BS 5837 Arboricultural Report

& Impact Assessment



at

Teil House 10D Kidderpore Avenue London NW3 7SU

> Dated 4th September 2020



Branching out through England and Wales

Image: PDF readers select page-width for detail & page-view for scrollingArboricultural Report to BS 5837: 2012 for:Mr Babajide JadesimiCrown Ref:10332Site:Teil House, 10D Kidderpore AvenueAuthor:Ivan ButtonDate:4th September 2020

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Crown Ref: 10332 Site: Author: Ivan Button Date:

Mr Babajide Jadesimi Teil House, 10D Kidderpore Avenue 4th September 2020

1. Introduction

1.1. Instruction

1.1.1.

We are instructed by Mr Babajide Jadesimi of No 44 Abbey Garden to:

- Undertake an Arboricultural Survey at Teil House 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 of the trees are growing within a conservation area or are protected by a tree preservation order.
- Provide guidance for architects or developers to enable them to understand and design within the existing tree constraints.
- 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 once the design has been finalised.
- Produce a Tree Protection Plan and Arboricultural Method Statement specifying how the retained trees shall be protected from inadvertent damage by demolition or construction activity.

1.2. Scope and Purpose of the Report

- 1.2.1. This report is designed to accompany a planning application for development proposals at the above site. Its purpose is to assist and inform the planning process. It is produced according to the guidance and recommendations within BS 5837: 2012 Trees in Relation to Design, Demolition and Construction.
- 1.2.2. The accompanying Arboricultural Method Statement specifies the principles to be adopted during construction and demolition that will minimise any impacts on trees. However, specific construction activities proposed within Root Protection Areas may need to be agreed in more detail if requested by the local authority at the reserved matters stage (for an outline planning applications) or via planning conditions.

1.3. References

1.3.1. We have liaised with our client to attain an adequate understanding of the project to enable us to carry out an accurate assessment of the proposals.

1.4. Survey Details and Findings

- 1.4.1.A visual ground level inspection of all trees was undertaken on the 6th June 2019 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 findings of the survey are presented in The Tree Data Schedule which is provided as a separate document as well as being appended to the end of this document within Appendix 6. The vegetation is further discussed in Section 3.
- 1.4.3. The Schedule includes scaled tree images based on measurements recorded for stem diameter, crown spread, crown height and overall height. Their purpose is to indicate, at a glance, the relative dimensions of each tree.

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A definition of the Retention Categories can be found in Appendix 1. All other terms used 1.4.4. within the Tree Data Schedule are defined and explained in Appendix 2. A more detailed description of the survey method is detailed in Appendix 3.

Drawings 1.5.

- The tree locations shown on the accompanying plans which are reproduced in Appendix 1.5.1. 6 have been plotted according to measurements taken on site.
- The Tree Constraints Plan shows the existing layout. For each tree the stem location is 1.5.2. indicated and scaled according to its diameter, the canopy is indicated according to measurements taken along the four cardinal points of the compass. Root protection areas (RPAs) are indicated which are calculated according to the guidelines within BS 5837 (2012).
- The Impact Assessment Plan indicates the tree constraints with the proposals overlaid. 1.5.3. Where applicable, this plan shows where works are proposed in Root Protection Areas and which trees are to be pruned or removed. This plan accompanies the Impact Assessment which is to be found in Section 4.
- The Tree Protection Plan shows the protection measures that are to be installed during 1.5.4. the construction phase. This plan forms part of the accompanying Arboricultural Method Statement which is also appended to this report (see Appendix 6).

Author 1.6.

This report was compiled by Ivan Button N.C.H. (Arb), FDSc (Arb), BSc (Hons), P.G.C.E., 1.6.1. M. Arbor. A. Details of the author's experience that qualify him to produce such a report are detailed in Appendix 4.

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2. Site Overview

2.1. Brief Description

- 2.1.1. Teil House is a detached, three-storey residential property located within the newly developed Kings College grounds.
- 2.1.2. The property is set back from Kidderpore Avenue by approximately 50 m. The ground slopes down from Kidderpore Avenue and then slopes steeply up again to the rear of the property. There is a level patio area to the rear of the building before the sloping embankment starts to slope steeply upwards away from the property.
- 2.1.3. Within the sloping embankment grows a large ash tree (T6) as well as two smaller sycamores (T4 and T5) and a small suppressed lime (T8).
- 2.1.4. In adjoining rear gardens grow a large ash (T3) and a small sycamore (T7).
- 2.1.5. Trees to the front and side of the property were also included in our survey. However, no development works are proposed there.

2.2. Coordinates

2.2.1. The site coordinates are $51^{\circ}33'29.92''N$ $0^{\circ}11'37.48''W$ and the altitude is approximately 99m above sea level¹.

2.3. Survey Extent

2.3.1. The area indicated below² shows the extent of the survey.



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

² Image taken from Google Earth and may not be current

 Image: Constraint of the second se

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. The protection status of the trees is also reported in this section.

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, T4, T5, T6, T7, T8

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. Tree Protection Status – Site Specific

- 3.3.1. On 6th June 2019, we were informed, by Rav Curry of London Borough of Camden that:
 - The site is within the Frognal Conservation Area.
 - Records show a protected Plane tree and a protected Yew tree at the front of the property. However the trees were protected in 1958 and may have long-since been removed. Our survey did not include a pane tree of a yew.

3.4. Tree Protection – General Notes

- 3.4.1. Before undertaking works to trees protected by a tree preservation order, consent needs to be obtained from the local authority which will provide application forms and advice to potential applicants. The removal of dead wood is exempt.
- 3.4.2. Where the works are proposed for reasons of safety or ill health, a report from a suitably qualified arborist will usually be required. Trees that are dead or imminently dangerous are technically exempt from protection, as are dead branches. If the tree work is not urgently necessary however, at least five working days notice of intention should be given to the local authority. In any case in would be prudent to take photographs before

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undertaking works without prior consent being granted. Unauthorised works to protected trees may result in a criminal prosecution and a large fine (unlimited).

- Where trees are located in a conservation area (but not protected by a TPO), works are 3.4.3. not permitted without first giving the local authority 6 weeks' notice of intention. 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 6 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.
- Where planning permission is granted and tree works have been approved as part of the 3.4.4. planning consent, no further application is required in respect of protected trees and no further notice is required in respect of trees within a conservation area.

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for: Mr Babajide Jadesimi
Site: Teil House, 10D Kidderpore Avenue
Date: 4th September 2020

4. Arboricultural Impact Assessment

4.1. Overview

Ivan Button

4.1.1.

Author:

It is proposed to extend the existing building to the rear and to widen the patio area as shown on the plans in Appendix 6. 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	None
Tree Removal: Retention Category U	None
Tree Pruning	Τ2
RPA: Extension Foundations	T2, T3 and T6
RPA: New Hard Surface	None
RPA: Underground Services	None
RPA: Soil Compaction	Trees adjacent the construction area (preventable by installing tree protection measures)

- 4.1.1. Other potentially damaging activities often associated with construction sites include demolition or the careless use of plant machinery, hazardous materials, or fires. All of the above potential impacts are considered in detail throughout this section.
- 4.1.2. The accompanying Arboricultural Method Statement (duplicated in Appendix 6) specifies the measures proposed to minimise all possible potential risks of damage to the retained trees.

