards to protect any soils where roots are growing. When planting new trees, species should be selected that can tolerate heavy soils.
- 4.3.4. 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 order³, 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 intention⁴. 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. On 2nd September 2024, we accessed the local authority website. A screenshot is produced below:



5.1.2. This indicates that:

- The site is within the Stroud Green Conservation Area.
- There are no tree preservation orders affecting trees within the site.
- There are no tree preservation orders immediately adjacent to the site.

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, 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 within the site.

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. Arboricultural Impact Assessment

6.1. Overview

6.1.1. It is proposed to construct a residential building 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 red.

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

Activity	Trees Potentially Affected
Tree Removal	None
Tree Pruning	T2, T5, T6, T7, T14 and T15
RPA: House Foundations	T2, T5, T6, T7 and T14 and T15
RPA: New Hard Surface	T7, T15, T16 and T17
RPA: Underground Services	T2 and T5
RPA: Change of Ground Levels	Unknown – To be confirmed
RPA: Soil Compaction	Trees adjacent to the construction area (preventable by installing tree protection measures)

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

6.2. Tree Removal

6.2.1. On 29th June 2023 a Section 211 notice was submitted for the removal of G3, T4 T8, T9, T10, G12 and T13. No objection was raised by the Local Authority and these trees have since been removed.

6.2.2. No Trees are proposed for removal to facilitate the development.

6.3. Impact on Tree Canopies

6.3.1. It is proposed to prune back the branches of T2 and T6 that are growing towards the proposal to create a clearance distance of 1.5m. This shall require the removal of relatively small secondary branches which should be pruned back to a secondary growth point. The pruning works should be undertaken sympathetically (working to BS 3998 guidelines).

6.3.2. It is proposed to remove the lower branches of T5 and T7 to a height of 6m and 5.5m respectively where they overhang the proposed building. This shall ensure adequate clearance height to prevent accidental breakage. The pruning works should be undertaken sympathetically (working to BS 3998: 2010 guidelines). This will create a clearance distance of 0.5m – 1m from the roof (depending on the final height as per 6.4.4

6.3.3. It is also proposed to prune the overhanging foliage of T14 and T15 back to the boundary (or close to it). This shall require the removal of relatively small secondary branches which should be pruned back to a secondary growth point where possible. The clearance distance between these canopies and the proposed building will be between 1 and 1.2m.

6.4. Impact on Tree Roots

Foundations

- 6.4.1. The foundations for the new property will extend into the theoretical Root Protection Area of T2 (10.9%), T5 (23.7%), T6 (16.7%), T7 (115.9%), T14 (10.9%) and T15 (6.0%). Given that a significant portion of the Root Protection Areas shall be affected, it is imperative that specialist foundations are installed, which will have minimal impact on the root system and on the soils in which the roots grow. This can be achieved by installing an above-ground foundation (supported on narrow piles) with an irrigated void beneath.
- 6.4.2. The following restrictions are recommended:
- All walls and structures shall be supported by an above-ground foundation supported on narrow-diameter piles (maximum 300mm).
 - Turf or loose topsoil may be removed to a maximum depth of 100mm so long as no roots over 25mm are encountered.
 - Trial pits shall be excavated to determine the location of the piles. Trial pits shall be 300mm x 300mm and excavated using hand tools to a depth of 600mm. Excavation shall be undertaken in the presence of the project arborist. Soil shall first be loosened with a pick to ascertain if large roots are present before being removed with a spade. If roots over 25mm are encountered, they shall be retained intact wherever possible and the pile relocated. Roots over 10mm shall be pruned using sharp secateurs. Beyond 600mm depth, piles may be installed using an auger or piling rig.
 - A reduced height piling rig shall be used below tree canopies. This shall be carefully marshalled by the appointed arborist.
 - A ventilated void of at least 200mm should be incorporated between the ground surface and the underside of the slab.
 - Rainwater to be collected and discharged in a controlled manner into the ventilated void.
 - A layer of pea gravel (e.g. 150mm thick) may be used to control/disperse the rainwater.
- 6.4.3. This type of foundation shall have almost no impact on the root system or the rooting environment (because it will allow adequate gaseous exchange and rainwater beneath the footprint of the building). Hence, by adopting such a foundation system, it is considered that the proposal shall have no long-term detrimental impact on the health of trees.
- 6.4.4. To facilitate the proposal, deeper excavation within the area highlighted in the Arboricultural Impact Assessment Plan may be required to lower existing levels. In this case, trial excavations shall be undertaken, supervised by the project arborist. This will determine the maximum depth of excavation possible while retaining significant roots, See section 6.4.11. If lowering of ground levels is not possible, finished floor levels of the proposed building will need to be altered to permit the above foundation methodology.

