ARBORICULTURAL IMPACT ASSESSMENT REPORT
BS 5837:2012 ‘Trees in relation to design, demolition and construction. Recommendations’

SITE
17 Kensington Square and 17 South End,
Kensington,
London, W8 5HH

CLIENT
Trilogy

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DATE: 22 December 2018
OUR REF: SHA 912

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Executive summary

This report is submitted in connection with a planning application for a new basement at 17 Kensington Square, and demolition and construction of a new property at 17 South End, Kensington, London, W8 5HH. I have provided all information in accordance with the British Standard (BS 5837: 2012 ‘Trees in relation to design, demolition and construction. Recommendations’ (referred to as BS). This report provides full arboricultural details suitable for validating the planning application.

Tree trees are not protected by a Tree Preservation Order, but they are in Kensington Square Conservation Area. No objection was raised to an application (reference ARB/18/02851 determined 22 June 2018) to fell all trees on site (expect the London plane SHA reference T1). The majority of these trees are low quality and small in size. These trees are still present and are included in the survey for completeness.

Previous planning application and Listed Building Consent are as follows:

PP/15/08115 - APPROVED(13/09/16) for construction of subterranean extension below rear garden, erection of single storey garden building and landscaping.

LB/15/08116 - APPROVED(02/09/16) as above

This application is for a smaller basement than previously approved and, as a separate but linked matter, and demolition and construction of a new house at 17 South End. This report covers both proposals for completeness, and assesses the arboricultural impact on the London plane tree, including measures for its protection during works. The report references a TreeRadar investigation by Peter Barton Associates dated March 2018.

The location of the extension for the Mews House has been designed based on the findings of the TreeRadar report. Works will be supervised at key stages by an arboricultural consultant and reported to the Royal Borough of Kensington and Chelsea tree officer.

The scheme is accompanied by a landscaping scheme which includes five standard trees.
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1. **Introduction:**

1.1. This report accompanies a planning application made by DAP on behalf of Trilogy to The Royal Borough of Kensington and Chelsea for a basement to 17 Kensington Square and demolition and construction of new property at 17 South End. The work is in accordance with BS 5837:2012 ‘Trees in relation to design, demolition and construction. Recommendations’ (referred to as BS).

1.2. This report details tree condition, the impact of the proposal on, and from, the existing trees and the measures taken to protect trees to be retained. It also includes tree surgery recommendations.

1.3. The survey has resulted in a layout as shown in the tree protection plan at Appendix 3. Where technical terms are used, explanations are found in the glossary.

2. **Statement of instructions and the issues addressed:**

2.1. I was instructed by Trilogy to:-

2.1.1. Carry out a tree survey in accordance with BS 5837:2012 ‘Trees in relation to design, demolition and construction – Recommendations’ (BS);

2.1.2. Analyse the proposals and the impact on trees to be retained;

2.1.3. Produce a tree protection plan, showing the location of the tree protection fencing in accordance with the BS and a specification for the protection of the existing trees;

2.1.4. Provide a tree surgery schedule which includes work to facilitate construction, based on the layout of, and works to, trees due to their condition or previous management;

2.1.5. Provide arboricultural method statements in as much detail as is practical at this stage.

2.2. The issues addressed are tree condition, and how the proposal impacts on the site and vice versa.
3. The site:

3.1. The site is the rectangular garden between 17 Kensington Square and 17 South End, Kensington, London. It is enclosed by c.2m high brick walls and is laid to lawn with small trees and shrubs. The large mature London plane is growing next to the eastern boundary and provides a high level of amenity. The tree population has not been actively managed for some time. The site is approximately level at c.22m datum, with a higher patio accessed by steps to the house.

3.2. Site soils: An assessment of soils on-site was carried out by MRH Geotechnical reference 151489 dated May 2015. This found that the site comprised made ground between 0.6 – 1.2m over firm clay containing variable amounts of sand and gravel.

4. The trees:

4.1. Generally: There are 13 individual trees subject of this survey. Full details are found in the survey sheets at appendix 1 and their location on the tree survey plan SHA 912 at appendix 2.

4.2. Legislation: No trees are protected by a Tree Preservation Order. The property is within Kensington Square Conservation Area. No objection was raised to a notification to fell all of the trees, apart from the London plane. Further details on legislation are found at appendix 7.

5. The Proposal

5.1. For a basement for 17 Kensington Square and demolition of 17 South End and construction of a new four storey building with basement.

6. Arboricultural impact assessment:

6.1. Summary of the impact on trees: Development can adversely impact on trees by causing them to be removed to facilitate the development, or in the future, by adversely affecting their potential for retention through disturbance in root protection areas (RPAs) or through post development pressure to prune or remove.
6.2. Tree roots can be asphyxiated and die if the rooting zone becomes compacted and soil structure damaged which can easily occur, particularly on clay soils, even with the passage of light vehicles. At the design stage, disturbance within the RPA should be avoided. If unavoidable (which may need demonstrating), consideration must be given to any construction activity such as demolition, including removal of existing hard surfaces, changing soil levels and the provision of services where within RPAs, as well as new surfaces and structures.

6.3. At the planning stage, any works proposed with RPAs must be shown to be achievable with minimal impact on retained trees. Areas should be identified where a detailed Arboricultural Method Statement will be required post planning consent.

6.4. Comments on specific trees and the arboricultural impact

6.4.1. All trees in the garden, including large shrubs (with the exception of the London plane) and T7 Eucalyptus in adjacent property:
For completeness the trees have been surveyed and plotted on the tree survey plan.
The onsite trees will be removed as permissible, given that no objection was raised by Royal Borough of Kensington and Chelsea Council to the S211 Notice in June 2018 (reference ARB/18/02851).

There is an offsite eucalyptus behind a tall brick wall. The roots are contained within the neighbouring garden due to the root barrier effect of the foundations (confirmation by Go Roots as an appendix to Barrell Tree Consultants report - extract below from page 2/2 (47) of Arboricultural Impact Appraisal and Method Statement).

In summary, based on the evidence provided by the excavations on site and my knowledge of tree root growth, I am confident that the Eucalyptus roots have not grown into the garden of 17 Kensington Square, consequently the proposed basement will have no adverse impact on the long term health and retention of the tree.