4.2. Tree Removal

4.2.1. All trees to be removed are indicated on the Tree Removal Plan and are listed below:

- **Retention Category A:** It is proposed to retain all Retention Category A trees.
 - **Retention Category B:** It is proposed to retain all Retention Category B trees.
 - **Retention Category C:** It is proposed to retain all Retention Category C trees.
- Retention Category U: Our survey did not identify any Retention Category U trees.

4.3. Impact on Tree Canopies

- 4.3.1. It is proposed to prune back the lower branches of T2 that are growing towards the proposal in order to create a clearance distance of 2.5m. Only a single storey extension is proposed, with a height of 3m, and so only the removal of relatively small secondary branches will be required. The pruning works should be undertaken sympathetically (working to BS 3998: 2010 guidelines). These works are specified within the Tree Works Schedule in Section 5.
- 4.3.2. All other tree canopies shall be unaffected by the proposals.

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4.4. Impact on Tree Roots

4.4.1. **Foundations:**

- 4.4.2. The foundations for the new extension and excavation for the sunken garden will extend into the theoretical Root Protection Area of T2, T3 and T6. However, less than 2% of the RPA of T2 and T6 shall be affected and circa 9% of the RPA of T3 (area shaded yellow on the Impact Assessment Plan). Consequently, the impact is considered to be relatively minor.
- 4.4.3. However, in order to minimise root severance, it is proposed to excavate the foundations within the Root Protection Area of T2, T3 and T6using hand tools only to a depth of 0.6m. This shall be done under the supervision of the project arborist. Deeper excavation may be undertaken using a mechanical excavator so long as it operates from a suitable load spreading surface or from outside all Root Protection Areas. Excavation for the foundations shall not extend more than 200mm beyond the build line in the direction of the trees. This will keep the extent of excavation towards the trees down to the minimum amount possible. Any roots growing close to the edge of the excavation should be kept intact or pruned by the project arborist. These measures shall ensure that the impact of such a small incursion will be minimal.

4.4.4. New Surfaces:

4.4.5. No new hard surfacing is proposed to the rear of the proposed retaining wall.

4.4.6. Underground Services:

4.4.7. No underground services are to be installed through any Root Protection Areas.

4.4.8. Changes in Ground Levels:

4.4.9. No further changes to ground levels are proposed over Root Protection Areas.

4.4.10. Soil Compaction:

- 4.4.11. 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.
- 4.4.12. Healthy soils contain about 25% air space between solid particles. Increased loading of the soils 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.

4.4.13. 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 as recommended within an Arboricultural Method Statement.

4.5. Demolition Activities

4.5.1. We recommend that hand tools are used under the supervision of an appointed arborist when the existing retaining wall is removed.

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4.6. Hazardous Materials

All hazardous materials (including cement and petrochemical products) will need to be 4.6.1. 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 and cement run-off are contained outside of all Root Protection Areas.

Cabins and Site Facilities 4.7.

4.7.1. 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.

4.8. **Boundary Treatments**

We are not aware of any changes are proposed to the existing boundary features that 4.8.1. might impact on trees.

Impact of Retained Trees on the Development 4.9.

Site:

Date:

- 4.9.1. 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.
- The gutters will need occasional maintenance to avoid blockage. This will be relatively 4.9.2. easy to manage as the proposal is a single storey building. The dwelling would benefit from the installation of controlled overflow guttering to minimise the impact from leaves.
- Because the proposed extension will be located to the north of the existing building, it 4.9.3. shall largely be shaded by the building itself and the neighbouring building. The larger trees to the rear are located to the north of the extension so shall not cast any shade in its direction.

Summary 4.10.

- The proposal seeks to retain all of the vegetation surveyed. 4.10.1.
- One tree (T2) requires minimal pruning to create an adequate clearance from the 4.10.2. proposal. No significant hard surfacing is proposed in RPAs.
- Some excavation to enable the foundations to be installed and excavation for the 4.10.3. sunken garden will be unavoidable. In order to minimise the impact on the roots of T2, T3 and T6 we recommend that soils beyond the footprint of the proposal are left undisturbed as much as possible. This may be achieved by utilising sheet piling or pinning in order to limit the disturbance to 200mm beyond the footprint.
- A suitable load spreading surface shall need to be maintained throughout the Restricted 4.10.4. Activity Zones A.
- Tree protection measures are specified throughout the accompanying Arboricultural 4.10.5. Method Statement that will ensure no negative impact on retained trees due to construction activity.

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Author: Ivan Button

Site: Teil House, 10D Kidderpore Avenue Date: 4th September 2020

5. Tree Works Schedule

5.1. Tree Works Specification

5.1.1. The following table specifies the tree works which will be required prior to the commencement of construction activity:

Tree Reference	Action Required	Notes
T2	Prune lowest branches to create a clearance distance of 2.5m from the proposal.	Branches to be pruned back to a secondary branch junction or the branch collar wherever possible. Pruning to be kept to a minimum to achieve the desired clearance of 2.5m.

5.1.2. **Pruning Standards:** Sympathetic pruning shall be carried out by a competent arborist working to BS 3998 (2010) guidelines. Lopping of branches is to be avoided. Instead a system of 'drop crotching' or 'reduction via thinning' is to be used to achieve the desired clearance without spoiling the appearance, or form, of the tree. All pruning cuts shall be made close to the branch collar or a secondary growth point. Cuts to be made with sharp, clean tools. No wound sealants to be used.

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6. Photographs

Photo 1.



Refer to the Tree Constraints Plan for photo locations







Photo 5.







Photo 6.



Crown Consultants Ltd trading as Crown Tree Consultancy, Crown House, Newton Terrace, Halifax, W Yorks, HX6 3PS. Tel: 01422 316660. Email: ivan@crowntrees.co.uk Website: **www.crowntrees.co.uk** Page 12 of 23 PDF readers select page-width for detail & page-view for scrollingArboricultural Report to BS 5837: 2012 for:Mr Babajide JadesimiCrown Ref:10332Site:Teil House, 10D Kidderpore AvenueAuthor:Ivan ButtonDate:4th September 2020

Photo 7.



Photo 9.



Photo 11.



Photo 8.



Photo 10.



Photo 12.



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Ivan Button

Author:

Date: 4th September 2020

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.

