Jeremy Wight, Brod Wight Architects 43 England's Lane London NW3 4YD

Your ref: 0ur ref: 1-38-3816

17th May 2017





The Old School Titley HR5 3RN at Jericho, Oxford & Harpenden, Herts.

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Dear Jeremy,

Re: 5 Templewood Avenue, London, NW3 7UY

Thank you for your e-mail of 8th May with thread e-mail from Camden Planning Officer Kristina Smith to Edward Youngson of Montagu Evans. I returned to site 9th May to check the trees that are the subject of Kristina's concerns, and below I have sought to address them.

I note firstly :

1) This application calls for the removal of a large tree in the rear (T7), which has not received adequate consideration in the arboricultural report. The tree is clearly large, and no indications are given that it is in poor condition, simply a statement that it is not visually important from the street, yet it has been classified as Cat C. section 05.08 of the report "Tree Removal Appraisal And Replacement Planting" refers us to a table showing which trees are proposed for removal, but does not offer any assessment of the impact of these losses, or their arboricultural acceptability.

The tree is about 11m in height – fairly large – agreed, but to fall naturally into category C (BS 5837:2012) a tree need not be small. This British Standard states :

4.5.5 When determining the appropriate category for any given tree, group or woodland (see 4.4), the arboriculturist should start by considering whether the tree falls within the scope of category U. Assuming that it does not, the arboriculturist should then proceed on the presumption that all trees are considered according to the criteria for inclusion in category A. Trees that do not meet these criteria should then be considered in light of the criteria for inclusion in category B. This process should be repeated, as required, until the appropriate quality or value assessment is reached.

Registered Consultant of the Arboricultural Association John Cromar, Dip. Arb. (RFS), F.Arbor A.



Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation
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 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories

Table 1 – Cascade chart for tree quality assessment from BS5837:2012

The classification assessment is a matter of where the tree lodges, so to speak, in the descriptive net, on the way down from the A category. Tree 7 has been reduced



very heavily in the past, to the points indicated on the photo below left. This pruning, for safety reasons, will, if the tree is not removed, need to be repeated soon, (and thereafter from time to time) to prevent the now long and heavy new shoots that have grown since that heavy reduction detaching and falling onto the house and into the garden. This means that the tree will inevitably be diminished in size, and also diminished as regards any small contribution it makes to public amenity (see photo below, overleaf). The tree is also rather one-sided by reason of a tree now long-removed which stood to the rear (NW).



As can be seen the tree currently makes only a very limited contribution via a partial and glimpse view from Templewood Avenue. The only private households that have any reasonably close view of the tree are nos. 7, 5a, and 3 Templewood Avenue. I therefore consider the tree to be unremarkable and to most naturally fall into the C category.

It follows that the removal of the tree will have negligible impact on public amenity. Whilst a landscaping scheme is not currently agreed, I see no reason why a suitable replacement tree could not be agreed between LPA and client and thus satisfactorily address public and private amenity concerns.

2) Similarly, there is little in the way of an assessment of the impacts on T1, which is variously referred to as "of significant general public amenity value" and a "substantial veteran" the report identifies some decay present in the tree, but does not put this into the context of the development and any associated impacts. The RPA of this tree has also been altered, clearly in part to reflect the footprint of the existing building, but again there is no section within the report where this is addressed.

I have now had the opportunity to check tree 1 again. The descriptors from my report are still valid. The tree is one of a number of old oaks in the general vicinity close to the Heath and that substantially predate all development in this area. It is a matter of record (*'The area within which No. 5 Templewood Avenue is located remained as open fields until the 1870s'* - from Heritage Statement) that the immediate environs of the tree have altered substantially from the initial conditions. Nonetheless the tree has survived for over 140 years and therefore has demonstrably adapted well to the changes within its root protection area (RPA).