A small amount of crown pruning will be required up to the wall to accommodate piling which is permissible under Common Law. A section 211 notice to carry out this pruning is not required, provided full planning permission has been granted and all pre-commencement conditions have been discharged. After works, the crown will be able to continue to grow over the wall as before, and there will be no resultant loss of visual amenity. Eucalyptus is a vigorous species and will quickly regrow from pruning points.
6.4.2. T1 London plane:
Size: This mature tree is 22m high with a crown spread of 20m. It is tall and imposing with a large pendulous crown. It is growing right next to a boundary wall and the lower bricks have been removed to accommodate the large buttress. It has a diameter at 1.5m of 1180mm, equating root protection area of a circle with a radius of 14.2m. The actual rooting area was investigated by TreeRadar which I discuss later.

Photo 1 – showing T7 eucalyptus growing in the neighbouring garden. The tall wall’s foundations will be acting as a root barrier. A small amount of crown pruning will be required for the piling rig.

Condition and management: The tree has a good vitality with little crown dead wood. It has been pollarded in the distant past, but has subsequently matured beyond the stage where it could be reasonably re-pollarded. There has been some light pruning to the lower crown.
Trunk and branches: A triangular cavity at the base on the western aspect can be probed to 50cm deep, and appears to extend up into the trunk to an undetermined height. This is an old cavity and is unlikely to significantly compromise the structure of the base of the tree given the fact that the buttress stem is at least of 1.5m diameter. However, as a precaution I strongly recommend that a further inspection is carried out using the specialist decay detection equipment Impulse Tomography (contact details of suitable companies available on request). The purpose of this investigation is to map the decay and then calculate if the tree poses a hazard, and requires pruning for safety reasons. It would be prudent to carry out a full climbing inspection to ascertain any faults not visible from the ground, such as Massaria disease of plane trees. At the time of the inspection, any dead wood with a diameter greater than 25mm could be removed.

Photo 2 of the London plane looking south.
Roots: The tree roots were investigated by TreeRadar carried out by Peter Barton Associates in March 2017. The findings were used by DAP Architects to define the layout of the extension. Key paragraphs from this report are copied verbatim below in blue italic font:

‘The RPA of the plane tree T8 extends across approximately 2/3rds the area scanned. Root development from this tree will have been limited by past excavations and cultivations. The few roots (if any) present from the plane tree within the area scanned would be in the lower zones of the subsurface profile. This is due to the disturbed ground conditions mentioned.

Below ground development potential
The evidence from radargram for scan line 5, indicates that between this scan line and 16 South End there would be very few (if any) roots from T8. Therefore, open cut basement construction could be tenable with very little impact on the roots of Plane tree T8.

Between scan lines 5 – 10, roots are exploiting a 100cm spatial band with bellow the 70cm topsoil depth. There are no root indicators below 2m depth range. Therefore there is a potential to tunnel under the root plate from scan line 5 at around 3m depth to enable basement construction underneath.’
Arboricultural Impact Assessment:

The proposed basement for 17 Kensington Square is smaller than the approved basement, therefore there are no new arboricultural impacts from this proposal in respect of the basement. The garden provides a good rooting environment with the only barriers being the foundations for the boundary wall (note it is likely that the roots of the London plane tree continue east under the boundary wall’s foundations). Plane trees are robust species, known to tolerate root and crown pruning and disturbance. Providing the draft method statements found at appendix 6 are followed, the tree can be retained successfully.

The footprint of the Mews House has been located following the findings from the Tree Radar report.
The proposal will be constructed in the following way:
- Tree surgery carried out, including ideally the further tree inspection
- Pre-commencement meeting with the site manager and arboricultural consultant
- Tree protection measures installed
- Demolition of 17 South End
- Construction of basement for 17 Kensington Square, accessing from 17 South End
- Construction of new property at 17 South End
- Construction of hard and soft landscaping and soft boundary feature to the south of the London plane

*Note that services will be from the existing property (17 Kensington Square) and from 17 South End.*

During that time there will be regular site supervision at key stages:
- Check on ground protection and tree protection measures prior to works commencing, including any top soil scraping near the tree
- Observation of the installation of the basement for 17 South End
- Removal of the tree protection and ground protection (see blue cross hatching on plan extract)
- Soil improvement
- Installation of key areas of landscaping near the tree. The amount of supervision required from the arboriculturist will be discussed with the landscape architect to avoid inspections which could be carried out by the landscape architect.

*Plan 2 – extract from SHA 912 TPP1. Do not scale. North is vertical.*
Tree protection: The trunk will be protected by a plywood box which will be secured. The ground outside of the fencing will be protected during works to prevent compaction of the soil and contamination of the ground. At the time of writing I propose a 200mm deep cellular confinement system, laid on a geotextile membrane and filled with a 20-40mm clean angular stone. This will resist compaction and ensure porosity which is essential for root integrity and function. However, the robustness of this method must be assessed by the engineer to see if it is suitable to carry the weight of piling rigs and dumpers with soil for muck away. It may be that for the piling operation additional ground protection is needed on top, but it is beyond my professional competence to comment further. It would be acceptable for the removal of the top soil up to 100mm deep if required based on the fact that a lot of the top soil will be tree/shrub roots from the removed trees and the fact that most rooting for the London plane is deep. However, clearance within 5m of the trunk must be observed by the arboriculturist. The machine to scrape the ground must be a low weight mini digger on caterpillar tracks using a smooth bucket, or a large digger working on a temporary trackway system to manage loading.

Basement for 17 South End: As a precaution the installation of the basement will take place under supervision. Roots from the London plane are distinguishable due to their colour (coral pink under the bark). If any roots from this tree are found here, they will be under the removed Indian bean tree (T12), and will be pruned cleanly and protected. Further information is found at the draft method statement at appendix 6 and the area to which this applies is shown by the yellow line on the tree protection plan SHA 912 TPP1.

External works: Removal of the ground protection is a sensitive time and will be carried out under arboricultural supervision. At this time the rooting environment will be boosted by decompacting the soil and injecting beneficial soil additives including biochar, multiple strains of mycorrhizal fungi, and antagonistic Trichoderma (to help disease resistance), good bacteria and worm casts. This work will take place immediately after ground protection removal and before landscaping. The boundary between the two properties will be separated by a new hedge. There will be new patios constructed in the root protection area. As we know the tree is deep rooting, and as the patio construction will be shallow, there will be no issues with levels. The gaps between the paving slabs will be porous to ensure water infiltration and gaseous exchange. The soil improvements will benefit the new planting as well as the London plane. The planting will take place in accordance with the arboricultural method statement at appendix 6.
7. **Conclusions:**

7.1. There was no objection to the removal of all trees (ARB/18/02851) and the approved basement for 17 Kensington Square is larger than the proposed basement as part of this application. The TreeRadar results have informed the proximity of the proposal for 17 South End. The London plane tree will be protected with plyboard and by the use of ground protection during works.