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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. E F PDF readers select page-width for detail & page-view for scrolling Arboricultural Report to BS 5837: 2012 for: Mr Babajide Jadesimi Site:

Crown Ref: 10332 Author: Ivan Button

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Appendix 2: Explanation of Tree Data & Glossary

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

General Observations A2.1

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 Semi-Mature Early-Mature Mature Veteran Over Mature	Usually less than 10 years old. Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy). Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy). Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy). A level of maturity whereby significant management may be required in order to keep the tree in a safe condition. 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 Very High High Moderate Low	To be carried out as soon as possible. To be carried out within 1 month. To be carried out within 3 months. To be carried out within 1 year. 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 Moderate Low Very Low	Having above average vigour. Having average vigour. Having below average vigour. Tree is struggling to survive and may be dving
Physiological Condition:	
Good Fair Poor Very Poor	Healthy and with no symptoms of significant disease. Disease present or vigour is impaired. Significant disease present or vigour is extremely low. Tree is dying.
Structural Condition:	
Good Fair Poor Very Poor	Having no significant structural defects. Some defects observed though no high priority works are required. Significant defects found. Tree requires monitoring or remedial works. Major defects which will usually require significant remedial works or tree removal.
Amenity Value:	
Very High High Moderate Low	Exceptional specimen, observable by a large number of people. Attractive specimen, observable by a significant number of people. One of the above factors is not applicable. 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 ounds, deadwood etc are all evaluated as follo

IVILI	villes, woulds, deadwood etcale 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				
		ability to deal with decay etc.			
	Minor	A defect that is not likely to compromise the tree's structural integrity.			

Image: The point of the page width for detail & page-view for scrollingArboricultural Report to BS 5837: 2012 for:Mr Babajide Jadesimi

Crown Ref: 10332 Author: Ivan Button

Site: Teil House, 10D Kidderpore Avenue Date: 4th September 2020

General Glossary

Adaptive growth	In tree biomechanics, the process whereby wood formation is influenced both in quantity and quality by the action of gravitational forces and mechanical stresses on the cambial zone.
Aerobic	Conditions in which oxygen is freely available, or to biomechanical processes that depend on the presence of oxygen.
Anaerobic	A condition marked by the absence of oxygen; Generally such areas are unsuitable for normal life and growth of plant tissues. These sites tend to be populated by bacteria capable of surviving low oxygen conditions often associated with Slime Flux.
Arboriculture	The culture and management of trees as groups and individuals primarily for amenity and other non-forestry purposes.
Arborist	A person possessing the technical competence through experience and related training to provide management of trees or other woody plants in a landscape setting. Generally involved with the development or management of trees for visual amenity or land management rather than the growth of trees for product or profit.
Barrier zone	A layer within an annual increment of wood which contains abnormal xylem cells, laid down by the cambium in response to wounding or other trauma.
Body language	In trees, the outward display of growth responses and or deformation in response to mechanical stress.
Bole	Or Trunk, the main stem of a tree below its first major branch.
Bracket	A type of fruiting body produced by various fungal species, plate like to hoof like in shape and often a one sided attachment to the wood or bark.
Branch bark ridge	A ridged area located at the union of a branch to a trunk or stem.
Branch Collar	lateral branch. As a branch decreases in vigour or begins to die, the collar usually becomes more pronounced and completely encircles the branch.
Brown Rot	Form of decay where cellulose is degraded, while lignin is only modified.
Buttress Root	Roots that emerge from the base of the tree stem, normally large and well developed that rapidly reduce in diameter to create the Root Plate this offers structural support for the tree. Buttress roots divide rapidly forming the connection between the stem and the transport roots.
Cabling Bracing	Installing cables within the crown of a tree to prevent collapse.
Callus	Undifferentiated cells often formed at the edges of recent injuries. This tissue quickly becomes differentiated, forming cells of the type characteristic of that position on the tree (e.g. forming wood, bark, roots, etc.) see wound response tissue.
Cambium	A thin layer of actively growing and dividing cells, located between the xylem (sapwood) and bark of a plant; the part responsible for radial growth of a tree stem or branch.
Canopy	The topmost layer of twigs and foliage in a woodland, tree or group of trees.
Canker	A localised area of dead bark and cambium on a stem or branch, caused by fungal or bacterial organisms, characterised by woundwood development on the perioder. This may be annual or personal
Cavity	An open and exceeding and of wood, where the bark is mission and internal wood has been decayed and dissolved.
Chlorotic	Also Chlorosis. A condition of the plant marked by yellowing of normally green foliage, often indicating nutrient deficiency or plant dysfunction.
Clinometer	Devices that measures vertical angles, and provides direct height measurements of objects by triangulation.
Co-dominant	Are forked branches or trunks of nearly the same size in diameter and lacking a normal branch union.
stems/trunk	
Compacted solls	Solis in which the air-space (oxygen space) has been reduced or eliminated, reducing water inflitration and percolation, reducing root presence and inhibiting new root development.
on	organisms.
Compression Failure	Localized buckling of fibres and other longitudinal elements produced by compression of wood along the grain; compression failures sometimes develop in standing trees.
Compression	The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees using special
Strength	drilling devices
Conservation Area	Abiornial wood formed on the lower side of branches and curved stells, with physical properties different from normal wood. In Great Britain, designated areas of architectural or historical interest, in which there are special procedures for planning applications. Additionally tree works cannot generally be undertaken without prior notification (Currently 6 weeks) to the relevant local planning authority. See also Tree Preservation Orders.
Core Sample	A sample of wood extracted from a trunk or branch, using an increment borer tool. The resulting core can be analysed for characteristics of growth wood strength structure decay, and for species identification
Crotch	The union of two or more branches; the auxiliary zone between branches.
Crown	The upper canopy of a tree, including upper trunk, scaffold branches, secondary branches, stems and leaves.
Crown lifting /	Crown Lift The removal of the lowest branches, usually to a given height. It allows more residual light and greater clearance
raising	underneath for vehicles etc.
Crown reduction	The reduction of a tree's height or spread while preserving its natural shape.
Crown thinning	The removal of some of the density of a tree's crown, usually 5-25% allowing more light through its canopy and reducing wind resistance.
Deadwood (noun)	Deadwood is often present within the crown or on the stems of trees. It may be an indication of ill health, however, it may also indicate natural growth processes. If a target is present beneath the tree, deadwood may fall and cause injury or damage and should be removed, otherwise deadwood can remain intact for conservation purposes (insects, fungi, birds etc.).
Deadwood (verb)	The removal of dead branches from a tree's canopy, usually of a specified size (in diameter).
Decay	Progressive deterioration of organic tissues, usually caused by fungal or bacterial organisms, resulting in loss of cell structure, strength, and function. In wood, the loss of structural strength.
Decay Detection	The assessment of decay within a tree has been traditionally difficult, but recent advances have made it possible to achieve accurate representations of the internal section of a tree in both 2D and 3D, removing doubt over the condition of the tree and allowing accurate management decisions.
Defect	In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.
Defoliation	The losing of plants foliage.
Dieback	Progressive death of buds, twigs and branch tissues, on individual limbs resulting in Deadwood, or throughout the canopy,