The RPA of the tree has indeed been altered in my report and drawings. I note from BS 5837:2012 :

4.6.2 The RPA for each tree should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.

I have applied soundly-based arboricultural experience from over thirty years in the profession in varying the notional circular RPA in plan, as this quite clearly does not

fit the current conditions. I am therefore somewhat at a loss to understand why Kristina says :

The RPA of this tree has also been altered, clearly in part to reflect the footprint of the existing building, but again there is no section within the report where this is addressed.

because there is :

05.03

An assessment as per BS5837:2012 section 4.6.2 has been carried out in connection with all trees to be retained. (This section requires that site conditions, tree mechanics, etc., are taken into account in determining the likely position of roots.) This is of some relevance in connection with this site where tree 1 has been regularly reduced. Reduction or pollarding promotes shrinkage of the root system, in accordance with established knowledge of tree physiology, e.g. in 'Crown Pruning Effects on Roots' *Coder*, (1997) found:

A decline in carbohydrate from failing photosynthesis (as in green wood pruning) allows carbohydrates to be preferentially held in the shoot. The result is a greater allocation of carbohydrate to shoot production and less to roots. After a time of internal nitrogen reallocation, the smaller allocation of carbohydrate to roots means less nitrogen uptake. As pathogens, damage, toxins, stress, etc. limit photosynthesis, less root area is generated.

Thus decline of the root system to somewhat below the orthodox extent of the RPA is now likely to have occurred. The tree requires (at least) recurrent pruning to maintain in reasonably safe condition. This is further likely to limit the extent of the root system. This fact has however not been relied upon in determining appropriate degrees of tree protection on the site : all due measures are proposed for implementation.

Perhaps Kristina means that a point by point defence of the alteration of the shape of the RPA is required. I am happy to supply it : for example; no significant root growth is likely below the made-up carriageway – such root growth is very rare indeed; there is a relatively recent building to the NW; on the other hand, ageing tarmac such as covers much of the frontage of no.5 tends not to limit root spread and thus the tree over the years is likely to have exploited, beneficially to itself, much of this area. Please note that the RPA has not been reduced : it has been modified in shape only.

However, this is somewhat academic as sadly my further investigations have established that the tree is now very badly decayed at the base. The strength of the wood encountered, as revealed by use of a 'Resi400' decay-detecting drill at the base is far below that of normal oak wood. (See SAFETY APPENDIX). It is likely that the main factors in the continuing presence of the tree (i.e.- why it has not blown down) is its very modest height, its great girth and limited spread - all amounting to a rather squat tree with little wind exposure. Nonetheless I must now alter my category assessment from B3 / 40+, to, regretfully, U /<10, or, at best, C1/10+. This difficulty in fact exemplifies a limitation of the Standard. Evaluating an extremely (structurally) fragile veteran which is nonetheless in good physiological condition and of high overall amenity value in terms of (as may be) habitat and great age but which might have much less than 40 years safe useful life expectancy at its current stature or even as a relic stretches the formal categories U, A, B, C, somewhat beyond meaningful practical use.

This does not mean that the tree must be proposed for removal. I see no great difficulty in reducing the tree further with a view to retaining it, but if it is not reduced further I fear the tree will collapse if left at its current size. It will surely be

accepted (regardless of whether development takes place or not) that the client will naturally wish to avoid undue threats to public and private safety.

Thus in respect of the following comments

3) With regard to veteran trees, this type of tree is much more sensitive to development than other trees, and should be assessed accordingly. A minimum root protection area of 15 times the trunk diameter (or two metres beyond the canopy of the tree, whichever is the greater) was set out as a standard in 'Veteran Trees: A guide to good management' (Read, 2000) This is upped to 15x diameter or 5m beyond canopy in "Ancient and other veteran trees: further guidance on management" (Lonsdale 2013), although this highlights the variable nature of individual site requirements. Furthermore, section 7.4 of BS 5837:2012 states that "...it is recommended that no construction, including the installation of new hard surfacing, occurs within the RPA.[of these trees]"

it is reasonable to robustly re-examine their basis. The tree has indeed been assessed according to its veteran status. This includes the fact that the crown of the tree is now a small fraction of the volume of what a non-veteran oak of its girth would typically be, owing to repeated reductions. Regular reduction or pollarding promotes shrinkage of the root system, all as noted in section 05.04 of my report and reproduced above.