7.2. Although not connected with the proposal, I recommend further investigation of the London plane tree for safety reasons.

7.3. Site supervision will take place at key stages of the project and subsequent notes will be issued to The Royal Borough of Kensington and Chelsea as a record.

8. **Recommendations:**

8.1. That a copy of this report, and subsequent more detailed arboricultural method statement, is kept on site, including A3 colour copies of the tree protection plan. The arboricultural documents will be part of site induction by the main contractor to all sub-contractors.

8.2. That the arboricultural method statements are developed further and are observed by all site personnel and supervised at key stages by the project arboricultural consultant. Short supervision reports are to be written after each inspection as a record of compliance and audit trail to the Local Authority.

8.3. That the foundation design takes into account trees to be retained, trees to be removed and trees to be planted.

8.4. That there are no ground level changes with the area shown on the plan by tree protection fencing.

8.5. That the line of the underground services should be ideally located outside of Root Protection Areas. However, as a precaution the final service plan should be assessed by an arboriculturalist. If it is unavoidable that services are to be located in RPAs, then a method statement must be produced.
8.6. That the landscaping scheme includes a mix of native trees from a cross section of species to ensure biosecurity against host specific pests and diseases. The trees must be planted and maintained in accordance with BS 8545:2014 *Trees: from nursery to independence in the landscape – Recommendations.*

8.7. That no tree works take place until consent is granted.

8.8. That the tree protection fencing and ground protection is installed before machinery enters the site and remains in place until the soft landscaping stage.

8.9. That the installation of the basement for 17 South End is carried out under arboricultural supervision.

8.10. That the locations of the exploratory intrusive investigation for contamination are assessed by the arboricultural consultant and that the ground remediation methodology near trees is discussed with the arboricultural consultant.

8.11. That consideration is given to the further investigation of the cavity of T1. This is for safety reasons and not in connection with the proposal.

Sharon Hosegood  
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Director  
Sharon Hosegood Associates Ltd
Appendix 1

Tree survey sheets
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<thead>
<tr>
<th>Tree Number</th>
<th>Botanical Name (Common name)</th>
<th>Age</th>
<th>Dia (mm)</th>
<th>Stems</th>
<th>Height (crown height)</th>
<th>Ult ht (m)</th>
<th>N</th>
<th>E</th>
<th>S</th>
<th>W</th>
<th>Cond</th>
<th>Life Exp</th>
<th>BS Cat</th>
<th>RPR (m)</th>
<th>RPA (m²)</th>
<th>Comments</th>
<th>Recommendations</th>
</tr>
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<tbody>
<tr>
<td>T1</td>
<td>Platanus × hispanica (London Plane)</td>
<td>M</td>
<td>1180</td>
<td>1</td>
<td>22(8)</td>
<td>25</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>Fair</td>
<td>20+</td>
<td>B3</td>
<td>14.16</td>
<td>629.99</td>
<td>Cavity on stem. Broken branches in crown. Major deadwood in crown. Tall and imposing with large pendulous crown. Growing immediately adjacent to a boundary wall which has a cut out the base to accommodate large buttress. Cavity at base on western aspect 50cm deep. Minor amount of pruning carried out to some lower branches and some removal of secondary laterals with sprouting from these pruned points.</td>
<td>Carry out further inspection. Carry out further inspection using specialist decay detecting equipment to map extent of decay and determine its significance. Carry out a full climbing inspection to check for defects including Massaria, and remove dead wood and small snapped branch.</td>
</tr>
<tr>
<td>T2</td>
<td>Quercus suber (Cork Oak)</td>
<td>SM</td>
<td>200</td>
<td>1.6(2)</td>
<td>15</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>Fair</td>
<td>20+</td>
<td>C2</td>
<td>2.4</td>
<td>18.1</td>
<td>Stem divides below 1.5m. Included bark present in fork. Unbalanced crown shape. Crown distorted due to group pressure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>Pyrus communis (Common Pear)</td>
<td>EM</td>
<td>200</td>
<td>1.6(2)</td>
<td>15</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>Poor</td>
<td>&lt;10</td>
<td>C2</td>
<td>2.4</td>
<td>18.1</td>
<td>Poor shape &amp; form. Leaning North-West. Major bark wounding on stem. Included bark present in fork. Major deadwood in crown. Unbalanced crown shape. Crown distorted due to group pressure.</td>
<td></td>
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<tr>
<td>T4</td>
<td>Quercus ilex (Holm Oak)</td>
<td>SM</td>
<td>200</td>
<td>1.9(0.5)</td>
<td>18</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Fair</td>
<td>20+</td>
<td>C2</td>
<td>2.4</td>
<td>18.1</td>
<td>Spindly. Crown distorted due to group pressure. Growing close to wall in an unsustainably close position.</td>
<td></td>
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<tr>
<td>Tree Number</td>
<td>Botanical Name (Common name)</td>
<td>Age Dia (mm)</td>
<td>Stems Height (crown height) Ult ht (m)</td>
<td>N E S W Cond Life Exp BS Cat RPR (m) RPA (m²) Comments</td>
<td>Recommendations</td>
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<td>T5</td>
<td>Catalpa bignonioides (Indian Bean Tree)</td>
<td>OM 450</td>
<td>1 8(2) 9 4 2 8 8 Fair &lt;10 U</td>
<td></td>
<td>5.4 91.62 Poor shape &amp; form. Leaning West. Unable to inspect stem due to undergrowth. Stem divides below 1.5m. Major deadwood in crown. Unbalanced crown shape. Crown distorted due to group pressure. Very heavy lean.</td>
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<tr>
<td>T6</td>
<td>Laurus nobilis (Bay)</td>
<td>M 350 200</td>
<td>2 9(0) 12 3 3 3 3 Good 10+ C2</td>
<td></td>
<td>4.8 73.6 Unable to inspect stem due to undergrowth. Stem divides below 1.5m. Growing close to the boundary. Climber in tree.</td>
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<tr>
<td>T7</td>
<td>Eucalyptus gunnii (Cider Gum)</td>
<td>EM 400</td>
<td>1 9(3) 25 4 4 4 4 Good 20+ C2</td>
<td></td>
<td>4.8 72.39 Leaning West. Offsite tree growing very close to boundary wall. Significant lean. Potential to reach great height, although with a more spreading crown than is typical.</td>
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<tr>
<td>T8</td>
<td>Acer palmatum (Japanese Maple)</td>
<td>EM 100 100 100</td>
<td>3 5(0) 8 3 3 3 2 Good 10+ B2</td>
<td></td>
<td>2.08 13.59 Multiple stems at ground level. Crown distorted due to group pressure. Attractive cultivar.</td>
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<tr>
<td>T9</td>
<td>Morus nigra (Black Mulberry)</td>
<td>M 360</td>
<td>1 10(1) 12 7 4 5 4 Good 10+ B2</td>
<td></td>
<td>4.32 58.64 Stem divides above 1.5m. Broken branches in crown. Major deadwood in crown. Growing near boundary. Broken stem at 4m. Localised decay in old small pruning wounds.</td>
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<td>S</td>
<td>W</td>
<td>Cond</td>
<td>Life Exp</td>
<td>BS Cat</td>
<td>RPR (m)</td>
<td>RPA (m²)</td>
<td>Comments</td>
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<tr>
<td>T10</td>
<td>Robinia pseudoacacia (Locust Tree)</td>
<td>EM</td>
<td>290</td>
<td>1</td>
<td>12(6)</td>
<td>18</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>Poor</td>
<td>&lt;10</td>
<td>C2</td>
<td>3.48</td>
<td>38.05</td>
<td>Declining. Leaning South-West. Decay present on stem. Broken branches in crown. Major deadwood in crown. Unbalanced crown shape. Crown distorted due to group pressure.</td>
<td></td>
</tr>
<tr>
<td>T11</td>
<td>Amelanchier lamarckii (Snowy Mespil)</td>
<td>M</td>
<td>150, 100, 100</td>
<td>3</td>
<td>8(3)</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>Fair</td>
<td>&lt;10</td>
<td>C2</td>
<td>2.47</td>
<td>19.17</td>
<td>Declining. Leaning South. Multiple stems below 1.5m. Included bark present in fork. Major deadwood in crown. Unbalanced crown shape. Crown distorted due to group pressure.</td>
<td></td>
</tr>
<tr>
<td>T12</td>
<td>Catalpa bignonioides (Indian Bean Tree)</td>
<td>OM</td>
<td>200, 300</td>
<td>2</td>
<td>9(0)</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Poor</td>
<td>&lt;10</td>
<td>U</td>
<td>4.33</td>
<td>58.91</td>
<td>Poor shape &amp; form. Low vitality. Leaning West. Included bark present in fork. Dieback in crown. Unbalanced crown shape. Crown distorted due to group pressure.Collapsed northern stem resulting in large tear.</td>
<td>Remove tree and root.</td>
</tr>
<tr>
<td>T13</td>
<td>Quercus ilex (Holm Oak)</td>
<td>SM</td>
<td>300</td>
<td>1</td>
<td>8(1.5)</td>
<td>18</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>Good</td>
<td>20+</td>
<td>C2</td>
<td>3.6</td>
<td>40.72</td>
<td>Unbalanced crown shape. Branches encroaching upon building. Reasonable form and condition.</td>
<td></td>
</tr>
</tbody>
</table>
Explanation of the tree survey sheets
The tree survey has been carried out in accordance with BS 5837:2012 ‘Trees in relation to design, demolition and construction – Recommendations’. Below is an annotation of the abbreviations in the sheet and their meanings.