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	extreme cases can result in Stag Heading.
Dripline	A projected line on the ground that corresponds to the spread of branches in the canopy; the farthest spread of branches.
Epicormic shoots	Fast growing, weakly attached shoots/branches that often grow as a response to stress factors upon a tree or branch removal.
Failure	In connection with tree hazards, a partial or total fracture within the wood tissue or loss of cohesion between roots and soil. (In
	total failure affected parts will snap or tear away completely, Partial failure there is a crack or deformation, which results in an
	altered distribution of mechanical stress.
Feeder Roots	Fine fibrous Water and nutrient absorbing roots located in the outer root system.
Flush-Cut	In trees and shrubs, a pruning cut close to the parent stem, which removes the branch bark ridge.
Foliage	The live leaves or needles of the tree; the plant part primarily responsible for photosynthesis.
Formative pruning	The trimming of a tree to remove weaknesses and irregularities which may lead to problems. The formative pruning operation
	is aimed at reducing the
	potential for future weaknesses or problems within the tree's crown.
Gall	An abnormal, disorganized growth of plant tissues, caused by parasitic or infectious organisms such as insects, fungi, bacteria.
	or viruses.
Girdling	In woody plants any form of damage that destroys the bark and / or the Cambium all the way around the stem branch or root
dirdining	normally resulting in death of the damaged section
Girdling Root	In woody plants, a root that grows arross the buttress or across other roots eventually causing constriction of the radial
	or with
Growth Increment	. Browning the provide a start of the start
Growth increment	received for the second s
	Cross-sections of wood.
Hazaru Dealli	An upwardity curved pranch in which strong internal stresses may occur without the compensatory formation of extra wood
	(longitudina spiriting may occur in some cases).
Heartwood	inner non functioning tissues that provide structural support to trunk.
Heave	In relation to shrinkable clay soils, expansion due to rewetting of a volume of soil previously subjected to the removal or water
	by plant / trees following felling or root severance. Also in relation to root growth, the lifting of pavements and other structures
	by radial expansion. Also in relation to tree stability, the lifting of one side of a wind rocked root plate.
Herbicide	A chemical compound that causes the death of a plant.
Included Bark	Bark that becomes embedded in a crotch between branch and trunk or between co-dominant stems, usually found in narrow or
	tight crotches, and causes a weak structure.
Increment Borer	A tool that cuts and extracts a narrow cylinder of wood from a tree for analysis of the wood tissue and growth increments.
Leader	The primary terminal shoot or trunk of a tree.
Limb	A large lateral branch growing from the main trunk or from another larger branch.
Lion Tailing	Often the result of poor pruning practices; the main leader or branches are largely devoid of side branches, growth is restricted
-	to the end of branches and is likely to suffer damage through end loading.
Lopping	In trees, a general term that related to the removal of branches from a tree.
Monitoring	Due to the relative life span of trees in relation to our own, long-term monitoring provides a valuable insight to the health of
0	trees, identifying decline and or stabilisation and or improvement.
Mulch	A material laid over the root system of a tree to help conserve moisture within the soil. Additionally it may help control the
	development of weeds close to the tree.
Mycelium	A mass of growing filaments (hyphae) formed by fungi.
Mycorrhizae	The symbiotic relationship between roots and certain beneficial fungi. Mycorrhizae are the combined root / fungal growth
Occluding tissue	The denoral term of wood, cambium and bark that device around the site of a wound on a woody plant
Dethoron	A microstration that caucal disease within another creation
Paulogen	A find our gains in that causes useases within another or gains in.
Phioem	The principle conductive tissue that the products of Photosynthesis are transported around the plant
Photosynthesis	The process were light energy is used to create energy (Carbonydrate) for use within the plant.
Pollard	A term for a pollarded tree.
Pollard head	The swollen section of branch / stem that forms behind the pollarding cut.
Pollarding	The complete or partial removal of the crown of a young tree so as to encourage the development of numerous branches either
	for amenity or historically as fodder, repeated management is required cyclically to maintain the feature
Prune or Pruning	Selective removal of woody plant parts of any size, using saws, Loppers, Secateurs, or other pruning tools.
Reaction Wood	Wood with distinctive anatomical characteristics, formed in parts of leaning or crooked stems and in branches to provide
	additional strength / support. In hardwoods, tension wood usually forms. In conifers, compression wood is usually found.
Reaction Zone	A zone normally darker than surrounding wood that denoted the boundary often a defensive one between functional sapwood
	and dysfunctional or decaying wood.
Re-grading	The raising or lowering of a soil profile from its original grade.
Remedial pruning	The removal of old stubs, deadwood, epicormic growth, rubbing or crossing branches and other unwanted items from the tree's
	crown.
Resistograph	Invasive decay detection technique whereby the resistance offered by the timber to a spinning probe is measured and plotted.
Rib	In tree body language, a long narrow, axial protuberance which often over lays a crack.
Ring Barking	Artificial Girdling of the stem, to result in the death of a tree. May be used in babitat creation were the retention of dead
	standing trees is required
Rod Bracing /	Traditionally this has relied upon the Installation of steel rods or holts through the stems or limbs to reduce twisting or
Rolting	relation in the installation of such features does require level interpretation
Poot Barriere	Spinking of the wood international of social reducts does require regaringer predetation.
ROOT Darriers	both buildings and services can benefit from the instanation of root barriers to protect a son volume from the ingress of roots.
Root Collar	The basal area of the tree; transition zone from trunk to root. Also sometimes called trunk flare.
Root Plate	The primary support area for the tree; an area of the root system close to the base that structurally anchors the tree to the soil.
Root Rot	Either a general term for decay within the wood of the lower stem / buttress roots, or a disease in which the fine roots are
	killed.
Root System	The portion of the tree containing the root organs, including buttress roots, transport roots, and fine absorbing roots; all
	underground parts of the tree.
Root Zone	The area and volume of soil around the tree in which roots are expected. May extend to three or more times the branch spread
	of the tree, or several times the height of the tree.
Sail Area	That area or the tree subjected to wind load.