New Surfaces:

- 6.4.5. The Impact Assessment Plan indicates where it is proposed to install a new surface over the Root Protection Areas of T7, T15, T16 and T17 (pedestrian).
- 6.4.6. The new surface shall be located beyond the BS 5837 (section 7.4.2.7) recommended maximum distance of 0.5m from any buttress roots.
- 6.4.7. T7 is the tree most affected by new surfacing (approximately 6.8% of the RPA will be affected). This is much less than the BS 5837 recommended maximum of 20% (BS 5837 Section 7.4.2).
- 6.4.8. To minimise the impact on roots, the following methodology is proposed:
- The new surface shall be installed entirely above ground.
 - Excavation shall be limited to the removal of existing vegetation or of topsoil which is too rich in organic matter to be suitable as a sub-grade. This also applies to edgings/steps.
 - Such excavation shall be undertaken using hand tools.

- A reduced-fines 40mm angular sub-base (e.g. MOT type 3) is to be used for any build-up of ground levels.
- The finished surface shall be highly permeable (e.g. gravel/paviours).

Underground Services:

- 6.4.9. The Impact Assessment Plan shows where underground services (drainage) is proposed.
- 6.4.10. To minimise the impact on roots, the following mitigation is proposed where underground services are to be installed within Root Protection Areas:
- Trenches to be excavated using hand tools and/or an air spade.
 - Excavation to be overseen by the project arborist.
 - Roots in excess of 25mm in diameter to be retained wherever possible. Else, roots may be pruned by the arborist.
 - Exposed roots to be protected by damp sacking whilst exposed.
 - Flexible services (e.g. cables and polyurethane pipes) to be installed below or between roots. Inflexible services (e.g. drains) may require some roots to be severed. In which case, as many roots as possible shall be retained.

Changes in Ground Levels:

- 6.4.11. As stated in Section 6.4.4, Ground levels to the north of the site may be lowered before the construction of the proposed building foundations. In this case, investigations into rooting activity should be undertaken to determine the maximum excavation permitted while retaining tree roots >25mm diameter. This should be undertaken using hand tools and under the supervision of the project arborist. Elsewhere, no changes of ground levels within Root Protection Areas shall be made without consulting the arborist and, if necessary, gaining approval from the local authority.

Soil Compaction:

- 6.4.12. 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.
- 6.4.13. 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.
- 6.4.14. 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. Examples ground protection measures is provided below:
- 6.4.15. Any existing hard surfacing may be retained and reinforced (where applicable and firm enough to spread the load of any traffic passing overhead), otherwise suitable new load spreading boards shall be installed. These need to adequately spread the load of all anticipated construction traffic.
- 6.4.16. Where only pedestrian traffic will occur, the ground protection measures might be as simple as timber boards, or scaffold planks installed directly onto the ground. Alternatively, the boards may be supported by a scaffold framework.
- 6.4.17. Where only light vehicles are to operate (e.g. barrows, trolleys or occasional cars or light plant machinery), 25mm wooden boards double laid and overlapping may suffice, though at least 150m of compressible woodchip may be installed first to help spread the load.



- 6.4.18. Where heavy vehicles/plant machinery will operate, sturdier ground protection measures will be required such as metal road plates, or purpose-built synthetic road mats over a compression-resistant layer such as 150mm of woodchip or 100mm of a 3D cellular confinement system in-filled with 7–40mm angular gravel.

6.5. Demolition Activities

- 6.5.1. To avoid inadvertent damage to roots, branches or stems, care shall need to be taken when demolishing structures or removing surfaces close to trees. The use of a (carefully marshalled) mechanical excavator shall be acceptable so long as walls are demolished in the direction away from trees, and foundations/surfaces are carefully lifted. Machinery operatives shall need to be made aware of this requirement.
- 6.5.2. 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.

6.6. Waste and Materials Storage

- 6.6.1. 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.
- 6.6.2. 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.

6.7. Cabins and Site Facilities

- 6.7.1. 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.
- 6.7.2. 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.