1  Tree
   T - Tree, G - Group of trees, H - Hedge and S - shrub mass
2  Species - Botanical name and (Common name)
3  Age
   NP – Newly planted, Y – Young - an establishing tree that could be easily transplanted
   SM - Semi-mature - an established tree still to reach its ultimate height and spread with considerable growth potential.
   EM – Early mature – a tree reaching its ultimate height and whose growth is slowing, however it will still increase considerably in stem diameter and crown spread.
   M – Mature – a tree with limited potential for further significant increase in size, although likely to have a considerable safe useful life expectancy
   OM – Over-mature – a senescent or moribund tree with a limited safe useful life expectancy
   V – Veteran – a tree older than typical for the species and of great ecological, cultural or aesthetic value.
4  Dia (mm)
Diameter of the stem in millimetres at 1.5m above ground level for single stemmed tree or in accordance with Annex C of BS 5837 for multi-stemmed trees or trees with low forks or irregular stems.
5  Stems
Number or stems. Multi-stemmed is m/s
6  Height (Crown height)
Height in metres from the ground to the top of the crown
(Crown height) – height of canopy above ground level
7  Ultht (m)
Height in metres that could be reasonably expected for the species given its condition, past management and location.
8  NSEW
The crown spread from the trunk to the tips of the crown at the four cardinal points
9 Cond
Physiological condition. Good, fair, poor or dead

10 Life Exp
Estimated remaining contribution in years; <10, 10+, 20+ and 40+.

11 BS Cat
Category in accordance with Table 1 and section 4.5 of BS
U – unsuitable for retention. Existing condition is such that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years. Note, category U trees can have existing or potential conservation value which might be desirable to preserve.
A – high quality and value (non-fiscal) with at least 40 years remaining life expectancy
B – moderate quality and value with at least 40 years remaining life expectancy
C – low quality and value with at least 10 years remaining life expectancy, or young trees with a stem diameter below 150mm
A, B and C category trees are additionally graded into: 1 – mainly arboricultural values, 2 – mainly landscape values and 3 – mainly cultural values including conservation

12 RPR (m)
RPR – Root protection area radius (m)

13 RPA – Root protection area (m²)

14 Comments
Detailed comments about the tree

15 Preliminary recommendations
Recommendations based on the tree’s conditions and its current surroundings.
Appendix 2

Tree survey plan SHA 912 TSP
1. Contractors to check all dimensions on site
2. Discrepancies must be reported to the Arboricultural Consultant before proceeding
3. The original of this drawing was produced in colour, a monochrome copy should not be relied upon.
4. It is the responsibility of the contractor to ensure necessary consents for tree works are in place.
5. This drawing is copyright © Sharon Hosegood Associates Ltd.

