Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT:

73-75 Avenue Road

London

NW8 6JD

REPORT PREPARED FOR:

Deroda Investment Limited

18 Esplanade

St Helier

Jersey

JE4 8RT

REPORT PREPARED BY

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MSc ARB MICFor FArbor A MRICS C Env

Ref: BWR/75AVR/AIA/01b

Date: 22nd March 2016

Appendices

Caveats

This report is primarily an arboricultural report. Whilst comments relating to matters involving built structures or soil data may appear, any opinion thus expressed should be viewed as qualified, and confirmation from an appropriately qualified professional sought. Such points are usually clearly identified within the body of the report. It is not a full safety survey or subsidence risk assessment survey. These services can be provided but a further fee would be payable. Where matters of tree condition with a safety implication are noted during a survey they will of course appear in the report.

A tree survey is generally considered invalid in planning terms after 2 years, but changes in tree condition may occur at any time, particularly after acute (e.g. storm events) or prolonged (e.g. drought) environmental stresses or injuries (e.g. root severance). Routine surveys at different times of the year and within two - three years of each other (subject to the incidence of the above stresses) are recommended for the health and safety management of trees remote from highways or busy access routes. Annual surveys are recommended for the latter.

Tree works recommendations are found in the Appendices to this report. It is assumed, unless otherwise stated ("ASAP" or "Option to") that all husbandry recommendations will be carried out within 6 months of the report's first issue. Clearly, works required to facilitate development will not be required if the application is shelved or refused. However, necessary husbandry work should not be shelved with the application and should be brought to the attention of the person responsible, by the applicant, if different. Under the Occupiers Liability Act of 1957, the owner (or his agent) of a tree is charged with the due care of protecting persons and property from foreseeable damage and injury.' He is responsible for damage and/or nuisance arising from all parts of the tree, including roots and branches, regardless of the property on which they occur. He also has a duty under The Health and Safety at Work Act 1974 to provide a safe place of work, during construction. Tree works should only be carried out with local authority consent, where applicable.

Inherent in a tree survey is assessment of the risk associated with trees close to people and their property. Most human activities involve a degree of risk, such risks being commonly accepted if the associated benefits are perceived to be commensurate.

Risks associated with trees tend to increase with the age of the trees concerned, but so do many of the benefits. It will be appreciated, and deemed to be accepted by the client, that the formulation of recommendations for all management of trees will be guided by the cost-benefit analysis (in terms of amenity), of tree work that would remove all risk of tree related damage.

Prior to the commencement of any tree works, an ecological assessment of specific trees may be required to ascertain whether protected species (e.g. bats, badgers and invertebrates etc.) may be affected.

Tree Constraints & Protection Overview

Client:	Deroda Investment Limited	Case Ref:	BWR/75AVR/AIA/01b
Local Authority:	London Borough Camden	Date:	22nd March 2016
Site Address: 73-75 Avenue Road, London NW8 6JD			
Proposal: Revised proposals for demolition of existing dwelling and two replacement dwellings with basements			

Report Checklist	Y/N		Y/N
Arboricultural constraints on site	Y	Trees removal proposed	N
Tree Survey	Y	Topographical Survey	Y
BS5837 Report	Y	Conservation Area	N
Tree Preservation Orders	N/k		
Tree Protection Plan:	N/a	(Include in future method statement)	
Tree Constraints Plan:	Y		
Arboricultural Impact Assessment:	Y		

Site Layout				
Site Visit	Y	Date: 11/03/15	Access Full/Partial/None	F
Trees on Site		Y	Off-site Trees	Y
Trees affected by development		Y	O/s trees affected by development	Y
Tree replacement proposed:		N	On or off-site trees indirectly affected by development	N

Trees with the potential to be affected

Recent tree survey, trial pits and site meeting with Camden's Tree Officer Mr Nick Bell has confirmed that the impacts from the revised proposals will be low. Precautionary measures proposed as mitigation.

Comments

Further investigation of decay in T19 recommended urgently – tree may well require felling. Other recommended works identified for 8 trees (see Appendix 2).

