REPORT ON TREES AT

Durham Cottage
Christchurch Street
London
SW3
The property has a historical association having once been the home of Vivian Lee. It is in a poor state of repair and of note is the front garden layout where there is a parking bay to the east that is divided from the western front and side garden by a dividing wall.

Arboricultural implications to development have been assessed in context of BS 5837: 2012: Trees in Relation to Design, Demolition and Construction – Recommendations.

The scheme design has taken account of the arboricultural advice and recommendations and no tree removal is required to facilitate the development. Trial trenches and excavations have been opened to assess the presence or otherwise of tree roots which reveal no significant rooting in key areas of the proposal. One further area of excavation is to be explored.

I describe one London plane tree in the adjacent property which grows up against the front eastern boundary of Durham Cottage.

Within the west portion of the front garden and behind the southern wall fronting Christchurch Street, grow a line of Common Lime trees that have been pollarded. These trees collectively form a green screen that is contained in height and spread by cyclical re-pollarding.

The works proposed can be implemented without risk of harm to either the Plane or Lime trees and the amenities they provide. To enable this, tree protection must be provided and can be controlled via application of pre-commencement planning conditions.
1 INTRODUCTION

1.1 Instruction: I am instructed by Architecture for London on behalf of our mutual client to provide arboricultural advice and guidance on proposals to refurbish and form a basement to Durham Cottage, Christchurch Street SW3.

1.2 Qualifications and experience: I have based this report on my site observations and the information provided in the light of my professional knowledge. I have experience and qualifications in arboriculture, and include a summary of these in Appendix 1.

1.3 Documents and information referred to: AFL provided me with copies of the following documents:

- Site as existing and proposed drawings in CAD format
- PDF planning set in the series 1465 and therein drawing 100 to 106 inclusive dated 05-02-2015.
- RBKC Level 1 Pre-Planning Application Advice ref PRE/PP/15/00055/LEV1 dated 5th February 2015.

1.4 Scope: This report is a trees planning report only and addresses the single application presented by the plans described at 1.3. Inspection of trees has been from the ground only and is limited to what was visible from vantage points available to me. The theoretical RPA of tree T1 is derived from an estimated stem diameter which, unadjusted, covers the greater proportion of the plot.

1.5 Background: Tree Projects provided initial constraints advice and at first inspection I saw an old pit (TH1 In Appendix 3) had been excavated towards the front centre of the elevation to the underside of footings. The purpose of the trench is unknown however I saw no significant tree roots.

When considering basement development potential beneath the building, I was concerned that at the garage opening within front elevation that there may be no footings to impede root growth beneath the property. I advised my client that on most occasions basement beneath existing footprint of buildings is considered acceptable firstly because roots tend not to proliferate due to edaphic conditions and secondly, there is a beneficial effect as by deepening foundations, the potential for future tree/ building conflicts is reduced.

Stressing that any roots greater than 50mm should be retained without harm, a ground work contractor was instructed to excavate a trench within the building (TH2). Footings were revealed to 1400mm and the only roots observed had followed the main drain through a gap in the footings.

The same contractor excavated a further pit within the garden (TH3) and again no roots of significance were observed.

From these investigations the scheme developed. At all times it has been known that results of root investigations would need to be available for inspection by the borough arboriculturist and this remains the case.


With respect to the pre-planning advice provided, it is acknowledged that further excavation will be required which is discussed in part 3 below.
2 TREE CONSTRAINTS ASSESSMENT

2.1 Identification and location of the trees: Trees within and adjacent to the property are described and shown on the plan and tree schedule at Appendix 2. This plan is for illustrative purposes only and it should not be used for directly scaling measurements. For immediate reference an extract of the tree schedule plan is presented at Figure 1.

2.2 Individual Tree Assessment and Assignment of Root Protection Area (RPA). RPA is a calculation based on a multiplication of tree stem diameter. In addition to this each tree is assessed in several other ways which include (but not exclusively) their contribution to amenity/overall condition and life expectancy. Broadly speaking ‘A’ and ‘B’ Category trees are the most worthy of retention. There are no ‘C’ or ‘U’ grade trees by my classification.