6.8. Boundary Treatments

- 6.8.1. Where fences are proposed within Root Protection Areas, the following methodology is recommended:
- Post holes should be narrow as possible and should not exceed 300mm x 300mm.
 - Excavation for the post holes should be undertaken using hand tools.
 - Roots in excess of 25mm diameter should be retained, and the post hole relocated.
 - A flexible fencing system that permits panel widths of various sizes will therefore be necessary.
- 6.8.2. Where Boundary walls are proposed within Root Protection Areas, the following methodology is recommended:
- Walls to be supported on a beam which spans Root Protection Areas.
 - Narrow piles not exceeding 300mm in diameter may be used to support the beam.
 - Trial excavations should be undertaken to a depth of 600mm to ensure all piles are located to avoid severing any roots in excess of 25mm diameter.
 - Any excavation should be undertaken using hand tools.
- 6.8.3. By adopting such a sympathetic installation method, it will be possible to retain all significant roots and ensure that the root system will be able to supply the canopy with the required water and nutrients.

- 6.8.4. Where gate posts are proposed within Root Protection Areas, the following mitigation is recommended:
- Post holes should be narrow as possible.
 - Excavation for the post holes should be undertaken using hand tools.
 - Roots in excess of 25mm diameter should be retained wherever possible.

6.9. Impact of Retained Trees on the Development

- 6.9.1. Some occasional trimming of the canopies of T2, T5, T6, T7 and G11 will be required in the future to maintain an appropriate distance from the proposed building. T14, T15, T16 and T17 are already maintained by cyclical pruning. Therefore, no additional management of these trees will be required to maintain an appropriate distance from the proposal in the future.
- 6.9.2. The gutters will need occasional maintenance to avoid blockage, however as the building is single storey this will be easy to manage, thus reducing pressure on future pruning requirements. The dwelling would benefit from the installation of controlled overflow guttering to minimise the impact of leaves.
- 6.9.3. 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.
- 6.9.4. The proposed building benefits from dual aspect windows to minimise the effect retained trees will have on the availability of sunlight, thus reducing pressure on future pruning requirements.

6.10. Summary

- 6.10.1. No trees are to be removed to enable the build.
- 6.10.2. T2, T5, T6, T7, T14 and T15 require pruning to create an adequate clearance from the proposal and prevent accidental breakage of branches during the construction stage.
- 6.10.3. Minor future pruning will be required of these trees, and of G11, to maintain an adequate clearance distance.
- 6.10.4. Foundations are proposed within Root Protection Areas. However, the sympathetic foundation design shall ensure no detrimental impact on trees.
- 6.10.5. All new hard surfacing within RPAs shall be installed sympathetically and with minimal excavation.

6.11. Arboricultural Method Statement

- 6.11.1. 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.

7. Photographs

Refer also to the Tree Constraints Plan for photo locations

Photo 1.

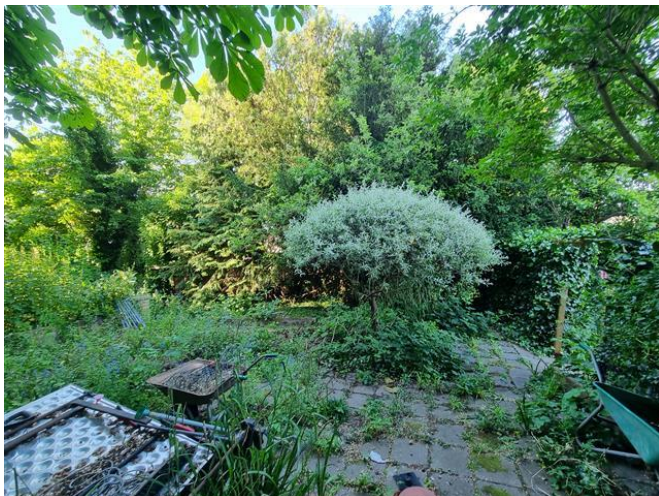


Photo 2.

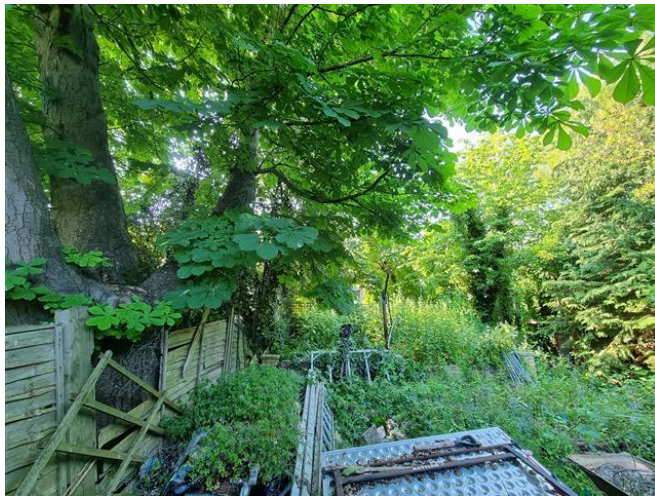


Photo 3.