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Sapwood	Xylem wood tissue, usually light in colour, representing the outer growth rings of the wood. Usually living, reactive wood tissue, in a healthy tree. See heartwood
Scaffold limbs /	The branches that from the main network framework of the crown of a tree.
Scattolu Branches	- A decline in growth and vigour due to ago or strong factors
Shrub	A weak plat that branches at or close to the ground level and so does not have a single stem
Slime Elux	A woody plat that bilanches at or close to the ground level and so dues not have a single stells.
Simeriux	malong to a total control in the spreading of bacteria of their products from a source of infection, characterized by malodorous gases, or salt deposits upon the bark. If these products enter the sap stream, localised vessel necrosis can result, usually associated with anaerobic conditions.
Soft Rot	A kind of wood decay, were a fungi degrades cellulose within the cell wall, without causing overall degradation.
Soil Compaction	The compression of soil, causing a reduction of pore space and an increase in the density of the soil. Air is squeezed out and nutrients become locked. Tree roots cannot grow in compacted soil.
Sonic Decay	Non invasive method whereby sound waves are passed through the tree and the speed is measured. Slow speeds indicate decay
Detection	 and a tomography picture representing the inner stem is produced.
Stag Heading	$_$ In a tree, a state of dieback were dead branches protrude beyond the current living crown.
Stress	_ In plant physiology, conditions were one or more physiological functions Are not working within normal parameters.
Stump Grinding	_ The removal of a tree stump using a specialist grinding machine.
Subsidence	$_$ In relation to vegetation, the removal of water by plant growth resulting in localised shrinkage in the soil volume.
Sucker	_ Same as sprout.
Suppressed	$_$ Trees which are dominated by surrounding vegetation and whose crown development is restricted from above.
Systemic	Affecting the whole plant or organism. A systemic compound is carried throughout the entire plant to all parts through the vascular system.
Target	$_$ Any person or object within reach of a falling tree or part of a tree that may be injured or damaged.
Target Pruning	$_$ The pruning of a branch were the wound affects only branch material, often result in a target shaped wound.
Tension Wood	Reaction wood typically formed on the upper side of limbs or curved stems; characterized by lack of cell wall lignifications (higher ratios of cellulose to lignin).
Tight Union / Tight Crotch	Also, narrow crotch. A crotch with a narrow angle between branches, often having included bark.
Tomography	The comparison of sound or stress waves through the tree allows the creation of a 2D or 3D representation of the internal structure of a stem or branch section and highlights areas of damage. Virtually non-injurious.
Topography	The configuration of surface features, including the vertical and horizontal relationships of the ground and other features.
Topping	Cutting large limbs back severely, without regard to form or habit of the tree. Cuts are usually made between lateral branch nodes. This practice is extremely injurious to trees, and promotes decay and structural weakness within the crown.
Tree	A woody plant that typically has a single stem, at maturity has a height of a least 4 metres and a stem diameter at breast height of at least 75mm.
Tree Preservation	In Great Britain, an order made by the local planning authority, were consent must be gained before undertaking all but exempt
Order	_ works to a tree.
Trunk Flare	$_$ The basal area of the trunk that flares or widens, and merges with the main roots. See root collar
Veteran Tree	Veteran trees are often found in large parks or estates and commonly affected by extensive decay or have been subject to extensive works. These trees are retained for historical importance and often pose greater risk than normal, which is generally justified. They need careful management and often propping or bracing to support them, some require fencing to limit access.
Vigour	Active, healthy growth of plants: ability to respond to stress factors.
Visual Tree	An assessment of the mechanical condition of trees based upon their 'body language'. Trees are dynamic and respond to faults /
Assessment (VTA)	$_$ decay / environmental factors in various ways, these responses can be indicative of structural integrity.
Wetwood	An infection caused by bacteria living inside the plant tissues. The bacteria ferment the plant fluids, resulting in death of nearby cells, and often causing exudations of fluid from the bark, often referred to as a Slime Flux.
White Rot	_ A kind if wood decay were a fungi attacks the lignin within the wood matrix
Wind loading	_ Forces placed upon tree canopy, branches, trunk and roots of a tree under windy conditions.
Wind Throw	_ The failure of a tree due to wind loading.
Witches Broom	_ A deformed or unusual growth of twigs from adventitious buds, caused by insects, disease, or dieback of twigs and buds.
Wood	_ Secondary Xylem; the main structural support and water conducting tissue of trees and shrubs.
Wound Response	Also Occluding Tissue, Wound Wood or Callus. Differentiated wood tissue that grows around the margins of a wound or injury.
Tissue	
Wound Wood	Wood with atypical features, formed in the vicinity of a wound and a term to describe the occluding tissues around a wound
Xylem	Plant tissues with special function of translocation of water and dissolved nutrients.

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Appendix 3: 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.

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Site: Teil House, 10D Kidderpore Avenue 4th September 2020 Date:

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.

Between 1983 and 1995 Ivan worked primarily within the construction industry and received training in a broad range of practical building skills and general construction principles. During this time he obtained a BSc (Hons) at Leeds University followed by a P.G.C.E at The University of Wales.

In 1995, Ivan obtained a NCH (Arboriculture) at the University of Lincoln and became a member of the Arboricultural Association. He then worked for an Arboricultural Consultancy for one year before establishing a tree surgery and landscaping business in 1998. In 2005 Ivan commenced full time employment with a leading Arboricultural Association approved consultancy and soon adopted a senior role responsible for five consultants.

He obtained a FDSc in arboriculture at the University of Lancashire, which he passed with distinction and is now a Director and Principal Consultant of Crown Consultants Ltd. He is accredited as a LANTRA Professional Tree Inspector. A qualification produced in association with the Arboricultural Association and generally recognised as appropriate for all levels of tree inspection.

He is a member of the Consulting Arborist Society and is listed within their areas of professional expertise for QTRA and as an expert witness.

Ivan is a professional member of the Arboricultural Association and the International Society of Arboriculture and is a licensed Quantified Tree Risk Assessment user.

Ivan has undertaken professional expert witness training and has been registered as a Sweet and Maxwell Checked Expert Witness since 2008.

Throughout 2009 acted as the principal Tree Officer for Barnsley Metropolitan Borough Council.

Ivan has produced several hundred Arboricultural Reports for the purposes of Development, Safety, Management, Mortgage, Subsidence, Mitigation and Litigation.

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 and is a professional member of the Arboricultural Association. 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.

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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: 2007. 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 www.trees.org.uk www.rfs.co.uk www.treehelp.Info www.woodland-trust.org.uk www.treecouncil.org.uk

Crown Consultants site containing useful information Arboricultural Association Royal Forestry Society of England, Wales and N. Ireland The Tree Advice Trust The Woodland Trust The Tree Council Image: PDF readers select page-width for detail & page-view for scrollingArboricultural Report to BS 5837: 2012 for:Mr Babajide JadesimiCrown Ref:10332Site:Teil House, 10D Kidderpore AvenueAuthor:Ivan ButtonDate:4th September 2020

Appendix 6: Tree Data Schedule and Site Plan(s)

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.

ence oup edge		t (m)	Ht (m)	ir (cm)	Crown Spread (m)	Scaled Tree Diagram (m)					Vigour	Amenity Value	
lefer 5 = Gr 4 = He	Age & Species	leight	- Invo	mete	N W E			Notes	development	proposals)	Physiological Condition	Life Expectancy (yrs)	
E O T		Ξ	÷	Dia	S	9 0 9			Priority	Inspect Freq (yrs)	Structural Condition	Retention Category	
	Semi-Mature					25					High	Moderate	
T1	Silver Lime	14	2	34	4 4	-	Form: History: Defects:	Single stemmed and vertical with a well-formed crown. No evidence of significant pruning. No significant defects observed.	No action i	equired.	Good	40+	
	Tilia petiolaris.				4					3	Good	В	
	Semi-Mature					25	Destriction	Charles and the descent should			High	Moderate	
T2	Ash	11	2.5	25	3 4 3	-	Form: History:	Situated on third party land. Single stemmed with a slight lean and a balanced crown. No evidence of significant pruning.	No action I	equired.	Fair	20-40	
	Fraxinus excelsior.				5		Other:	Limited inspection, dimensions estimated.	n/a	3	Fair	В	
	Mature					²⁵					Moderate	High	
Т3	Ash	17	17 5 65	5 65	65	9 6 7		Position: Form: Other:	 Situated on third party land. Single stemmed and leaning with a slightly unbalanced crown. Location prevented detailed in spection. 	No action required.		Good	40+
	Fraxinus excelsior.				5.5				n/a	3	Good	Α	
	Young					25	Desitiens				High	Low	
Т4	Sycamore 8 2.		2.5	24	24	1 2 3	-	Form: History:	Form: Single stemmed and vertical with an unbalanced crown History: No evidence of significant pruning.	No action required.		Good	20-40
	Acer pseudoplatanus.				5.5	-	Defects:	No significant defects observed.	n/a	3	Good	С	
	Semi-Mature					²⁵					High	Low	
T5	Sycamore	13	3	36	5 4.5 4.5	5	Position: Form: History:	Position: On steep embankment. Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning.		equired.	Good	40+	
	Acer pseudoplatanus.				3		Defects: No significant defects observed.			Good	C +		
	Mature					L0	Position:	On steep embankment.	n/a	3			
	Ash				10		Form:	Multi-stemmed at 4.5m with a well-formed crown.	Noaction	oquirod	Moderate	Moderate	
Т6	7311	22	9	105	89		HISTORY:	in the past.	No action	equired.	Good	40+	
	Fraxinus excelsior.				5		Defects: Other:	One heavily reduced limb appears to have some decay. Significant deadwood to North side of canopy.	n/a	3	Good	В	
	Semi-Mature				_	25	Position: Form:	Situated on third party land.			Moderate	Low	
Т7	Sycamore	9	1.5	30	2 4 5	-	History:	Single stemmed with a slight lean and a low, wide spreading habit. No evidence of significant pruning. No significant defects observed.	No action i	equired.	Good	20-40	
Acer pseudo	Acer pseudoplatanus.				5		Defects: Other:	Limited inspection, dimensions estimated.	n/a	3	Fair	C	