I now discuss each tree/group individually:

2.2.1 Tree T1: London Plane, \((Platanus \times Hispanica)\). B2 grade with an estimated safe useful life expectancy. This tree grows adjacent to the party wall forming the eastern party wall boundary and is located ‘off site’. Growing on raised ground approximately 500mm above that of Durham Cottage, the boundary wall is severely fractured with signs of rotation all likely to have been induced by root growth and expansion of the trunk. There are two piers within the wall which suggest Durham Cottage may once have been a coach house to the larger property to the east. These piers appear relatively intact however the damaged wall appears to be being held up by a now redundant gas pipe.

The tree has been crown lifted to a height of approximately 11m over Durham Cottage and has evidently been subject to light crown reduction and lateral branch reduction over its life. Pruning of the northern crown is awkward and (probably) in consequence this has grown out to a greater degree than other parts. The tree has a somewhat elliptical crown shape and whilst it can never be allowed to develop the full crown of an open grown London Plane, it is appropriate to the setting and available space.

During my inspection I visually inspected the granite setts of the driveway and surprisingly, I saw no significant distortion of this surface commensurate with tree root growth. Similarly, my visual inspection of the central wall within the front garden did not indicate...
substantial cracking and distortion although there is a slight bow across the length of coping. Whether this is due to roots or defective drains is not certain. At the time of my inspection, within the western portion of the garden in the corner between the front elevation and the slight extension that forms the garage, I saw an inspection pit that I presume may have been dug with a view to identifying the depth of footings (See ‘TH1’ at Fig 1 below and Appendix 3) I noted the underside of footings to be approximately 1200mm below adjacent ground and saw no sign of roots attributable to the London Plane (or Limes).

Additional excavations have been undertaken which include:

- An internal trench east west just inside the garage door (See ‘TH2’ at Fig 1 below and Appendix 3) continuing behind the front door and the now stripped kitchen: this revealed a substantial brick footing to -1400mm with no sign of roots other than minor and insignificant small fibrous roots to the eastern end of the trench
- A large pit in the location of the proposed south east corner of the front garden basement close to the dividing wall and limes (TH3). This revealed no roots of significance of either London Plane (or Lime)

2.2.2 Trees T2 to T6: Common Lime (*Tilia x europaea*) B2 grade with 20+ year’s safe useful life expectancy. This group of trees have been maintained by pollarding at approximately 5m and collectively they form a tall screen when in leaf. I measured the stem diameters of T5 and T6 and assigned the largest of these (230mm DBH of T5) to the other trees less easy to reach due to undergrowth. I have merged the RPA of these trees on the tree schedule plan. There is little to say other than this group of trees delineates the boundary with Christchurch Street well and, the form of management (pollarding) is appropriate to keep them to shape and to contain them to prevent excessive shading of the garden when in leaf.

3 ARBORICULTURAL IMPACTS AND SCHEME DESIGN.

3.1 Construction relative to RPA:

The scheme proposed is for development including garden basement that is in areas where investigations reveal no tree roots. The excavations remain open and available for inspection by tree officers. Tree rooting characteristics are often described as being ‘opportunistic’ where the tendency is for proliferation into accessible soils that are more conducive to growth by their being moist and having a reasonable nutrient status. Given the depth of footings it is no particular surprise that there are minimal roots beneath the building where soils will be relatively dry and compact in condition.

Tree RPA is, as described above, derived by the recommendations of BS 5837, the calculation being the multiplication of stem diameter at 1.5m height by 12. Occasionally one encounters a tree with a stem diameter and RPA that is of a size that overwhelms the conceivable available rooting space for the tree in question. This usually occurs in urban areas and frequently in respect of trees that have a long history of containment pruning. The conundrum this presents can perhaps be best be addressed by acknowledging that BS5837 is a good but basic tool and that its model is not always applicable in all circumstances. Above and beyond this, to objectively assess matters, I often find that tree root investigations provide the necessary evidence on which impacts of development into ground that may or may not contain roots.