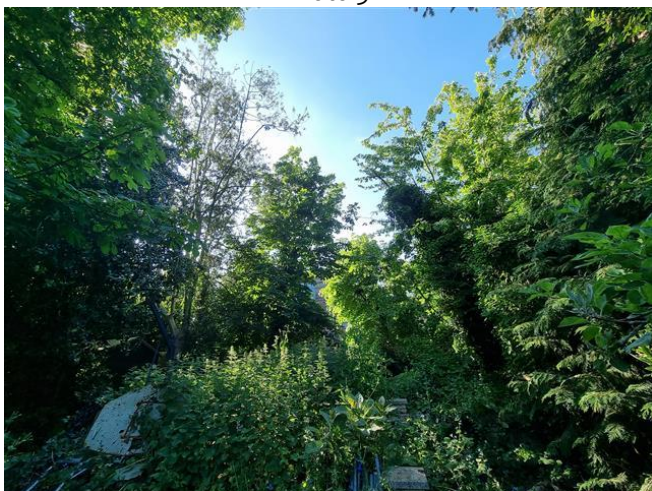


Photo 4.

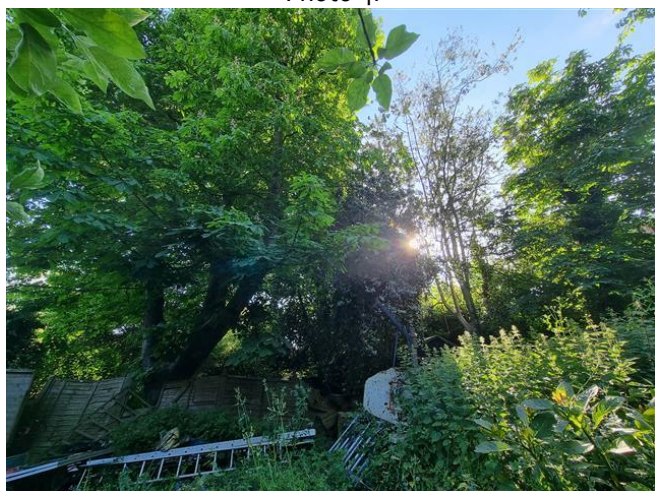


Photo 5.



Photo 6.



Photo 7.



Photo 8.



Photo 9.

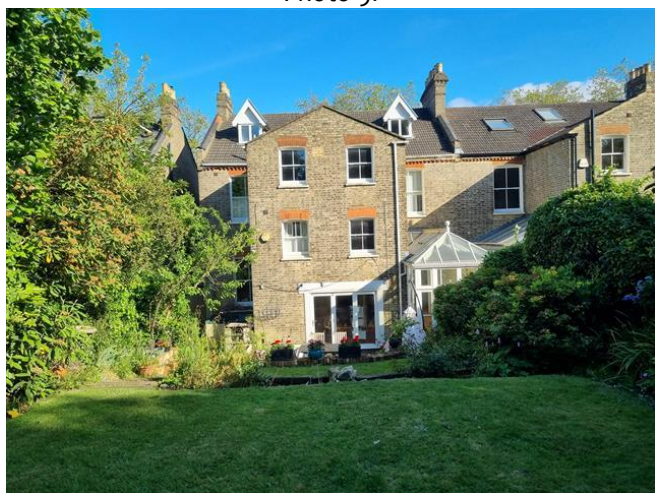


Photo 10.



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. These 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: Tree Data Glossary

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 that is unlikely to develop into a major defect.

Appendix 4: Author's Qualifications

Qualifications & Experience of Carl Lothian – BSc (Hons) Arboriculture, MArborA.

Carl began his arboricultural career by undertaking a Level 3 extended diploma in arboriculture and forestry at Merrist Wood College in 2015. Upon completion of his diploma, Carl worked with several tree surgery firms completing a range of arboricultural works. In 2018 Carl began his BSc (Hons) in arboriculture and urban forestry, graduating with a first-class degree and attaining the Institute of Chartered Foresters Student of the Year Award.

After graduating, Carl worked as a TreeRadar technician where he carried out tree root and decay surveys with specialist ground-penetrating radar equipment. During this time Carl was fortunate enough to work at prestigious sites, such as the Palace of Westminster and the National Maritime Museum.

Whilst working at Crown, Carl has undertaken a range of tree surveys and written reports relating to development, tree condition, subsidence, hazard assessment, and decay detection. Carl is a professional member of the Arboricultural Association and a professional member of the Consulting Arborist Society.