:nce oup dge		(m)	lt (m)	r (cm)	Crown Spread (m)	Scaled Tree Diagram (m)			Recommen (Independe	ndations	Vigour	Amenity Value
efere = Gr = He	Age & Species	eight	wn F	mete	N W E			Notes	development	proposals)	Physiological Condition	Life Expectancy (yrs)
K OT		Ĭ	Cro	Dia	S	9 0 9			Priority	Inspect Freq (yrs)	Structural Condition	Retention Category
	Young				1	[25	Form:	Single stemmed and leaning with an unbalanced crown.	N		Moderate	Low
Т8	Sliver Lime	5	1.5	13	2.5 2	-	History: Defects:	No evidence of significant pruning. No significant defects observed.	NO action r	equirea.	Good	10-20
	Tilia petiolaris.				4	0	Other:	Poor form.	n/a	3	Fair	C

Photographs





Photo 5.

Photo 7.

Photo 9.

Photo 11.





Photo 6.

Photo 2



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Photo 8.
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Photo 10.



Drawing No:	CCL 10332 / TCP Rev: 2	
Title:	Tree Constraints Plan (Existing Layout)	
Site:	Teil House, 10D Kidderpore Avenue NW3 7SU	
0 L Scale: 1:100	5 Paper Size: A1	CROWN Arboricultural Consultan 01422 316660

Cherry







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 nremarkable trees of low quality and merit. Individual speciment idered to be a material planning consideration.

Trees unsuitable for retention due to their very poor condition.



Excavation is proposed in this area to enable installation of the extension and sunken garden. However, less than 2% of the RPA of T2 and T6 shall be affected and circa 9% of the RPA of T3. Consequently, the impact is considered to be relatively minor. However, in order to minimise the impact, it is proposed to limit the extent of soil disturbance to 200mm beyond the proposed footprint. This may be done by piling, pinning or a similar method.

Branches below a height of 5m to be pruned back to create a clearance distance of 2m from the proposed single storey extention.



Drawing No:	CCL 10332 / IAP Rev: 2		Tree	Reter
Title:	Impact Assessment Plan (Existing Layout with Proposals Overlaid)	No.	\odot	Cate
Site:	Teil House, 10D Kidderpore Avenue NW3 7SU		0	Cate
o L Scale:	5 	CROWN Arboricultural Consultants 01422 316660	\odot	Cate



tegory A tree tegory B tree tegory C 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. \odot \bigcirc

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 Inremarkable trees of low quality and merit. Individual specimens insidered to be a material planning consideration





Arboricultural Method Statement

Site: Teil House, 10D Kidderpore Avenue, NW3 7SU

Date: 04/09/2020 Revision: 2 CCL ref No: 10332

Tree Protection Barriers

The purpose of tree protection barriers is to keep construction activity away from Restricted Activity Zones or Construction Exclusion Zones. They should be appropriate to the nature and proximity of activity within the site. The barriers should be erected prior to the commencement of all activity including demolition, soil stripping and delivery of materials and demolition (except where existing **Ground Protection Measures** structures require demolition to enable the barriers to be installed). Barrier systems are specified below and should be installed according to the legend on the Tree Protection Plan.

The In-Ground System This system may be installed where indicated by a solid purple line on the Tree Protection Plan. It should be robust enough to withstand occasional knocks by plant machinery and, once installed, shall remain in place throughout the entire construction phase.



Anti-climb weldmesh pane (or metal / 18mm ply sheets) firmly secured tandard scaffold poles driven 0.6m into the ground (100mm timber posts in concrete foundations may be

Scaffold pegs secured into the ground The Back-Stay System —— This system may be installed where indicated by a solid or dashed purple line on the Tree Protection Plan. It is more practical over existing hard surfaces or where the fencing needs to be moved to

enable permitted activities within a Bestricted Activity Zone. This system should be able to withstand occasional knocks by machinery and should not be relocated except with the consent of the site manager and the approval of the local authority. Within this system, weldmesh fencing panels (minimum height 2m) are affixed into rubber or concrete feet and clipped together with anti-tamper couplers. Two couplers should be used, spaced

at least 1m apart. Alternate panels should be attached to a diagonal back stay connected to an additional foot or baseplate secured with ground pins or additional ballast. Where ground pins are not used, the total weight of the foot/plate plus ballast should total not less than 32kg. Where it is not possible to install diagonal struts (such as very close to a hedge) then the front feet shall be secured using ground pins or ballast.

The 'Back Stay System'

2m X 3.5m weldmesh (or sheet metal) panels linked with antitamper couplings Each panel attached to a back stay which is founded in an additional foot or mesh tray as illustrated Minimum 32kg ballast to retain

rear foot or tray (including the weight of the foot/tray) Alternate front feet to be secured with ground pins or additional ballast



used outside of RPAs)

Notices

Suitable weather-proof notices should be displayed to identify tree protection zones. They should state the purpose of the fencing and that it should not be moved, or traversed, other than by authorised personnel.

Restrictions in Specific Zones

Restricted Activity Zone A

- Within this zone trees roots are likely to be present where access will be required to facilitate
- construction. The following restrictions shall apply: No vehicles or plant machinery shall park or operate unless a suitable load spreading surface is in place. The load spreading surface shall be installed and/or maintained as specified under the heading *Ground Protection Measures*. This shall remain in place throughout the entire construction phase or until any new permanent hard surfacing is installed. Any pedestrian activity other than very occasional shall also require a suitable load spreading surface. suitable load spreading surface.
 - Removal of existing structures such as, walls, steps and hard surfaces (where applicable) shall be undertaken using hand tools or a mechanical excavator operating from outside the Restricted Activity Zone and carefully marshalled by the project that no water run-off enters • No excavation shall occur beneath any existing hard surfacing and its sub-base or
 - beneath the foundations of any structure such as wall, steps or patio.
 - and obtaining approval from the local authority. • Existing ground levels shall be retained undisturbed or raised by no more than 150mm. Ground levels may only be raised using granular topsoil (not rich in clay) or Underground Services where new surfacing is proposed.
 - where new surfacing is proposed.
 No new permanent or temporary structures shall be erected other than those shown on the planning application documents unless approved by the local authority.
 No underground services (including soak-aways) shall be located in any part of the Construction Exclusion Zones or Restricted Activity Zones unless done so in a manner detailed in a specific Method on the planning application documents unless approved by the local authority. • Underground services shall not be installed in this area without prior consultation Statement and approved by the local authority. with the project arborist and a methodology agreed and approved by the local Site Hoarding
- If roots are encountered in excess of 25mm diameter, they shall be retained If site hoarding shall be installed over the Root Protection Area of any tree, the following restrictions wherever possible and protected with damp sacking during times that they are shall apply: unearthed. Any roots in excess of 10mm that need to be severed shall be pruned with Ground levels shall be maintained as existing. secateurs.
- compaction or contamination occurs. All hazardous materials (including non-essential cement products) shall be forbidden. No fires shall be permitted.