The orthodox extent of the RPA is now I maintain commensurately reduced. This I contend puts into fair context Kristina's comments. I am firmly in favour of retaining veterans in urban situations where it is safe to do so, and am happy to support even extraordinary measures where reasonable to achieve this. There must however, reasonably, be exercise of balance on the part of the LPA in granting planning consent here in recognition of the condition of the tree.

The recommendation in BS 5837:2012 section 7.4 is, unfortunately, misunderstood above : the recommendation is for NEW surfaces to be avoided – i.e. previously unsurfaced, soft ground should not be covered. In this case via careful management of the RPA (as outlined in my report) the RPA can be enhanced, to the benefit of the tree. Dr. David Lonsdale, editor of the publication quoted above, makes via the contributors several useful suggestions for the management of veteran trees; these are largely most appropriate for non-urban situations. In this case the construction methods suggested in my report when followed in detail show that most of the driveway (where the core of the RPA certainly still exists) will be refurbished without interfacing with the underlying root-bearing soil at all.

Notwithstanding, I am happy to propose below enhanced methods of management for the RPA of the tree. These can reasonably be implemented where various excavations are proposed. It should be noted that the overall encroachment on the RPA of the tree by excavations is only 6.15%, assuming the present, actual root system extends as far as the proposed car lift. If it does not, and I doubt that it does, the encroachments total only 3.02%.

4) I therefore have concerns with regard to the impacts of the scheme on this tree, notwithstanding the aforementioned documents being guidance only, and the existing site conditions within the RPA of this tree. Further detail is required, with reference to its veteran status, physiological condition, and relevant guidance, to enable a full assessment of the impacts to this tree.

To be clear : the structural condition of the tree is enough to justify its removal. Its physiological condition is satisfactory – even good. (See SAFETY APPENDIX). I firmly believe that if such an application was made to the LPA it would be difficult to see a good basis for refusal and that if it went to appeal, that, given the structural

condition, removal would almost certainly be upheld. However removal is not the intention of the client nor is this my current recommendation.

I propose additional measures below and which I can if required submit within an amended report for ease of reference, or might simply be Conditioned. Added material is **highlighted**. Please read with plan 1-38-3816/P2a v6 appended.

Method 5 : ROOT PRUNING

This method shall apply within any RPA (orange shapes around tree locations), for example in the magenta fill zone (proposed steps/lightwell at front) and the eyan cross zone (car lift at front). Any roots encountered shall be trimmed to the edge of excavation using a sharp edge tool such as handsaw or secateurs; the cuts shall be made at right angles to the long axis of the root, and in accordance with BS3998:2010, 8.6. Any soil removed shall be replaced with 'Carbon Gold' mixed with dry clay loam. The relative amount of 'Carbon Gold' to dry clay loam will be 5% by volume - this equates to 20 kgs of product per cubic metre of topsoil (to BS3882 : 2015 topsoil). Two products (Carbon Gold 'Tree Growth Enhancer / Tree Protector') shall be mixed in equal amounts. 10 kgs of each, thus, shall be applied in every cubic metre of topsoil. An HDPE membrane shall be placed between any root-bearing soil and any wet concrete to be poured. Impermeable sheeting (to exclude wet concrete) shall be laid and secured locally by temporary weighting as required. Any concrete casting shall take place without disturbing this protective layer.

Method 6 : SERVICE TRENCHES

N.B. -This applies to ALL services : Electricity, gas, water, etc. Existing services shall be utilised wherever possible.

These methods shall apply generally wherever proposed within any RPA (orange shapes around tree locations) and specifically for areas of orange fill)

1) The trench shall be opened with an air-spade to required depth. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. Roots 20mm or more in diameter unearthed shall be immediately protected with bubble-wrap and insulating or gaffer tape while rest of trench is dug. OR

2) Services shall be thrust-bored using trenchless techniques (compressed air-driven 'mole') at a depth of 700mm or more below ground level, entailing no surface excavation. Starter pits for rams shall be outside any RPA, or reception/starter pits shall be opened according to 1) above.