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/wgfsfell.pdf/\\$FILE/wgfsfell.pdf](http://www.forestry.gov.uk/website/pdf.nsf/pdf/wgfsfell.pdf/$FILE/wgfsfell.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

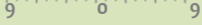
Communities and Local Government website with numerous downloadable documents, from: <http://www.communities.gov.uk/planningandbuilding/planning/treeshighhedges/>

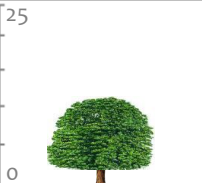
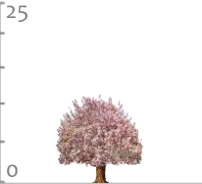
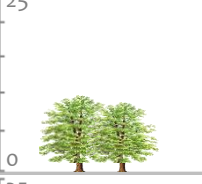
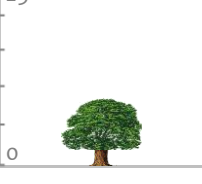
Tree Specific Websites

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) 	Notes	Recommendations (Independent of any development proposals)		Vigour	Amenity Value
										Physiological Condition	Life Expectancy (yrs)
								Priority	Inspect Freq (yrs)	Structural Condition	Retention Category
T1	Early-Mature Pear Pyrus sp.	7.5	1.5	50	2 3 4.5 4.5		Form: Multi-stemmed at 2m with a poorly formed crown. History: Previously topped at 6m (Significantly reduced canopy). Defects: No significant defects. Other: Vegetation prevented detailed inspection.	No action required.		Moderate Good Good	Low 20-40 C
								n/a	3		
T2	Mature Pear Pyrus sp.	11	2	52	4 4 4		Form: Multi-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: Scattered dead twigs. Other: Ivy prevented detailed inspection.	No action required.		Moderate Fair Good	Low 20-40 B -
								n/a	3		
G3	Semi-Mature Elder & Holly Sambucus nigra & ilex aquifolium.	av 5	av 1.5	av 10	av 3.5 2.5 2.5 each		Form: Two close growing specimens. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate Good Good	Low 40+ C
								n/a	3		
T4	Young Willow-leaved Pear Pyrus salicifolia.	2.5	1.5	8	2 2 2		Form: Multi-stemmed at 1.5m with a compact crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate Good Good	Low 40+ C
								n/a	3		
T5	Mature Horse Chestnut Aesculus hippocastanum.	15	1.5	85	6 6.5 6.5		Position: Situated on third party land. Form: Triple-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate Good Good	Moderate 40+ B
								n/a	3		
T6	Semi-Mature Holly Ilex aquifolium.	9	1.5	31	3 3 3.5		Position: Situated on third party land. Form: Multi-stemmed at ground level with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Recorded stem diameter is equivalent for four stems (25cm, 13cm, 9cm, 10cm).	No action required.		Moderate Good Good	Moderate 40+ B -
								n/a	3		
T7	Early-Mature Holly Ilex aquifolium.	12	3	32	4 5.5 3		Position: Situated on third party land. Form: Multi-stemmed at 2m with a narrow, upright habit. History: No evidence of significant pruning. Defects: Very sparse canopy with scattered dead twigs.	No action required.		Moderate Fair Good	Low 10-20 C
								n/a	3		

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)	Notes	Recommendations (Independent of any development proposals)		Vigour	Amenity Value
										Physiological Condition	Life Expectancy (yrs)
								Priority	Inspect Freq (yrs)	Structural Condition	Retention Category
T8	Semi-Mature Horse Chestnut Aesculus hippocastanum.	11	2.5	24	5 3.5 4 3.5		Form: Single stemmed with a slight lean and a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Ivy prevented detailed inspection.	No action required.		Moderate Good Good	Moderate 40+ B
								n/a	3		
T9	Semi-Mature Cherry Prunus sp.	11	1.5	27	0.5 4.5 4.5 6		Form: Twin-stemmed at ground level with an unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects observed. Other: Ivy prevented detailed inspection. Recorded stem diameter is equivalent for three stems (18cm, 20cm).	No action required.		Moderate Good Good	Low 40+ C
								n/a	3		
T10	Semi-Mature Sycamore Acer pseudoplatanus.	12	2.5	22	3 3 3.5 3		Form: Twin-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Ivy prevented detailed inspection.	No action required.		Moderate Good Good	Low 40+ C
								n/a	3		
G11	Semi-Mature Silver Birch Betula pendula.	av 9	av 2.5	av 13	av 1.5 1.5 1.5 each		Position: Situated on third party land. Form: Row of similar specimens. History: No evidence of significant pruning. Defects: No significant defects. Other: Limited inspection, dimensions estimated.	No action required.		Moderate Good Good	Moderate 40+ B
								n/a	3		
G12	Semi-Mature Mixed Mixed.	av 9	av 1	av 15	av 2 4 2 each		Form: Row of boundary trees. History: No evidence of significant pruning. Defects: No significant defects. Other: Vegetation prevented detailed inspection.	No action required.		Moderate Good Good	Moderate 40+ C +
								n/a	3		
T13	Semi-Mature Lawson Cypress Chamaecyparis lawsoniana.	10	0.5	30	3 4 4 3		Form: Twin-stemmed at 2m with a narrow, upright habit. History: No evidence of significant pruning. Defects: Major wound where historic stem has failed (due to included bark).	Remove.		Moderate Good Poor	Moderate <10 U
								Moderate	N/A		
T14	Early-Mature Lime Tilia sp.	8.5	2	43	3 3 3 3		Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate Good Fair	Moderate 40+ B
								n/a	3		