In the case of Durham Cottage I take the view that although the circular RPA presented extends beneath the building, this should not be an impediment to development, in this case basement formation. Basement formation will be in soils from which one would not expect the tree to be deriving critical sustenance and, by strengthening and deepening foundations, one is actually increasing the long term sustainable retention of the tree by
practically eliminating the risk of tree root related damage to the property. It may be worth mentioning that in circumstances where there are tree and building conflicts, the courts almost without exception favour the building. The outcome of which tends to be removal of the tree.

As has been discussed there are both historic and recent excavations which are useful to understand tree root implications of the scheme. The areas of excavation are presented at Appendix 3 and shown now in the extract at Fig 2:

![Fig 2: Appendix 3 extract of Tree Root Investigation Plan](image)

Extension of the basement into the front garden required investigation for roots and none were found at the location of two trial pits TH1 and TH3. It is noted that the borough arboriculturist may seek further investigative works and a further trench is proposed at TH4. Within the plan at Appendix 3 a specification is proposed that describes excavations are to be undertaken by hand with retained roots greater than 50mm protected by hessian wrapping.

3.2 Ensuring Trees are Adequately Protected. Whilst the extent (physical lines) of construction proposed is not considered to present risk to trees and their health and well being, enabling works and the volume of materials moved and equipment brought to site can have negative impacts. I call this effect ‘construction overspill’

Construction work can always pose a risk to trees if protection measures are not provided that are fit for purpose to the task at hand.

Tree protection is a combination of physical installations plus management oversight to ensure timely delivery and on-going maintenance.

3.3 Tree Protection fencing will be required to isolate the Lime trees from construction overspill. This should be positioned at the edge of RPA and will demarcate an area within which no site activity or storage of materials is allowed. Pedestrian access for site visitors and operatives on defined routes would be permissible and this is the sole exception to activity within what should otherwise be considered a total exclusion area.

3.4 Ground protection will definitely be required to protect soils and any tree roots located beneath the front garden driveway. Previously we have successfully implemented schemes of ground protection that involve pouring a temporary slab of concrete that can bare construction and vehicle loads and protect soils beneath and roots within form compaction or liquid contamination. Such an approach
would be appropriate in this instance given the significance of the London Plane.

4. INDICATIVE TREE PROTECTION METHOD STATEMENT.

Tree protection is a matter that is frequently controlled by application of pre-commencement planning conditions. I present below in indicative terms how such conditions might be addressed:

4.1 All Tree Protection will be installed prior to commencement of work on site. It is likely that a grant of planning permission for the scheme proposed will be conditional upon installation of adequate tree protection for on site and neighbouring trees. Both the principle and contract administrator will ensure any pre-commencement tree protection details are discharged and protective measures installed before any works starts. A pre-commencement site meeting will take place at which the contract administrator, main contractor, ground worker and project arboriculturist meet to confirm installation of tree protection and resolve any potential conflicts before work starts. The project arboriculturist will liaise as necessary with the council arboriculturist.

4.2 Tree Protection will be retained for the full duration of works and maintained as necessary to ensure function as intended. In practical terms the day to day continuity and maintenance of tree protective measures will be assigned to the site manager. He will liaise with the project arboriculturist in event of a tree related emergency.

4.3 Ground protection will be provided as per a detail to be confirmed but which is anticipated to be by provision of a load barring concrete slab over existing driveway cobbles.

4.4 Any tree surgery that may be required will be undertaken by a competent arboricultural contractor and under the direction of the project arboriculturist. The project arboriculturist will liaise with and notify the Local Authority arboriculturist of any proposed works which require formal consent or notice.
5 SUMMARY AND RECOMMENDATIONS

On the basis of the above information and discussions, I summarise and make recommendations as follows:-

5.1 The scheme has negligible arboricultural impacts. No trees are required to be felled to implement the scheme.

5.2 The scheme proposed has been designed following tree root investigations. No roots were revealed that give rise to concern regarding the lines of proposed construction however one further excavation is proposed at location TH4.