Recommendations

1	Proposal will mean the loss of important trees (TPO/CA)	N
2	Proposal has sufficient amelioration for tree loss	Y
3	Proposals provide adequate tree protection measures	Y
4	Proposal will mean retained trees are too close to buildings	N
5	Specialist demolition / construction techniques required	Y
6	The Proposal will result in significant root damage to retained trees	Y
7	Further investigation of tree condition recommended	Y

RPA= Root Protection Area
TPP= Tree Protection Plan
AMS= Arboricultural Method Statement
AIA = Arboricultural Implication Assessment
BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'

1. SUMMARY

1.1 This report comprises an arboricultural impact assessment of the revised proposals for 73-75 Avenue Road, London NW8 6JD, reviewing any conflicts between the proposals and material tree constraints identified in our survey. The site has extant planning permission (Ref: 2011/2388/P dated 28/03/12) for the demolition of the existing building and the erection of single family dwelling. The revised proposals are for two dwellings on a similar footprint.

1.2 There are 22 trees surveyed on or around the site, of which 2 are category A (High Quality), 12 are B category *(Moderate Quality), 7 are C category *(Low Quality) and 1 is U category *(Unsuitable for Retention). In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees would comprise a constraint in aggregate, in terms of any collective loss / removal, where replacement planting would be appropriate. In this instance, no such collective impact is proposed.

1.3 All of the tree works identified within the Barrell Tree Services Arboricultural Impact Assessment and Method Statement Report (Ref: 10159_AIA2_AS_14/04/11) to facilitate the existing permitted development have been undertaken; the Tree Protection Barriers (TPB's) are also in place. The retained trees were re-surveyed by Landmark Trees on the 11th March 2015, with additional works noted, including the urgent investigation of the decay on the category U tree T19. Subject to these investigations, it seems likely T19 will have to be felled, given the presence of substantial decay in the graft union at the base of the tree.

1.4 Trial pits were excavated with an air spade and manual digging tools on the 26th of February 2015 (see Appendix 5). These were inspected with the Camden Tree Officer Mr Nick Bell, with both parties agreeing that a middle ground between the conventional and fully modified RPA (with all roots inbound) would be appropriate, based on the trial pits and internal site constraints. Given the symmetrical pattern of buttressing observed on some trees, it seems likely they are still rooting below the boundary wall and under the pavement and that a sufficient area can be set aside between the trees and the proposals to create a more or less contiguous, rectangular RPA reserve. Mr Bell agreed that the existing swimming pool would prove a current barrier to rooting further into the site, and that whilst trees to its west, may root further into the lawn (roots of 30-45mm were encountered running into the lawn in trial pits 4-6, parallel with and west of the pool), the consented ground floor (GF) with its 800mm strip foundation would establish another such barrier to rooting were it built out. Similarly, trial pit 7 on the tree side of the existing TPB was inspected by both parties and agreed to contain no roots. This tree, T8, has been left with a conventional RPA, since it would appear either that it is freely rooting below boundary walls (quite conceivable for the species) or its boundary hugging RPA is too eccentric to plot.

1.5 In the light of these findings, and the agreement in principle between the parties, the overall impact of the revised proposals has been rated as low: the Lower Ground Floor (LGF) proposals adopt a pragmatic approach to the RPA constraints by following the outline of the pool and consented GF, with a not inconsiderable recess to bridge the gap in-between. Eccentricities notwithstanding, it was agreed that the evidence also indicates there will be no RPA impact on the category B tree T8 from the LGF proposals. The impacts from the proposed GF will be minimal, as it will be cantilevered off the LGF with flexibly placed piles at discrete intervals along the outside. The felling of the category C birch (T2) to facilitate development was also agreed in principle, as the still semi-mature tree has sub-optimal conformation (co-dominant stems with included bark). The loss will be mitigated within the proposed landscaping scheme from Bowles and Wyre.

1.7 The alteration / widening of access within the RPA of T29 has also been rated as a low impact, as the existing kerb is not raised, and therefore no change in levels are involved. During the site meeting, Mr Bell raised no objection in principle, for this reason (no change in levels).

1.8 The updated tree survey has enabled the accurate plotting of the existing canopies. The only tree that overhangs the existing Tree Protection Barrier (TPB) significantly is T8, although this is all tertiary branch / twig material of less than 25mm diameter up to 10m above ground; this material can be lifted as necessary without injury. Minor tree works may be required to cut back T22, which barely overhangs the TPB.