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)	Notes	Recommendations (Independent of any development proposals)		Vigour	Amenity Value
										Physiological Condition	Life Expectancy (yrs)
								Priority	Inspect Freq (yrs)	Structural Condition	Retention Category
T15	Early-Mature Lime Tilia sp.	8.5	2	41	3 3 3	25 0 9 	Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate Good Fair	Moderate 40+ B
								n/a	3		
T16	Early-Mature Lime Tilia sp.	8.5	2	41	3 3 3	25 0 9 	Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate Good Fair	Moderate 40+ B
								n/a	3		
T17	Early-Mature Lime Tilia sp.	8.5	2	42	3 3 3	25 0 9 	Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate Good Fair	Moderate 40+ B
								n/a	3		

Tree Data Schedule														
Reference H = Hedge	Age & Species	Height (m)	Crown H (m)	Diameter (cm)	Crown Spread (m)			Notes	Recommendations (Independent of development proposals)		Visual Physiological Condition	Anxiety Value Structural Condition	Life Expectancy (Years)	
					W	N	E		Priority	Inspect Freq (m)				
T1	Early-Mature Pear	7.5	1.5	50	2	4.5	3	Form: Multi-stemmed at 2m with a poorly formed crown. History: Previously topped at 6m (Significantly reduced canopy). Defects: No significant defects. Other: Vegetation prevented detailed inspection.	No action required.		Moderate	Good	Low	20-40
	Pyrus sp.			4.5					n/a	3		Good		C
T2	Mature Pear	11	2	57	4	4	4	Form: Multi-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: Scattered dead twigs. Other: Ivy prevented detailed inspection.	No action required.		Moderate	Fair	Low	20-40
	Pyrus sp.			4					n/a	3		Good		B -
G3	Semi-Mature Elder & Holly	av	av	av	2.5	3.5		Form: Two close growing specimens. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate	Good	Low	40+
	Sambucus nigra & Ilex aquifolium	1.5	1.5	10	2	2.5	each			n/a	3		Good	
T4	Young Willow-leaved Pear	2.5	1.5	8	2	2	2	Form: Multi-stemmed at 1.5m with a compact crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate	Good	Low	40+
	Pyrus salicifolia.			2					n/a	3		Good		C
T5	Mature Horse Chestnut	15	1.5	85	6.5	6.5		Position: Situated on third party land. Form: Triple stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate	Good	Moderate	40+
	Aesculus hippocastanum.			6.5					n/a	3		Good		B
T6	Semi-Mature Holly	9	1.5	31	3.5	3	3	Position: Situated on third party land. Form: Multi-stemmed at ground level with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Recorded stem diameter is equivalent for four stems (25cm, 13cm, 9cm, 10cm).	No action required.		Moderate	Good	Moderate	40+
	Ilex aquifolium.			3					n/a	3		Good		B -
T7	Early-Mature Holly	12	3	34	5	5.5	3	Position: Situated on third party land. Form: Multi-stemmed at 2m with a narrow, upright habit. History: No evidence of significant pruning. Defects: Very sparse canopy with scattered dead twigs.	No action required.		Moderate	Fair	Low	10-20
	Ilex aquifolium.			3					n/a	3		Good		C
T8	Semi-Mature Horse Chestnut	11	2.5	24	3.5	5	4	Form: Single stemmed with a slight lean and a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Ivy prevented detailed inspection.	No action required.		Moderate	Good	Moderate	40+
	Aesculus hippocastanum.			3.5					n/a	3		Good		B
T9	Semi-Mature Cherry	11	1.5	27	4.5	6		Form: Twin-stemmed at ground level with an unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects observed. Other: Ivy prevented detailed inspection. Recorded stem diameter is equivalent for three stems (18cm, 20cm).	No action required.		Moderate	Good	Low	40+
	Prunus sp.			6					n/a	3		Good		C
T10	Semi-Mature Sycamore	12	2.5	22	3	3.5		Form: Twin-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Ivy prevented detailed inspection.	No action required.		Moderate	Good	Low	40+
	Acer pseudoplatanus.			3					n/a	3		Good		C
G11	Semi-Mature Silver Birch	av	av	av	1.5	1.5		Position: Situated on third party land. Form: Row of similar specimens. History: No evidence of significant pruning. Defects: No significant defects. Other: Limited inspection, dimensions estimated.	No action required.		Moderate	Good	Moderate	40+
	Betula pendula.	9	2.5	13	1.5	each			n/a	3		Good		B
G12	Semi-Mature Mixed	av	av	av	2	4		Form: Row of boundary trees. History: No evidence of significant pruning. Defects: No significant defects. Other: Vegetation prevented detailed inspection.	No action required.		Moderate	Good	Moderate	40+
	Mixed.	9	1	15	4	2	each			n/a	3		Good	
T13	Semi-Mature Lawson Cypress	10	0.5	30	4	3	4	Form: Twin-stemmed at 2m with a narrow, upright habit. History: No evidence of significant pruning. Defects: Major wound where historic stem has failed (due to included bark).	Remove.		Moderate	Good	Moderate	<10
	Chamaecyparis lawsoniana.			4					Moderate	N/A		Poor		U
T14	Early-Mature Lime	8.5	2	43	3	3	3	Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate	Good	Moderate	40+
	Tilia sp.			3					n/a	3		Fair		B
T15	Early-Mature Lime	8.5	2	41	3	3	3	Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate	Good	Moderate	40+
	Tilia sp.			3					n/a	3		Fair		B
T16	Early-Mature Lime	8.5	2	41	3	3	3	Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate	Good	Moderate	40+
	Tilia sp.			3					n/a	3		Fair		B
T17	Early-Mature Lime	8.5	2	43	3	3	3	Position: Situated on third party land. History: Previously topped at 7m. Managed by cyclical pruning. Defects: No significant defects observed. Other: Limited inspection, dimensions estimated.	No action required.		Moderate	Good	Moderate	40+
	Tilia sp.			3					n/a	3		Fair		B