Notes:

- Crown spread
- RPA - root protection area as defined by Table 2 BS 5837:2012

Legend:

- Category A - high quality and value
- Category B - moderate quality and value
- Category C - low quality and value
- Category U - unsuitable for retention

Client Site Address:
17 South End, Kensington Square, Kensington W8 5BU

Tree Survey Plan:
- Drawing Title: SHA 912 TSP
- Date: 20.12.18
- Scale: 1:250@A3
- Drawing Status: ND-H
- Authorized: SMH

Revision:

- Rev: Description
- 3: The original of this drawing was produced in colour, a monochrome copy should not be relied upon.
- 4: It is the responsibility of the contractor to ensure necessary consents for tree works are in place.
Appendix 3

Tree protection plan SHA 912 TPP1
Category A - high quality and value
Category B - moderate quality and value
Category C - low quality and value
Category U - unsuitable for retention

RPA - root protection area as defined by Table 2 BS 5837:2012

Trees to be removed
Plyboard tree trunk protection
Ground protection during construction comprising 200mm deep cellular confinement system filled with 20-40 mm clean stone laid on a geotextile membrane SUBJECT TO AN ENGINEER'S ASSESSMENT

Trees to be removed
Area for method statement for basement excavation

Notes
1. Contractors to check all dimensions on site
2. Discrepancies must be reported to the Arboricultural Consultant before proceeding
3. The original of this drawing was produced in colour, a monochrome copy should not be relied upon
4. It is the responsibility of the contractor to ensure necessary consents for tree works are in place
5. This drawing is copyright © Sharon Hosegood Associates Ltd
Appendix 4

Tree surgery schedule
**Tree surgery schedule**

All works to be carried out in accordance with BS 3998:2010 ‘Tree works – Recommendations’. All pruning cuts to be made at suitable growing points in the line with the principles of ‘Natural target pruning’. An ecological check is required by a competent person prior to tree works being carried. Works should not take place until planning permission is granted and all pre-commencement conditions are discharged.

Note the site is in a Conservation Area

<table>
<thead>
<tr>
<th>Tree no.</th>
<th>Species</th>
<th>Proposed works</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>London plane</td>
<td>Carry out a further inspection of the cavity of the base using Impulse tomography</td>
<td>For safety reasons in particular to map decay and its significance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carry out a full climbing inspection to check for any defects such as Massaria and report to the consultant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remove dead wood with a diameter greater than 25mm and remove slender snapped branch.</td>
<td>For safety reasons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crown lift by pruning the tips of branches to ensure 8m clearance over the site. Note that only very minor tip pruning will be required.</td>
<td>For clearance for the piling rig</td>
</tr>
<tr>
<td>T2</td>
<td>Cork oak</td>
<td>Fell to ground level and grind stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T3</td>
<td>Pear</td>
<td>Fell to ground level and grind stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T4</td>
<td>Holm oak</td>
<td>Fell to ground level and grind stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T5</td>
<td>Indian bean tree</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T6</td>
<td>Bay and adjacent shrub Garrya elliptica</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T7</td>
<td>Eucalyptus</td>
<td>Prune back to the boundary line</td>
<td>To facilitate construction</td>
</tr>
<tr>
<td>T8</td>
<td>Japanese maple</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T9</td>
<td>Mulberry</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>Tree no.</td>
<td>Species</td>
<td>Proposed works</td>
<td>Reason</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------</td>
<td>---------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>T10</td>
<td>False locust</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T11</td>
<td>Snowy mespil</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T12</td>
<td>Indian bean tree</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td>T13</td>
<td>Holm oak</td>
<td>Fell to ground level and grind or grub out stump</td>
<td>Approved by ARB/18/02851</td>
</tr>
<tr>
<td></td>
<td>All other small saplings and shrubs in the garden</td>
<td>Fell to ground level and grub out stumps</td>
<td>To facilitate construction</td>
</tr>
</tbody>
</table>
Appendix 5

Tree protection specification
T1 will be protected by a scaffold framework around the tree trunk as shown by the brown box on the extract from the tree plan below:

Plan 3 – extract from SHA 912 TPP1. Do not scale. North is vertical.

The scaffolding will be erected to 2m and form a rigid framework around the tree trunk to protect the trunk from accidental impact. On to this plywood will be fixed and signs (overleaf) attached.
Suggested site warning sign format

PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.

TREE PROTECTION AREA
KEEP OUT!
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION
ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE PROJECT ARBORICULTURIST
Ground protection during demolition and construction

Where working space ‘temporary access’ is needed within the root protection area during works, fencing should be set back the minimum amount to achieve the required room. If there is existing hard surfacing in this area, it should remain during the works as ground protection. The suitability of this surfacing for ground protection, and whether it needs to be reinforced to bear the weight of machinery, should be assessed by an engineer and discussed with an arboriculturist.

Where the set back of the fencing exposes unmade ground, the ground must be protected before any works take place on site. This is to prevent root damage and soil compaction.

The ground protection might comprise of one of the following: (section 6.2.3.3 of BS)

A) For wheeled or tracked construction traffic exceeding 2 tonnes gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected. At the time of writing I recommend a 200mm deep cellular confinement system laid on a geotextile membrane. The cells to be filled with 20 – 40mm angular road stone. The advantage of this is that porosity is retained. There are many companies who supply this product and a free design service. Companies include:

www.groundtrax.com
http://www.geosyn.co.uk/product/cellweb-tree-root-protection

The location for ground protection is shown on the tree protection plan by blue cross hatching, identified in the key.
Appendix 6

Draft arboricultural method statement
Tree works:
Recommendations for tree works can be found in the tree surgery schedule in Appendix 5. All works shall be in accordance with BS 3998:2010 ‘Tree work. Recommendations’. The use of a competent and insured tree surgery contractor is necessary to comply with this. The main contractor and tree surgery contractor must ensure that any necessary consents have been received from the local authority and that no protected species are harmed whilst carrying out site clearance or tree surgery works. Within root protection areas, stumps, shrubs and other vegetation must be removed by hand or using stump grinding machinery to minimize root damage of retained trees. Where poisoning of stumps is specified, this must be carried out by competent operatives. Only chemicals approved for this purpose and used in accordance with the manufacturer’s instructions will be used.

The following information must be sought:
- Current employers, public and product liability insurance
- Waste carriers’ licence
- Qualification and experience of key personnel, including relevant NPTC certificates
- COSHH assessment
- Tool and task based risk assessment, including a Working at Height Risk Assessment
- Site specific risk assessment
- Emergency procedure plan
- Method Statement

A list of suitable tree surgeons is found at:

Bio security measures are important and found at:
https://www.forestry.gov.uk/biosecurity

Fires: Fires on site should be avoided if possible. If unavoidable, they should be situated far enough so that there is no risk of damage to the trees, taking into consideration the wind direction.