1.8 Low-invasive foundations will be required where the boundary wall is being reconditioned/rebuilt (i.e. either the existing sub-base or discontinuous footings with suspended beam(s)). Flexibility of footing placement (relative to root location) should be built into the design, with the pit locations trial-excavated by hand under supervision.

1.9 The substation and adjacent condenser enclosure encroach within the RPAs of T18 (2.8%) and T14 (4.6%) respectively. Whilst these encroachments are rated as a very low impact, the potential for a more significant cumulative impact to T18 in particular exists and therefore, similar mitigation of manual excavation of the limits of the foundations with pre-emptive root pruning is proposed. The adoption of this mitigation will ensure the impacts remain very low overall. The condenser enclosure can be sited on a concrete raft installed using a no-dig method meaning it is of negligible impact to T14 overall.

1.10 The condenser enclosure located to the north-west of the site encroaches within the RPA of T7 by 6.5% and T8 by 2.4%. As above, this can be sited on a no-dig concrete raft with negligible impact to either tree.

1.11 The floor plans show only a stair well and ancillary rooms facing the canopies, therefore any secondary impacts affecting the revised scheme will be minimal.

1.12 The site investigations and further survey work has enabled an in principle agreement with the Camden Tree Officer Mr Nick Bell; both parties have agreed that the revised proposals will have a low impact on the retained tree resource and the wider tree population or local landscape. Thus, with suitable mitigation and supervision the scheme is recommended to planning.

* British Standards Institute: Trees in relation to design, demolition and construction BS 5837: 2012 HMSO, London

2. INTRODUCTION

2.1 Terms of reference

2.1.1 LANDMARK TREES were asked by Deroda Investment Limited to provide a survey and an arboricultural impact assessment of proposals for the site: 73-75 Avenue Road, London NW8 6JD. The report is to accompany a planning application.

2.1.2 The site has extant planning permission (granted under reference 2011/2388/P dated 28/03/12) for the demolition of the existing building and the erection of single family dwelling house comprising basement, lower ground, ground, first and second floor level, in addition to the formation of new vehicular access, erection of a new boundary wall, hard and soft landscaping and associated works. It is understood that the recent application reference 2014/7839/P to discharge condition 14 (Tree protection measures) has been granted. The revised proposals are for the construction of two new build detached, single family dwellings comprising of basement, lower ground, ground, first and second floor level, with the erection of a new boundary wall, hard and soft landscaping, an electrical substation and condenser and associated works. This report will assess the impact of the revised proposals for two dwellings on the trees and their constraints, identified in our survey. Although the proposals were known at the time of the survey, Landmark Trees endeavour to survey each site blind, working from a topographical survey, wherever possible, with the constraints plan informing their evolution.

2.1.3 I am a Registered Consultant and Fellow of the Arboricultural Association and a Chartered Forester, with a Masters Degree in Arboriculture and 25 years' experience of the landscape industry - including the Forestry Commission and Agricultural Development and Advisory Service. I am a UK Registered Expert Witness, trained in single and joint expert witness duties. I am also Chairman of the UK & I Regional Plant Appraisal Committee, inaugurated to promote international standards of valuation in arboriculture.

2.2 Drawings supplied

2.2.1 The drawings supplied by the client and relied upon by Landmark Trees in the formulation of our survey plans are:

Existing site survey: 1503_Site

Proposals: 2037-11-01 LANDSCAPE SKETCH MASTERPLAN REV G
196/031 Proposed Basement Floor Plans (Nos. 73 & 75) P1
196/032 Proposed Lower Ground Floor Plans (Nos. 73 & 75) P1
196/033 Proposed Ground Floor Plans (Nos. 73 & 75) P1

2.3 Scope of survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, I surveyed the trees on site on 11th March 2015, recording relevant qualitative data in order to assess both their suitability for retention and their constraints upon the site, in accordance with British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations [BS5837:2012].

2.3.2 Our survey of the trees, the soils and any other factors, is of a preliminary nature. The trees were SURVEYED on the basis of the Visual Tree Assessment method expounded by Mattheck and Breloer (The Body Language of Trees, DoE booklet Research for Amenity Trees No. 4, 1994). LT have not taken any samples for analysis and the trees were not climbed, but inspected from ground level.