The position of drainage services has been agreed between drainage engineers and arboriculturist as flexible. Any soil removed shall be replaced with 'Carbon Gold' mixed with dry clay loam. The relative amount of 'Carbon Gold' to dry clay loam will be 5% by volume - this equates to 20 kgs of product per cubic metre of topsoil (to BS3882 : 2015 topsoil). Two products (Carbon Gold 'Tree Growth Enhancer / Tree Protector') shall be mixed in equal amounts. 10 kgs of each, thus, shall be applied in every cubic metre of topsoil. Method 7 : PIERS for SLIDING GATE / GATE CONSTRUCTION This method shall apply in zone of cyan fill on plan. Footings shall be confined to isolated pads, dug initially to trial positions. The trial pits to determine pad locations shall be dug with hand tools only, or opened with an air-spade to required depth. N.B. The precise location of pads is flexible within a dimension to be determined by retained engineer. If hand digging is adopted, probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. THE WORK SHALL PROCEED CAUTIOUSLY. No roots over 20mm diameter shall be cut. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of hole is dug. It shall be borne in mind that the presence of large numbers of roots >20mm in diameter may effectively prevent completion of trial pit, as this would be sufficient reason to terminate the operation and consider its purpose complete or would entail the moving of the trial pit to a different location. If a root > 20mm diameter is inadvertently damaged, it shall be retained in situ for appraisal by the arboriculturist. Where roots more than 20mm diameter are unearthed in the pad locations and a pad cannot be re-located, the roots shall be wrapped in bubble wrap. The wrap shall not be wound very tightly against the root. All edges shall be sealed with insulating or gutter tape (not packing tape). (This sleeving both protects the root and forms a compressible layer when wet concrete is poured.) The sleeving shall be chased into the sides of the pit (where the root enters the soil face) for a distance of about 50mm and the entry point ring-sealed with expanding foam. A 25mm minimum thickness of wrap shall be fixed around the roots to be preserved. This protection shall be carried out progressively as the pad pit is dug, so as to protect roots from casual damage during excavation. A continuous HDPE membrane shall be placed to prevent contact between wet concrete when pads are cast or mortar when constructing the proposed pier. Any joins shall be sealed with gutter or gaffer tape. Any soil removed shall be replaced with 'Carbon Gold' mixed with dry clay loam. The relative amount of 'Carbon Gold' to dry clay loam will be 5% by volume this equates to 20 kgs of product per cubic metre of topsoil (to BS3882 : 2015 topsoil). Two products (Carbon Gold 'Tree Growth Enhancer / Tree Protector') shall be mixed in equal amounts. 10 kgs of each, thus, shall be applied in every cubic metre of topsoil.

Method 8 : This method shall apply after completion of main build only, within zone gridded green on plan. The driveway shall be refurbished as follows : the temporary concrete protection shall be removed with hand tools or hand-held power tools only. The underlying sub-base shall be left undisturbed : no excavation below the underside of the existing sub-base shall take place, except as per Methods 6 and 7. Any excavation or grading in the existing sub-base shall be by hand tools or hand-held power tools only. The proposed bound-gravel finish shall where required be laid over a separating layer of non-woven geotextile such as 'Treetex' or similar, with a blinding of 5-10mm granite chippings (no fines) to correct levels.

LANDSCAPING PHASE

Method 9 : EXISTING HARD SURFACING TO BECOME SOFT LANDSCAPING & PLANTER AREA

This method shall apply in magenta hatch zone.

The existing hard surface shall be lifted by hand tools or hand-held power tools only. No 'scraping up' with a mechanical excavator shall be carried out. No excavation below the underside of the existing sub-base shall take place. De-compaction measures shall consist of lightly hand-forking over to 250mm depth, or using a pinch bar to loosen the ground surface. The ground surface once exposed shall immediately be protected : a 2D geotextile membrane, such as 'Treetex T300' type shall be laid; 100mm of green-source woodchip; continuously abutted scaffold boards or manufactured boards so as to completely cover this area. This area may be used for pedestrian access. Scaffold erection shall take its bearing directly off the ground surface via spreader plates/scaffold boards. At landscaping phase, this protection layer shall be removed.