Site and fuel storage, cement mixing and washing points: All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside root protection areas unless otherwise agreed with the Local Planning Authority. No discharge of potential contaminants should occur within 10m of a retained tree stem or where there is a risk of run off into Root Protection Areas.
**Temporary buildings for site use:** Site cabins, trailers and other temporary buildings can sometimes be used in root protection area if consent is agreed by the local planning authority. This can be very useful if there is a robust existing hard surfacing in place. The method for installing the buildings, and assessment of whether ground protection is needed is to be agreed with the Arboriculturist and specified prior to installation.

**Protection of tree canopies:** Piling rigs and cranes are often used close to trees. Work must be carefully planned so that there is sufficient room to avoid hitting the canopy during transportation or operation. Arboricultural supervision may be required, however, it is the responsibility of the contractor to assess and plan the work. Any access facilitation pruning required is detailed in the tree surgery schedule.

**New landscaping:** Within the root protection areas of trees to be retained, the preparation of soil for planting and turfig will be carried out by hand. Cultivation will be kept to a minimum and new topsoil must not exceed 100mm in depth within 1m of the stem. Top soil and other materials will be transported by wheelbarrow on running boards when working near trees.

**Construction of the basement for 17 South End near T1:** Within the yellow line area on the tree protection plan, the footings will be dug in the presence of an Arboriculturist. Any roots found from the London plane will be cut cleanly with bypass secateurs or a small hand saw. If a root is larger than 25mm, then an assessment will be made as to whether tree surgery is needed to compensate for root loss. A photographic record will be kept of the pruned roots. The vertical wall of the trench (on the tree side) will be faced with a double layer of damp hessian pegged in place to prevent it from sagging. The purpose of this is to prevent desiccation of the roots. Work should not take place in very hot, dry, or frozen conditions to avoid root damage. The hessian will then be faced with an impermeable plastic sheet to prevent the alkalinity of the concrete scorching the cut ends of the roots. Basement excavation can then continue in the normal way. It may be necessary for operation reasons to carry out this digging very slightly outside (tree side) of the basement line. A simple diagram is found overleaf:
Arboricultural site supervision

An initial site meeting:

Before works have started, but after the tree surgery and tree protection measures are in place. At this meeting the site manager, contractor, arboricultural consultant should discuss methodology and the tree protection measures will be examined. A ‘What you need to know about working near trees at 17 Kensington Square and 17 South End, Kensington, London, W8 5HH’ sheet will be issued which includes contact details.

After each site supervision, a short report will be sent to the contractor, client and local authority as a record of compliance.
Appendix 7

Tree related legislation
Tree preservation orders


There are no tree preservation orders affecting the site.

Conservation Area:

The property lies within the Kensington Square Conservation Area. This means that before any tree work can take place, six weeks’ notice (a section 211 notice) must be given to the Local Planning Authority (LPA). The LPA can either raise no objection, or if they object, they must serve a tree preservation order. A section 211 application is not required to carry out works listed within the tree surgery schedule of this report provided that this report is submitted as part of the planning application and that planning permission is granted. All pre-commencement conditions must be met prior to undertaking such works. This report references previous consent.

Ecological considerations


Occupiers Liability Act 1957 and 1984

The Occupiers Liability Act (1957 and 1984) places a duty of care to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore, this report includes recommendations within the tree tables for work required for safety reasons. ‘Common sense risk management of tree (National Tree Safety Group 2012)’ states that ‘The owner of the land on which a tree stands, together with any party who has control over the tree’s management, owes a duty of care at Common Law to all people who might be injured by the tree. The duty of care is to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property’. Common law enables pruning back to the boundary line providing the work is reasonable. Other restrictions, such as tree preservation orders/conservation areas still apply.
The owner of a tree is not obliged to trim their trees or hedges to prevent them from crossing over a boundary. Whilst the tree owner is not obliged to cut back the branches, the person whose property is overhung has the right to cut back the branches to the boundary providing there are no planning or legal restrictions on the trees such as Tree Protection Orders or if they are located in a churchyard, in which case suitable consent must be obtained. Such pruning works must be undertaken to a suitable standard and must not cause damage to the tree.

The resulting debris remains the property of the tree owner, but you must not cause any damage to their property when returning it back to them and you do not have the right to trespass on the tree owner’s property in carrying out the works. In the interests of good neighbourly relations, we would encourage neighbours to discuss their intentions with each other before carrying out such works, providing the work is reasonable and that the trees are not subject to TPO or Conservation Area protection.
Appendix 8

Statement of methodology and reference material
**Statement of methodology**

Review of architects plans

Site visit made by Sharon Hosegood on 18 December 2018.

Tree survey using Visual Tree Assessment carried out in accordance with BS 5837:2012 ‘Trees in relation to design, demolition and construction – Recommendations’ (BS). All investigations were from ground level only and binoculars were used when necessary. All trees with a trunk diameter of 75mm or above were surveyed. Obvious hedges and shrub masses were identified where appropriate. Information collected is in accordance with recommendations in subsection 4.4.2.5 of BS and include species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree was then allocated one of four categories (U, A, B or C).

**Received material**

Concept landscape proposals by Classic Landscape Architecture, Topographical survey reference AD123, consents The Royal Borough of Kensington and Chelsea (ARB/18/02851/JABU, dap_1028_101_01_PROP Site Plan_p, dap_1028_102_01_PROP Floor Plans_p, dap_1028953_Top Ext Prop Overlay_p, dapa_953_200_B1 Basement_1B1-Basement, dapa_953_200_GF Ground Floor_1GF-Ground Floor, Drawing-2079671_Trees to be removed, LLP48 - GPR 17 Kensington Sq Report_r1 (TreeRadar report by Peter Barton Associates), Tree schedule (Barrell Tree Consultants), Tree survey and Arboricultural implications assessment by Barrell Tree Consultants, including root investigations of the rooting of a Eucalyptus tree.

**Reviewed text**

BSI. BS 3998:2010 Tree work-Recommendations.

BSI. BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations

R.G.Strouts and T.G.Winter ‘Diagnosis of ill-health in trees’ TSO 1994

The Royal Borough of Kensington and Chelsea website

C. Mattheck ‘The body language of trees’ 2015
Appendix 9

Caveats & Exclusions
Specific report caveats

1. At the time of writing this report, the protected tree status is correct. However, this can change. Therefore, I advise that a further check is made with The Royal Borough of Kensington and Chelsea before any works to trees take place.