2.3.3 A tree survey is generally considered invalid in planning terms after 2 years, but changes in tree condition may occur at any time, particularly after acute (e.g. storm events) or prolonged (e.g. drought) environmental stresses or injuries (e.g. root severance). Routine surveys at different times of the year and within two - three years of each other (subject to the incidence of the above stresses) are recommended for the health and safety management of trees remote from highways or busy access routes. Annual surveys are recommended for the latter.

2.3.4 The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

2.4 Survey data & report layout

2.4.1 Detailed records of individual trees are given in the survey schedule in Appendix 1 to this report.

2.4.2 A site plan identifying the surveyed trees, based on the client's drawings / topographical survey is provided in Appendix 6.

2.4.3 This plan also serves as the Tree Constraints Plan with the theoretical Recommended Protection Areas (RPA's), tree canopies and shade constraints, (from BS5837: 2012) overlain onto it. These constraints are then overlain in turn onto the client's proposals to create an Arboricultural Impact Assessment Plan in Appendix 7. General observations and discussion follow, below.

3.0 OBSERVATIONS

3.1 Site description

Photograph 1: View of existing dwelling from Avenue Road and Queen's Grove Junction

3.1.1	The site is double fronted occupying a prominent position at the junction of Avenue Road with Queen's Grove and Elsworthy Road. The site previously accommodated a single family house with a separate single storey enclosed swimming pool. It is currently being re-developed under planning application reference 2011/2388/P, with the requisite tree protection in place (as permitted under 2014/7839/P for the discharge of Condition 14 relating to the tree protection – see section 3.3 below).
3.1.3	In terms of the British Geological Survey, the site overlies the London Clay Formation (see indicated location on Fig.1 plan extract below). The associated soils are generally, highly shrinkable clay; e.g. slowly permeable seasonally waterlogged fine loam over clay. Such highly plastic soils are prone to movement: subsidence and heave. The actual distribution of the soil series are not as clearly defined on the ground as on plan and there may be anomalies in the actual composition of clay, silt and sand content.
3.1.4	Clay soils are prone to compaction during development with damage to soil structure potentially having a serious impact on tree health. The design of foundations near problematic tree species will also need to take into consideration subsidence risk. Further advice from the relevant experts on the specific soil properties can be sought as necessary.