Planter retaining walls (or borders) shall entail no cut into the existing soil (which is within the RPA of tree 1) and shall be formed from timber baulks (e.g. modern railway sleepers) pinned to substrate with 25mm dia. re-bar or similar and the holes sealed with hardwood pegs. The base of any walled planter shall be open to the parent soil at existing ground level. The planter shall be filled with 'Carbon Gold' mixed with dry clay loam. The relative amount of 'Carbon Gold' to dry clay loam will be 5% by volume - this equates to 20 kgs of product per cubic metre of topsoil (to BS3882 : 2015 topsoil). Two products (Carbon Gold 'Tree Growth Enhancer / Tree Protector') shall be mixed in equal amounts. 10 kgs of each, thus, shall be applied in every cubic metre of topsoil.

I trust the foregoing is of use to you. If I can be of further assistance, or any point needs clarification, please do not hesitate to contact me. For a brief overview of our small company please visit <u>www.treescan.co.uk</u>

Yours sincerely,

John C. M. Cromar enc SAFETY APPENDIX PLAN 1-38-3816/P2a v6

SAFETY APPENDIX

1) I carried out three test bores with a 'Resi F400', an instrument that reveals the position and extent of decay in trees. It incorporates a very fine drill that penetrates 400mm into the tree. The instrument draws a trace which can be interpreted by a trained person to indicate the presence or otherwise of decay.

2) Criteria exist for establishing the significance of decay in trees. Using a formula suggested by Mattheck (*Mattheck and Breloer*, 1994) for this purpose, given the diameter of the tree (+/-1300mm) the minimum residual wall thickness (the outer part of the tree's cross section – the bark and sapwood zone) in this case would be 390mm. However, this is for an unreduced tree.

3) The nature of the decay and the likely fungal agent are also germane. Whilst no fungal fruiting bodies were in evidence I suspect *Laetiporous sulphureus*. This typically renders the oak timber brittle and causes little or no external sign of ribbing (the so-called body language – after Mattheck - of trees), which is consistent with what I observed of the condition of the tree.

4) Major limbs are also affected, probably by the same fungus. See photo below :

5) APPRAISAL

The whole tree is likely now rather inflexible and has little tolerance of bending or flexing. For this reason the tree should in the short term be maintained at around 9m in height and spread. Further regular appraisal is absolutely required to determine



when as may be the tree reaches a state of decay where even at reduced size it is an unacceptable hazard. However, it is my experience that it is in the nature of trees to confound expectation and it might be that the tree will remain viable and reasonably safe for many decades. Nonetheless it is my professional opinion that the tree cannot be reasonably held to be a significant constraint in planning terms such that the proposed development be refused. 'RESI 400' TRACES



The traces are very low in comparison to the typical norm for oak wood. There is very little wood indeed where any normal 'peak' characteristics (see TB3 at 20-21 cm, TB1 at 22cm etc.) are present. The red asterisks are where 'barrier zones' (after Shigo) should form. These are typically (when the response of the tree to decay is vigorous) zones of rapid transition from high to low trace : in this case in each of the three test bores no such pattern was observed – the slope is by contrast very shallow. It can be concluded that the defensive response of the tree is almost zero and that the decay is probably rapidly progressive.



CROSS SECTION OF BASE OF TREE

Note that in the diagram left the width of the outer zone at would typically be on the margin of sufficiency to maintain the tree at full height - perhaps 17-20 metres in height - if the zone was of wood at full strength. It is not, in this case, and therefore a judgement is necessary as to whether the embrittled wood can support the tree even at reduced height. It is my opinion that further reduction is required (as recommended above) to maintain the tree in reasonably safe structural condition in the short term.

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