2. No internal diagnostic equipment was used other than a sounding mallet and probe and all inspections were from ground level only, with the aid of binoculars where necessary.

3. The survey is concerned solely with arboricultural issues.

4. Any changes in ground level, or excavations near to tree roots not discussed within this report may change the stability and condition of the trees and a further examination would be required.

5. As trees are a dynamic living organism this report is only valid for a period of 12 months, in respect to their health and condition.

6. Only the trees listed in this report have been examined.

7. The measure of offsite trees has been estimated, except any crown within the site overhang which is measured. Where the crown of an onsite tree overhangs the boundary, the crown spread in this direction is also estimated.

8. The base and trunk of the offsite trees could not be examined, and therefore a full assessment of the trees condition could not be made.

9. Dense ivy and undergrowth prevent a full condition survey being carried out. The vegetation may be hiding structural defects.

10. The tree information is from the time of the survey. Some pests, diseases and fungi only appear seasonally, therefore it is possible not all issues that may affect the health of the trees could be observed.

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Appendix 10

My experience and qualifications
Sharon is an Expert Witness, chartered arboriculturist and Director of Sharon Hosegood Associates Ltd. Sharon had eleven years’ experience as a local government tree and landscape officer before joining DF Clark Contractors as a tree consultant in 2005. In 2007 she formed an environmental practice in Essex with the owner. As managing director, she built up the ecological and arboricultural consultancy to a team of 20. She is a regular presenter and an occasional trainer for Trevor Roberts Associates. She appeared on BBC1 in July 2015 and September 2015, in ‘Britain Beneath Your Feet’ demonstrating tree radar at the Burghley Country Park, Lincs, with Dallas Campbell, the consumer programme ‘Rip Off Britain’, and latterly, again with tree radar equipment, Springwatch, investigating the rooting of the Major Oak at Sherwood Forest in June 2018. Sharon was the technical coordinator and chair of the Institute of Chartered Foresters national study tour 2016 ‘The streets of London’. In November 2018 Sharon presented at the Annual International Arboricultural Summit in Hong Kong.

**Specialties:**
- Trees in relation to development, including appeals and planning hearings
- Tree root investigations, including TreeRadar
- Tree hazard evaluation
- Tree preservation orders
- Trees and well-being with community engagement

**Professional bodies:**
- Fellow of the Institute of Chartered Foresters (ICF)
- Former Councilor for the ICF
- Assessor for the ICF examination board
- Fellow of the Arboricultural Association

**Qualifications:**
- Cardiff University Law School Bond Solon Civil Expert Certificate
- Arboricultural Associations Technicians Certificate
- BSc (Hons) Geography and Landscape Studies
- Managing Safely IOSH (2017)

**Awards:**
- Top student award for the Technician’s certificate in 2005
- The Broomfield Hospital Woodland Management project she has managed since 2009 has won the following awards:
  - The Essex Biodiversity Awards (nomination)
  - The Excellent Community Engagement Award (NHS Forest)
  - Green Flag and Green Apple Award
  - Highly commended for the Health Sector Journal Award 2013
Appendix 11