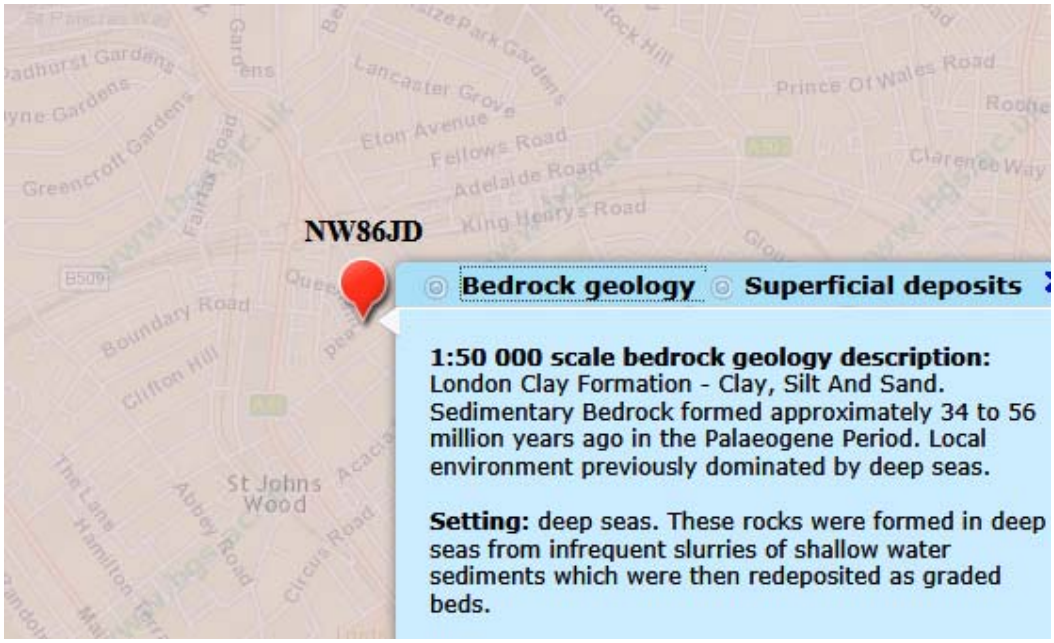


Figure 1: Extract from the BGS Geology of Britain Viewer

3.2 Subject trees

3.2.1	Of the 21 surveyed trees 3 are category A (High Quality), 8 are B category (Moderate Quality), 9 are C category (Low Quality) and T19 is U category (Unsuitable for Retention).
3.2.2	The tree species found on site comprise London plane, common lime, common beech, horse chestnut, Indian horse chestnut, oak, common hawthorn, maple, domestic pear, pittosporum and birch.
3.2.3	In terms of age demographics there are semi-mature and mature trees on the site.

3.2.4	Full details of the surveyed trees can be found in Appendix 1 of this report.
3.2.5	There are recommended works for 9 trees, including the urgent investigation of the decay on the category U tree T19 (see photograph 3 below). These works are listed in Appendix 2.

Photograph 2: Trees T18 – T24 along south eastern boundary

Photograph 3: Decay on T19

3.3 Planning Status

3.3.1	The site stands just outside two Conservation Areas. There was a recent application (2014/7839/P) to discharge condition 14 (Tree protection measures) granted under reference 2011/2388/P dated 28/03/12, which we understand has been granted. We are not aware of the existence of any Tree Preservation Orders.

4.0 DEVELOPMENT CONSTRAINTS

4.1 Primary constraints

4.1.1 BS5837: 2012 gives Recommended Protection Areas (RPA's) for any given tree size. The individual RPA's are calculated in the Tree Schedule in Appendix 1 to this report, or rather the notional radius of that RPA, based on a circular protection zone. The prescribed radius is 12-x stem diameter at 1.5m above ground level, except where composite formulae are used in the case of multi-stemmed trees.

4.1.2 Circular RPA's are appropriate for individual specimen trees grown freely, but where there is ground disturbance, the morphology of the RPA can be modified to an alternative polygon, as shown in the diagram below (Figure 2). The modifications made to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.

4.1.3 Accordingly, the modifications to the RPA of surveyed trees on this site have been made on the sound basis of further investigations using 7 trial pits, in addition to the assessment of actual rooting barriers on site. The AIA plan within Appendix 4 illustrates both the modified and conventional RPAs where there is clear evidence of the likely root distribution. The trial pits were inspected with Camden's Tree Officer, Mr Bell on the 11th March 2015. Both parties agreed that a middle ground between the conventional and fully modified RPA (with all roots inbound) would be appropriate based on the trial pits and internal site constraints. Given the pattern of buttressing (see Photograph 4 of T22) it seems likely the trees are rooting below the boundary wall and under the pavement and that a sufficient area can be set aside between the trees and the proposals to create a more or less contiguous, rectangular RPA reserve. It was agreed between both parties that the existing swimming pool would prove a current barrier to rooting further into the site, and that whilst trees to its west may root further into the lawn (roots of 30-45mm were encountered running into the lawn in trial pits 4-6 parallel with, and west of the pool), the consented GF with its 800mm strip foundation would establish another such barrier to rooting were it built out.

4.1.4 Similarly, the trial pit 7 on the tree side of the existing TPB was inspected by both parties and agreed to contain no roots. The tree T8 has been left with a conventional RPA, since it would appear either that it is freely rooting below boundary walls (quite conceivable for the species) or its boundary hugging RPA is too eccentric to plot.

4.1.5 The results of all the trial pits are summarised below in Table 2. The full Root Excavation Report is contained in Appendix 5.