Drawing No: CCL11519C / TCP Rev: 1

Title: Tree Constraints Plan (Existing Layout)

Site: 47 Mount View Road N4 4SS

Scale: 0 5 10m 1:200 Paper Size: A1



CROWN Arboricultural Consultants 01422 316660

Tree Retention Categories

Stems & canopies shown

 Category A tree

 Category B tree

 Category C tree

 Category U 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.

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

Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.

Trees unsuitable for retention due to their very poor condition.

Subsequent to the tree survey a 5m notice of intent was submitted to the Local Authority for the removal of G3, T4 T8, T9, T10, G12 and T13. These trees have since been removed.

Tree Constraints Plan

Status: Final

	BS s837 Root Protection Area (radius = 1xstem diameter)
	Root Protection Area needing amendment due to site conditions, e.g. presence of existing road or building.
	Root Protection Area having been amended to account for site conditions
T1 = Tree No 1 G2 = Group No 2 H3 = Hedge No 3	

 Photo 1

 Photo 2

 Photo 3

 Photo 4

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)	Square (m)
T1	Pear	7.5	6.0	113
T2	Pear	11	6.2	122
G3	Elder & Holly	5	1.2	5
T4	Willow-leaved Pear	2.5	1.0	3
T5	Horse Chestnut	15	10.2	327
T6	Holly	9	3.7	43
T7	Holly	12	3.8	46
T8	Horse Chestnut	11	2.9	26
T9	Cherry	11	3.2	33
T10	Sycamore	12	2.6	22
G11	Silver Birch	9	1.6	8
G12	Mixed	9	1.8	10
T13	Lawson Cypress	10	3.6	41
T14	Lime	8.5	5.2	84
T15	Lime	8.5	4.9	76
T16	Lime	8.5	4.9	76
T17	Lime	8.5	5.0	80

Photographs

Photo 1.

Photo 2.

Photo 3.

Photo 4.

Photo 5.

Photo 6.

Photo 7.

Photo 8.

Photo 9.