5.3 Tree Protection measures are proposed in indicative terms that from the authors experience are fit for purpose and correctly installed and maintained will enable construction to proceed safely and without causing harm to trees.

5.4 I recommend that the tree protection provisions indicated within this report are incorporated into tender documents for pricing.

5.6 I recommend that on-going arboricultural presence is maintained within the design team for the duration of works and particular, in respect of a pre-commencement meeting and, supervision of the installation of tree protection measures.

5.7 With adequate tree protection installed in a timely manner, the proposals for work to Durham Cottage do not present a risk of harm to trees or the amenities they provide.

Nick Bentley
HNDH, RFS Cert Arb
19th February 2015
Brief qualifications and experience of Nick Bentley


2. **Practical experience:** As gardener, arborist and arboriculturist. Royal Botanic Gardens Kew (Wakehurst Place) as climbing tree surgeon. 15 years experience Local Government as an Arboricultural Officer: Leicester City Council, Wycombe District Council and latterly 8 years at the Royal Borough of Kensington and Chelsea handling all aspects of pubic sector tree management and procedures relating to the Town and Country Planning Act 1990 i.e. Development Control, public inquiries and informal hearings, tree preservation procedures and all aspects of control and enforcement thereof. Following a brief spell of 18 months as contracts manager of Arboricultural Association tree surgery contracting company I have been self employed from 2004 as a specialist tree planting contractor and, consulting arboriculturist for public and private clients and now continue to trade as Tree Projects Ltd.


4. **Commissions undertaken:**

   - Planning consultancy to British Standard 5837 Trees in Relation to Construction; tree surveys and design advice for new builds, underground and above ground extensions, including method statements and tree protection plans.
   - Tree condition surveys and recommendations including data handling through Ezytreev and Confirm.
   - Providing advice on tree preservation matters, tree work applications and sub-contracting tree surgery operations.
   - Tree supply and planting.
   - Tree root investigations by trench formation and pile spotting by use of non percussive air spade and air vacuum excavation techniques.
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<th>Common Name</th>
<th>Latin Name</th>
<th>DBH</th>
<th>Cnt</th>
<th>Height</th>
<th>Low Crown</th>
<th>First Sig. Branch ht &amp; bearing</th>
<th>Nth</th>
<th>East</th>
<th>Sth</th>
<th>West</th>
<th>Age</th>
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First Sig. Branch ht & bearing:
- Cnt: Crown Count
- Low Crown: Low Crown
- First Sig. Branch ht & bearing: First Significant Branch Height & Bearing

Date: 6th August 2014
Weather: Dry and Bright
Explanatory Notes to tree survey schedule

- **Tree reference (tag) number**: Individual trees are referred to by a ‘T’ prefix to a number, i.e. T1, T2 etc. Collections or distinct groups of trees may be assigned a G prefix to denote presence of a ‘group’. Prefixes and ‘SB’ (shrub) ST (Stump) and ‘H’ (Hedge) show further arboricultural features.

- **Name/ Latin**: Species identification is based on visual observations and the common English name of what the tree appeared to be is listed first, with the botanical name after. The botanical name is followed by the abbreviation spp if only the genus is known.

- **Measurements/estimates**: Stem and Height dimensions are taken by tape or laser unless indicated. (DBH in mm/ Height in m)

- **Tree Stem DBH (Diameter Breast Height) is used to calculate Root Protection Area (RPA)**: Measured at 1.5m above adjacent higher ground level using a specially calibrated ‘diameter tape’ and recorded in millimetres. Low branching trees are measured at the waist if lower than 1.5m. If two or more stems are present breaking from ground level, each stem is measured and relative locations described where possible using cardinal points. If taken lower than 1.5m for practical purposes the reading height is given.