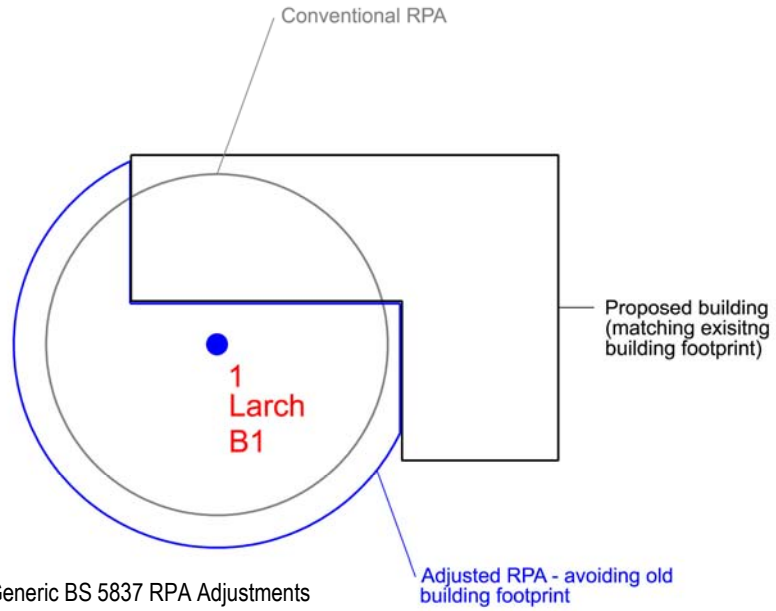
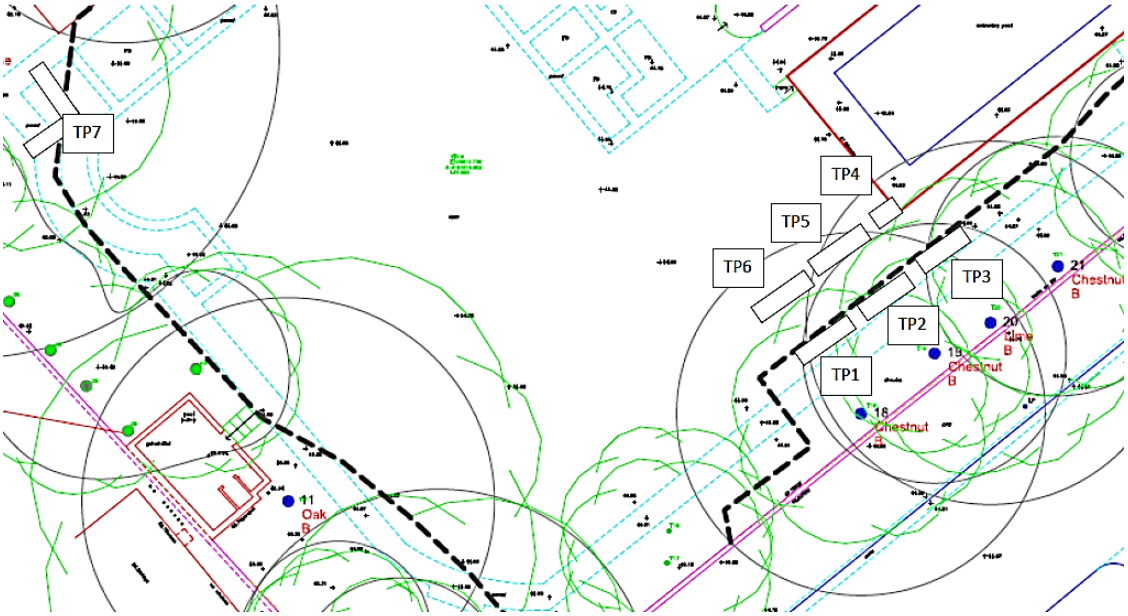


Figure 2 – Generic BS 5837 RPA Adjustments

Table 2: Trial Pit Results – Located as per plan extract below

Trial Pit 1	1.5m Long, 40cm Wide, 12cm Deep. 1x60mm root Number of fibrous roots
Trial Pit 2	1.5m Long, 40cm wide18cm Deep. 1x 50mm Root
Trial Pit 3	1.5m long, 35cm wide, 13cm Deep 1x45mm root 1x50mm root
Trial Pit 4	90cm long, 40cm wide, 12cm deep 2x30mm roots 1x25mm root
Trial Pit 5	1.5m long plot containing 2x 40mm roots, Chased this back into the lawn to determine point that roots reduce <25mm. 2.5m out from initial plot (11m from boundary wall) roots are still 30mm in diameter.
Trial Pit 6	1.5m long, 40cm wide, 20cm deep 1x45mm root 1x30mm root
Trial Pit 7	1.5m longx1.5m long “L”, 40cm wide, 70cm deep No Roots



Plan Extract Showing Location of Trial Pits

Photograph 4: Stem of T22 illustrating pattern of buttressing

4.1.6	The quality of trees will also be a consideration: U Category trees are discounted from the planning process in view of their limited service life. Again, Category-C trees would not normally constrain development individually, unless they provide some external screening function.
4.1.7	At paragraph 5.1.1. BS5837: 2012 notes that "Care should be exercised over misplaced tree preservation; attempts to retain too many or unsuitable trees on a site are liable to result in excessive pressure on the trees during demolition or construction work, or post-completion demands on their removal."