Restricted Activity Zone B

Within this zone it is proposed to excavate for the foundations for the new extension and sunken approval of the local authority with regard to its location and specification. garden. Either contiguous piling (or sheet piling) shall be installed along the edge of the excavation or an alternative method shall be adopted which does not disturb soils beyond the footprint of the Siting of Cabins proposal (e.g. pinning). A typical method of pinning would be to excavate to a specified depth (e.g. Cabins shall be located outside of Construction Exclusion Zones and Restricted Activity Zones unless without disturbing soils beyond the footprint of the build. The specific method adopted will vary etween contractors. However, the following restrictions will apply and must be adhered to:

- Excavation shall not extend more than 200mm beyond the footprint of the proposal in the direction of the trees. • Where a small excavator is used, it shall operate from outside of the adjacent Fence Posts or Decking Posts
- Construction Exclusion Zon • The excavator or piling rig shall be marshalled to ensure no contact is made with any restrictions shall apply: tree canopy. The project arborist shall oversee all excavation in this area.

General Restrictions - Throughout the Site

Preparatory Works No demolition, removal of surfaces, or soil stripping shall commence until the protective fencing and ground protection measures are installed to the satisfaction of the local authority.

No fires shall be permitted beneath any tree canopy or within 5m of any tree stem, branch or foliage. fires shall be permitted in the vicinity of any exposed tree roots.

Canopy Protection

accidentally damaged.

- In order to protect tree canopies the following restrictions shall apply throughout the site: • No machinery in excess of 2m shall pass beneath the canopy of any tree without being carefully
- marshalled in order to ensure that no branches are damaged. • If materials require installation or delivery beneath tree canopies, this shall be done without the use of overhead cranes.
- crane is required, they shall be carefully marshalled in order to ensure that branches are not Activity Zones that apply to this site.

Storage of Spoil and Materials

Storage of materials and spoil shall be avoided in any Construction Exclusion Zones and Restricted Activity Zones unless it has been agreed with the project arborist that the ground protection measures are adequate to ensure no soil compaction or contamination occurs. All hazardous Scaffolding materials (including non-essential cement products) shall be forbidden.

Author: Joe Taylor FdSc (Arboriculture), M. Arbor A

Client: Nigel Bird Architects

Removal of Tree Protection Barriers Removal of protective fencing or ground protection measures shall be done after all major construction work is complete and their removal has been approved by the appointed arboris

Within Restricted Activity Zones, soils containing roots may be subject to compaction due to general construction activity (including pedestrian activity and use of plant machinery). In order to minimise compaction, it is proposed to ensure that a suitable load-spreading surface is in place at all times. Any existing hard surfacing may be retained and reinforced (where applicable and adequate). otherwise suitable new ground protection measures shall be installed. The ground protection shall need to be able to adequately spread the load of construction traffic. Where existing hard surfacing Vertical scaffold poles are driven into the ground, onto which are affixed horizontal scaffold poles | is to be retained, it shall not be necessary to install additional ground protection measures. However, and diagonal bracing struts. Weldmesh panels (or similar – e.g. Heras type fencing panels, or 18mm+ the hard surfacing must be firm enough to spread the load of any traffic passing overhead.

> boards, or scaffold planks installed directly onto a geotextile fabric on the ground. The ground should first be made even by raking, or by adding a few centimetres of sand or woodchip. Alternatively the boards may be supported by a scaffold framework. The scaffold may be founded on poles driven into the ground and/or onto blocks (to raise the scaffold) with additional couplings to make the framework secure.

> Where only light vehicles are to operate (e.g. barrows, trolleys or occasional cars), thick wooden boards or scaffold planks should also suffice, though at least 150m of compressible woodchip will need to be installed first to help spread the load. Sturdier systems are specified below: Where cars will regularly park or heavier vehicles/plant machinery will occasionally operate, sturdier ground protection measures will be required such as metal road plates, or purpose built synthetic oad 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 (e.g. CellwebTM).

> A temporary concrete slab may also be considered as a suitable load spreading platform. Where a pile driver needs to operate, a concrete slab may be the preferred option. Where existing structures need to be removed, this shall be done with temporary ground protection measures in place to enable this to be achieved without compacting soils.

> The ground protection measures shall be installed and approved before commencement of demolition and construction activity and before the arrival of plant machinery or materials. They shall remain in place until all heavy construction activity is complete or until they are due to be replaced with a new hard surface.

Construction Exclusion Zones

- Nithin Construction Exclusion Zones the following restrictions shall apply: • Tree Protection Barriers shall be erected and maintained throughout the entire project as indicated on the Tree Protection Plan and under the header -Tree
 - Protection Barriers. These shall remain in place at all times except when authorised landscaping works are being undertaken. At such times, all restrictions that apply to the Restricted Activity Zone shall apply. Furthermore, the project arborist shall be informed prior to
 - any works being undertaken in these zones. No construction activity or excavation shall occur unless agreed otherwise by the project arborist and local authority. No vehicles or plant machinery shall be driven or parked.
 - No tree works, other than those specified in this report shall be undertaken • No alterations of ground levels or conditions shall occur.
 - No chemicals or cement washings permitted • No temporary structures shall be installed.
 - No spoil shall be stored. No fires shall be permitted
 - All hazardous materials (including non-essential cement products) shall be forbidder Removal of hard surfaces, structures or turf shall be done using hand operated tools only and supervised by the project arborist.



General Restrictions - Continued

Hazardous Materials

Any mixing of cement base materials shall take place outside the Constructio Exclusion Zones and Restricted required. Otherwise, provisior

• No further excavation shall occur in this zone without consulting the project arborist All other chemicals hazardous to tree health, including petrol and diesel, shall be stored in suitable containers as specified by current COSHH Regulations, and kept away from Root Protection Areas.