- **Height**: Height given approximately to the nearest 0.5m, may be derived from compensating lines of sight.

- **Stem Cnt = Stem Count**: number of stems observed (informs calculation of RPA taking account of difference between single stem [SS] and multi-stemmed trees [MS])

- **Low crown Height**: the generalised height of the crown above ground level, usually branch ends.

- **First Significant Branch & Bearing**: Height of first significant branch and direction of growth.

- **Branch Spread**: Crown spread is measured and given to the nearest metre or half metre from the face of the trunk to the tips of the live lateral branches, measured towards the cardinal points. Usually measured by pacing. For trees managed by pollard regime crown may be to pollard extent: check tree schedule.

- **Age Class**: Y=young, SM=Semi Mature, EM=Early Mature, M=Mature, OM=Over Mature, V=Veteran. Age is estimated from visual indicators and experience and it should only be taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records or local knowledge.

- **Life Expectancy**: the estimated remaining contribution (to amenity)/ safe useful life expectancy in years. (< 10, 10+, 20+, 40+) a tree with less than 10 years safe useful life will ordinarily need to be felled unless retained for habitat purposes within an excluded area.

- **Physiological condition**: An assessment of the general health of a tree considering vigour, extension growth, crown density and presence of pathogens. G=Good, F=Fair, P=Poor, D=Dead

- **Category Grading**: the grade of the tree utilising the cascade chart for tree assessment within BS 5837:2012 Trees in Relation to Design, Demolition & Construction. Trees are graded on arboricultural, landscape and cultural/ conservation qualities. The assessed quality of a tree is ascribed by this letter whilst numeric sub categories define where the quality lies without conferring additional value. Simplified definitions are:
  - **Category U, Unsuitable for Retention**: ‘Trees in such a condition that they cannot realistically be retained in the context of the current land use [or their condition] for longer than 10 years’. (Trees would probably be removed for reasons of sound arboricultural management in any event)
  - **Category A**: ‘Trees of high quality with an estimated remaining life expectancy of at least 10 years.’
  - **Category B**: ‘Trees of moderate quality with an estimated remaining life expectancy of at least 20 years’
  - **Category C**: ‘Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm’.
  - Sub categories 1, 2 or 3 assign respectively: 1; mainly arboricultural qualities, 2: mainly landscape qualities, 3; mainly cultural values including conservation. Note: for example an A1 tree has the same retention priority as an A2 tree. A Some trees may qualify under more than one criterion.

- **Comments**: observations that may supplement assessments of condition or otherwise be significant.

- **Preliminary Management Recommendation**: Advice regarding tree surgery etc. Key: NW = No work. RP= Reduce to Previous Reduction Points. CR% = Crown Reduce (by % or m), CL = Crown Lift (to specified height AGL), CT = Crown Thin (by %), **Priority** (where specified) Priority 1 = Urgent works ASAP and certainly within 1 Month. Priority 2 = Complete within 12 months. Priority 3 = Non critical works to complete within 2 to 3 years.

- **RPA m2**: The Root Protection Area in square metres required by BS 5837.

- **RPA radius**: the radius of a circle of size equivalent to the RPA m2. The radius is taken from the centre of the tree plot.

- **RPA square**: the length of sides of a square equivalent to the RPA m2. the centre of the trunk of the tree to be positioned in the centre of the square
APPENDIX 3

TREE ROOT INVESTIGATION PLAN
(WITH NOTES)

No Pages: This plus 1
NOTES TO TREE ROOT INVESTIGATIONS:

Subject to RBKC tree officer approval, Excavate trench at location TH4 to connect TH1 to TH3. Width sufficient to excavate to 1200mm depth.

All excavation to be by use of hand tools, any roots greater than 50mm to be retained wrapped in a thick wad of Hessian bound into position with Hessian string or 50mm masking tape. Smaller roots to be trimmed with secateurs. Retained roots not to be stepped on or used as a lever for spade.

When a root is first revealed, carefully excavate and remove soil from around it by undercutting and letting that directly around it to fall away.