Photo 10.

Existing Layout (Black)

Proposed Layout (Red)

RPA of T7, T15, T16 and T17 affected by new permeable paving on grass - approx 6.8%, 3.6%, 5.3% and less than 1%

In order to ensure no impact on roots, or the rooting environment, the following mitigation (NO-DIG METHOD) is proposed:

- Excavation shall be limited to the removal of existing vegetation or of topsoil which is too rich in organic matter to be suitable as a sub-grade. This also applies to edgings used to retain the new surface.
- Such excavation shall be undertaken using hand tools.
- A reduced-fines 40mm angular sub-base (e.g. MOT type 3) shall be used for any build-up of ground levels.
- The finished surface shall be highly permeable (e.g. gravel/paviments).

To ensure minimum impact on trees where new gate posts are to be installed, the following mitigation is proposed:

- Post holes should be narrow as possible.
- Excavation for the post holes should be undertaken using hand tools.
- Roots in excess of 25mm diameter should be retained wherever possible.

To ensure minimal impact on trees where fences are to be replaced/installed within RPAs, the following mitigation is recommended:

- Post holes should be narrow as possible and should not exceed 300mm x 300mm.
- Excavation for the post holes should be undertaken using hand tools.
- Roots in excess of 25mm diameter should be retained, and the post hole relocated.
- A flexible fencing system that permits panel widths of various sizes will therefore be necessary.

RPA of T2, T5, T6, T7, T14 and T15 affected by Foundations - approx 10.9%, 23.7%, 15.9%, 16.7%, 10.9% and 6.0%

To ensure minimal impact on roots and the rooting environment, the following mitigation MINIMUM-DIG METHOD) is proposed:

- RC Raft foundation to be entirely above ground (turf or loose topsoil may be removed to a maximum depth of 100mm so long as no roots over 25mm are encountered).
- Excavation to be supervised by the project arborist.
- RC Raft installed. This may be supported by narrow diameter piles (max 300mm diameter).
- Trial pits excavated to 600mm depth to determine pile locations.
- All roots over 25mm diameter to be retained intact and pile relocated.
- A ventilated void of at least 200mm should be incorporated between the ground surface and the underside of the slab.
- Rainwater to be collected and discharged in a controlled manner into the ventilated void.
- A layer of pea gravel (e.g. 150mm thick) may be used to control / disperse the rainwater.

Depth of excavation / finished levels in these area to be decided at a later date based on tree root investigations.

Trial excavations to be undertaken to prevent roots >25mm diameter being severed.

Once finished levels have been determined, the above Minimum-Dig methodology is to be implemented.

Proposed terrace to be cantilevered to avoid impacting on trees

Canopy of T14 and T15 to be pruned back to the boundary.

This pruning shall ensure adequate clearance to avoid accidental breakage of branches during the construction phase

Canopy of T5 and T7 to be crown lifted to a height of 5.5m where they overhang the proposed building.

This pruning shall ensure adequate clearance to avoid accidental breakage of branches during the construction phase

Canopy of T2 and T6 to be pruned back to create a clearance distance of 1.5 from the proposed building.

This pruning shall ensure adequate clearance to avoid accidental breakage of branches during the construction phase

Proposed drainage locations

Mixed shrubs including hazel, viburnum & elder

Semi-mature holly
Ht: 6m
Dia: 9cm
Spr: 6m

Semi-mature sycamore
Ht: 8m
Dia: 10cm
Spr: 6m

Young apple
Ht: 4m
Dia: 10cm

Mixed shrubs

Apple
Ht: 5m
Dia: 25cm
Spr: 6m

Apple
Ht: 3.5m
Dia: 20cm
Spr: 6m

T7

T6

T5

T17

T16

T15

T14

G11

Impact Assessment Plan

Status: Final - for submission

Subsequent to the tree survey a S211 notice of intent was submitted to the Local Authority for the removal of G3, T4 T8, T9, T10, G12 and T13. These trees have since been removed.

Drawing No:	CCL 11519C / IAP Rev: 2
Title:	Impact Assessment Plan
Site:	47 Mount View Road N4 45S
Scale:	0 5 10m 1:2300 Paper Size: A1



Tree Retention Categories	
Stems & canopies shown	
	Category A tree
	Category B tree
	Category C tree
	Category U 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.
	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
	Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
	Trees unsuitable for retention due to their very poor condition.



	BS 5837 Root Protection Area (radius = 1xstem diameter)
	Root Protection Area needing amendment due to site conditions, e.g. presence of existing road or building.
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Proposed pruning

MN = Measured North:
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