Glossary
<table>
<thead>
<tr>
<th><strong>Arboriculture</strong></th>
<th>Formerly all aspects of the culture of trees, especially for forestry. Latterly, the art and science of cultivating and managing trees as groups and individuals, primarily for amenity and other non-forestry purpose.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arboricultural method statement</strong></td>
<td>Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.</td>
</tr>
<tr>
<td><strong>Arboriculturist</strong></td>
<td>Person who has, through relevant education, training and experience in the field of trees in relation to construction.</td>
</tr>
<tr>
<td><strong>Architecture</strong></td>
<td>In a tree, a term describing the pattern of branching of the crown or root system.</td>
</tr>
<tr>
<td><strong>Biochar</strong></td>
<td>Biochar is charcoal used as a beneficial soil amendment enabling nutrient uptake and assisting the trees defense mechanism</td>
</tr>
<tr>
<td><strong>Biodiversity</strong></td>
<td>The variability among all living organisms of an ecological complex.</td>
</tr>
<tr>
<td><strong>Biomechanical</strong></td>
<td>Pertaining to the mechanical functions and properties of living organisms, such as trees.</td>
</tr>
<tr>
<td><strong>Body language</strong></td>
<td>In trees, the outward display of growth responses and/or deformation in response to mechanical stresses.</td>
</tr>
<tr>
<td><strong>Branch</strong></td>
<td>A limb extending from the main stem or parent branch of a tree.</td>
</tr>
<tr>
<td><strong>Branch bark ridge</strong></td>
<td>The raised arc of bark tissues that forms the acute angle between a branch and its parent stem.</td>
</tr>
<tr>
<td><strong>Branch collar</strong></td>
<td>The swelling or roughened bark often found at the base of a branch which should be left intact if the branch is to be pruned off.</td>
</tr>
<tr>
<td><strong>Canopy</strong></td>
<td>The topmost layer of twigs and foliage in a tree.</td>
</tr>
<tr>
<td><strong>Co-dominant</strong></td>
<td>In trees, a similarity between two or more stems or branches with regard to their size and their position within the canopy.</td>
</tr>
<tr>
<td><strong>Column</strong></td>
<td>In the wood or phloem of a tree, an axially elongated zone of tissue that is distinguished form the surrounding tissue; e.g. Live versus dead or decayed versus non-decayed.</td>
</tr>
<tr>
<td><strong>Construction exclusion zone</strong></td>
<td>An area based on the root protection area from which access is prohibited for the duration of the project.</td>
</tr>
<tr>
<td><strong>Crown</strong></td>
<td>In arboriculture, the main foliage-bearing portion of a tree.</td>
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<tr>
<td><strong>Crown lifting</strong></td>
<td>The removal of shortening of the branches that form the lower part of the crown of a tree.</td>
</tr>
<tr>
<td><strong>Crown reduction</strong></td>
<td>Pruning in order to reduce the size of the crown of a tree.</td>
</tr>
<tr>
<td><strong>Crown thinning</strong></td>
<td>Pruning inside the crown of a tree in order to reduce its density.</td>
</tr>
<tr>
<td><strong>Defect</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Dieback</strong></td>
<td>The death of part of a plant, usually starting from a distal point and often progressing proximally in stages.</td>
</tr>
<tr>
<td><strong>Direct damage</strong></td>
<td>Direct physical damage to a structure of surface from pressure exerted by the trunk or growing roots.</td>
</tr>
<tr>
<td><strong>Epicormic</strong></td>
<td>Pertaining to shoots or roots which are initiated on mature woody stems; shoots can form in this way from dormant buds or they can be adventitious.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Failure</td>
<td>In connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil.</td>
</tr>
<tr>
<td>Flush cut</td>
<td>A pruning cut close to the parent stem which removes part of the branch bark ridge.</td>
</tr>
<tr>
<td>Foreseeable</td>
<td>In hazard assessment, pertaining to failure and associated injury of damage which are predictable on the basis of evidence from a tree and its surroundings.</td>
</tr>
<tr>
<td>Fungi</td>
<td>Organisms of several evolutionary origins, most of which are multicellular and grow as branched filamentous cells within dead organic matter or living organisms.</td>
</tr>
<tr>
<td>Hazard</td>
<td>A thing, a process or a potential event that has the potential to cause harm.</td>
</tr>
<tr>
<td>Heartwood</td>
<td>The dead or predominantly dead central wood of various tree species whose outer living wood, sapwood, has a finite and pre-determined lifespan.</td>
</tr>
<tr>
<td>Independent in the landscape</td>
<td>Point at which a newly planted tree is no longer reliant on excessive or abnormal management intervention in order to grow and flourish with realistic prospects of achieving its full potential contribute to the landscape.</td>
</tr>
<tr>
<td>Landscape character</td>
<td>A distinct, recognisably and consistent pattern of elements in the landscape that make one landscape different from another, rather than better or worse.</td>
</tr>
<tr>
<td>Mulch</td>
<td>Material laid down over the rooting area of a tree or other plant to help conserve moisture, suppress weeds and encourage a beneficial microflora.</td>
</tr>
<tr>
<td>Mycorrhizal</td>
<td>Pertaining to an intimate symbiotic association between plant roots and specialised fungi.</td>
</tr>
<tr>
<td>PICUS and Impulse Tomography</td>
<td>The Picus Sonic Tomograph is a non-invasive tool for assessing decay in trees. It works on the principle that sound waves passing through decay move more slowly than sound waves traversing solid wood. By sending sound waves from a number of points around a tree stem to a number of receiving points, the relative speed of the sound can be calculated and a two-dimensional image of the cross-section of the tree can be generated.</td>
</tr>
<tr>
<td>Pollard</td>
<td>A term for a pollarded tree</td>
</tr>
<tr>
<td>Pollarding</td>
<td>The complete or partial removal of the crown of a young tree so as to encourage the development of numerous branches; also, further cutting to maintaining this growth pattern.</td>
</tr>
<tr>
<td>Probability</td>
<td>A statistical measure of the chance that a particular event (e.g. a specific failure of a tree or specific kind of harm to persons or property) might occur.</td>
</tr>
<tr>
<td>Risks</td>
<td>The likelihood of the potential harm from a particular hazard becoming actual harm.</td>
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<tr>
<td>Root protection area</td>
<td>A layout tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority. BS 5837:2012 ‘Trees in relation to design, demolition and construction – Recommendations’.</td>
</tr>
<tr>
<td>Root flare</td>
<td>Thickened and expanded base of s tree stem at ground level form which buttress roots form.</td>
</tr>
<tr>
<td><strong>Rootplate</strong></td>
<td>The central part of the root system of a tree, consisting of the large-diameter main roots and a dense mass of smaller roots and soil.</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td>In construction, any above-or below-ground structure or apparatus for utility provision.</td>
</tr>
<tr>
<td><strong>SULE</strong></td>
<td>Safe useful life expectancy of a tree (Barrell)</td>
</tr>
<tr>
<td><strong>Target pruning</strong></td>
<td>The pruning of a twig or branch so that tissues recognizably belonging to the parent stem or branch are retained and not damaged.</td>
</tr>
<tr>
<td><strong>Targets</strong></td>
<td>In tree hazard assessment, persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.</td>
</tr>
<tr>
<td><strong>Tree Preservation Order</strong></td>
<td>In Great Britain, an order made by a local authority, whereby the authority’s consent is generally required for the cutting down, topping or lopping of specified trees.</td>
</tr>
<tr>
<td><strong>Tree protection plan</strong></td>
<td>Scale drawing, informed by descriptive text where necessary, based upon the finalized proposal, showing trees for retention and illustrating the tree and landscape protection measures.</td>
</tr>
<tr>
<td><strong>TreeRadar</strong></td>
<td>The TreeRadar unit is a scanning cart with a 400MHz antenna which sends a beam every 1cm down to a depth prescribed by the operator (usually between 2 - 3m, which is the maximum depth). The reflection is recorded in a field computer and then analysed by the latest software, TBA. Water and metal reflect, therefore the machine records live roots which contain moisture, and cannot detected dead dried out roots. For each scan line a 'virtual trench' is produced which shows all roots with a diameter greater than 20mm. The machine cannot determine root diameter, other than it being greater than 20mm, due to the lack of correlation between the amounts of live root tissue in a root compared to the thickness of a roots. For example a large root may only have a live central core.</td>
</tr>
<tr>
<td><strong>Utility</strong></td>
<td>An undertaker by statute that has a legal right to provide customer services (e.g. communication, electricity, gas and water).</td>
</tr>
<tr>
<td><strong>Vigour</strong></td>
<td>In tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter growth.</td>
</tr>
<tr>
<td><strong>Vitality</strong></td>
<td>In tree assessment, an overall appraisal of physiological and biomechanical processes, in which high vitality equates with near-optimal function, in which high vitality equates with healthy function.</td>
</tr>
<tr>
<td><strong>Visual Tree Assessment (VTA)</strong></td>
<td>In addition to the literal meaning, a system expounded by Matteck and Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.</td>
</tr>
<tr>
<td><strong>White-rot</strong></td>
<td>Various kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded.</td>
</tr>
<tr>
<td><strong>Wound</strong></td>
<td>Injury caused to a tree by a physical force.</td>
</tr>
</tbody>
</table>
ARBORICULTURAL IMPACT ASSESSMENT REPORT
BS 5837:2012 ‘Trees in relation to design, demolition and construction.
Recommendations’

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CLIENT
Trilogy

DATE: 22 December 2018
OUR REF: SHA 912