Sturdy plasic sheet

e.g 1200 guage DP

over plastic she

- Post holes shall not exceed 300mm x 300m Storage of materials and spoil shall be avoided unless it has been agreed with the
 No post hole shall be excavated within 1.5m of any tree stem. project arborist that the ground protection measures are adequate to ensure no soil • Post holes shall be excavated using hand tools or by a post-hole auger attached to plant
 - machinery sited outside of Root Protection Areas. Roots in excess of 25mm shall be retained wherever possible.
 - Roots in excess of 10mm shall be pruned with sharp secateurs. • Pruning shall be minimal and only undertaken where absolutely necessary to facilitate the site

hoarding. It shall be undertaken by a reputable tree surgeon working to BS 3998 (2010). Site hoarding may be installed in place of the specified tree protection measures subject to the

im), install shuttering and then cast the concrete for the proposed walls. Then to excavate short sections beneath this wall and cast deeper concrete. Then to excavate in between these deeper consulted and specific tree protection measures agreed. The following general restrictions will apply: sections and infill with concrete. In this manner excavation may continue to any specified depth • All services to and from site cabins shall be installed above ground through any Root Protection Areas

• No excavation shall occur within Root Protection Areas to enable cabins to be installed. • The cabins shall be founded on a suitable load spreading surface.

If permanent fencing or decking is to be installed within Root Protection Areas, the following • All post holes shall be excavated by hand and kept as narrow as possible (maximum diameter

- Exploratory post holes shall be dug before committing to post / panel positions. If any roots in excess of 25mm are encountered they are to remain intact and the post hole shall be relocated slightly. The fencing system must permit such flexibility (i.e. where fixed panel widths are used,
- all post holes must be excavated before committing to the final location). • Any roots in excess of 10mm which are severed shall be neatly pruned back with secateurs. This will encourage healing and reduce the likelihood of infection. Walls shall be avoided over Root Protection Areas unless their foundations may be spanned over
- roots using a beam system. Hedges may be planted within Root Protection Areas using hand tools to minimise excavation.

Lighting, Bollards, CCTV and associated Cables If any of the above are to be installed close to tree canopies or within Root Protection Areas of retained trees; installation methods shall be detailed in a specific Method Statement and approved

by the local authority. Consideration should be given to the following: No fires shall be permitted within any Construction Exclusion Zone or Restricted Activity Zone. No removed to the branch collar as per British Standard 3998 (2010).

- Post holes must be excavated by hand or using an appropriate sized auger. No other form of mechanical excavation may be used. • Wherever possible, cables should be routed in a direction directly away from the tree stem rather than tangentially across the rooting zone. The location of all such cables shall be determined after consultation with the project arborist and approval by the local authority.
- Use of Heavy Plant

• If materials are to be installed or delivered close to tree canopies (but not beneath them) and a All machinery operatives are to be made aware of any Construction Exclusion Zones and Restricted All machinery operatives are to respect these zones and ensure that no damage occurs to trees due to the careless use of machinery. Mechanical excavators should have tracks rather than wheels to help spread their load. They should be carefully marshalled when working close to tree canopies.

If scaffolding is required in areas containing ground protection measures, the protective boards shall need to remain in-situ and be strengthened and stabilised to bear the weight of scaffold poles. Prior to the installation of any scaffolding within 0.5m of any tree branches, the project arborist shall be consulted to specify any pruning works that may be required.

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CROWN

08000 14 13 30

Tree Protection Plan

Free Data Schedule

Spread (m) Diagram (m Age & Specie Semi-Mature Silver Lime History: No evidence of significant pruning. Defects: No significant defects observed. Tilia petiolaris Semi-Matur Position: Situated on third party land Ash No evidence of significant pruning. Other: Fraxinus excelsion Mature sition: Situated on third party land Young Position: On steep embankmen Sycamore 8 2.5 24 2 History: No evidence of significant pruning. Acer Defects: No significant defects observed. pseudoplatanus Semi-Mature Position: On steep embankme Sycamore History: No evidence of significant pruning. Acer Defects: No significant defects observed. pseudoplatanus Mature Position: On steep embankmen Ash Reduced in the past. Fraxinus excelsio Semi-Mature Position: Situated on third party land Sycamore History: No evidence of significant pruning. Defects: No significant defects observed. Acer Other: Limited inspection, dimensions estimate oseudoplatanus Young Silver Lime History: No evidence of significant pruning. 5 1.5 ¹³ _{2.5} Defects: No significant defects observed. Other: Poor form. Tilia petiolaris

Restricted Activity Zone A

Cherry

Timing of Operations d according to the following chronology

Order	Phase	Activity		
1st.		Planning conditions relating to trees to be ide		
2nd.	Pre-	Install the tree protection barriers (fencing an <i>Protection Measures</i>).		
3rd.	Construction Phase	Pre-Commencement site meeting: Tree prote Variances to be agreed. Extents of excavation monitoring to be agreed.		
4th.		Arboricultural Method Statement to be revise		
		Protection measures confirmed		
5th.	Construction	Demolish existing structures and remove exis		
6th.	Phase	Install new buildings, structures and any hard Arboricultural Method Statement.		
7th.		Site meeting with project arborist. Condition be assessed and ground remediation to be ag		
8th.	Post- Construction Phase	Remove protective barriers (fencing and grou		

that no water run-off enters





Inspection	Site Attendees	Comments
Pre- Start Desk-top To occur prior to any works taking place on the site.	N/A.	Project Manager and Site manager to study this Method Statement & contact the Project Arborist to agree all protection measures.
Pre-Start Meeting After tree works completed & tree protection barriers / ground protection measures installed. Prior to any other activity, inc. demolition & soil stripping. Excavation within Restricted Activity Zone B Excavation is required for the proposed stairs and the foundations for the proposed extension and retaining wall.	Site manager, project arborist. Tree Officer invited. Site manager, project arborist. Tree Officer invited.	Tree protection fencing locations & specification checked. Additional ground protection measures checked. Further protection measures / restrictions agreed. Two week's notice to be given prior to excavation. Excavation to be as specified in this Method Statement. Excavations to be recorded and photographed. Mitigation measures to be employed specified by the project arborist.
Post-Construction Meeting Post external construction activity but prior to removal of fencing & landscaping operations.	Site manager, project arborist. Tree Officer invited.	Retained trees inspected. Ground conditions assessed and mitigation measures agreed where appropriate. Further landscaping operations and restrictions to be agreed.

Position	Name	Contact Phone & email	Roles
Project Manager	Insert Details	insert Details	Liaising with site manager & project arborist regarding any potential issues relating to trees. Oversight of this monitoring schedule. Instructing the project arborist and arranging access. Liaising with local authority regarding discharge of planning conditions and variances to the Arboricultural Method Statement.
Site Manager	Insert Details	Insert Details	Familiarity with Arboricultural Method Statement. Implementation of the tree protection measures. Day-to-day compliance with Tree Protection Measures. Informing the Project Manager of Tree Protection variances & issues affecting trees.
Project Arborist	Crown Tree ails Consultancy	08000 14 13 30 0203 797 7449 Info@crowntrees.co.uk	Inspect tree works and report to the project manager. Inspect tree protection measures and report to Project Manager. Oversee excavations in RPAs, provide mitigation advice, undertake root pruning. Monthly site monitoring and reporting to the Project Manager on tree protection and variances.
Local Authority	London Borough of Camden	020 7974 4444	Liaising with the project arborist and project manager regarding tree protection issues relating to planning conditions. Advice and assistance with the discharge of planning conditions relating to trees.
Additional Contact	Insert Details	Insert Details	Insert Details
Additional Contact	Insert Details	Insert Details	Insert Details