4.1.10 In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees would comprise a constraint in aggregate, in terms of any collective loss / removal, where replacement planting would be appropriate. (In this instance, no such collective impact is proposed).

4.1.11 In this instance the trial pit evidence, existing barriers to rooting, and buttressing patterns suggest that the on and off-site category A and B trees will provide minimal primary constraints upon development. These constraints must also be viewed within the light of the existing consented scheme and the proposed ground floor strip foundations.

4.2 Secondary Constraints

4.2.1 The second type of constraint produced by trees that are to be retained is that the proximity of the proposed development to the trees should not threaten their future with ever increasing demands for tree surgery or felling to remove nuisance shading (Figure 3), honeydew deposition or perceived risk of harm.

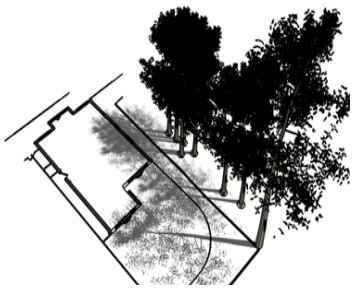


Figure 3 –
Generic Shading Constraints

4.2.2 The shading constraints are crudely determined from BS5837 by drawing an arc from northwest to east of the stem base at a distance equal to the height of the tree, as shown in the diagram opposite. Shade is less of a constraint on non-residential developments, particularly where rooms are only ever temporarily occupied.

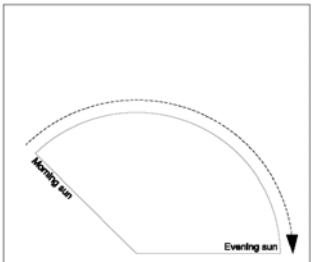


Figure 4 – Shading Arc

4.2.3 This arc (see Figure 4) represents the effects that a tree will have on layout through shade, based on shadow patterns of 1x tree height for a period May to Sept inclusive 10.00-18.00 hrs daily.

4.2.4	Assuming that they will be retained, the orientation of the on-site trees along the south eastern boundary will have the potential to provide a variety of secondary constraints, including shading, organic deposition and the potential need to maintain crown clearance in the future. The significance of these constraints will vary depending on the location and proximity to the proposed re-development.

Note: Sections 5 & 6 will now assess the impacts upon constraints identified in Section 4. Table 1 in Section 5 presents the impacts in tabular form (drawing upon survey data presented in Appendices 1 & 2). Impacts are presented in terms of whole tree removal and the effect on the landscape or partial encroachment (% of RPA) and its effect on individual tree health. Section 6 discusses the table data, elaborating upon the impacts' significance and mitigation.

5.0

Table 1: Arboricultural Impact Assessment

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (1998))

Hide irrelevant | Show All Trees

Ref: BWR/75AVR/AIA

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
C	2	Birch, Silver	Fell to facilitate construction NB felling discussed with Camden TO (11/03/15) - no objection to be raised as co-dominant stems.	m^2 N/A %	Semi-mature	Normal	Poor/ moderate	N/A	Low	New planting / landscaping
C	3	Hawthorn, Common	Demolition of existing landscaping/new steps Basement Construction within RPA	1 m^2 5.53 %	Early Mature	Moderate	Good	Low	N/A	Airspade / manual excavation Hand dig / prune top 750mm of path thru. RPA
C	4	Pittosporum	Demolition of existing landscaping	0.9 m^2 19.89 %	Semi-mature	Normal	Moderate	Medium	N/A	Airspade / manual excavation
A	7	Beech, Common	Demolition of existing landscaping Basement construction within RPA Conventional: 19.7m2/9% Modified: None	0 m^2 0 %	Mature	Normal	Moderate	Low	N/A	Airspade / manual excavation Hand dig / prune top 750mm of path thru. RPA Piling on edge of canopy (4m ground clearance) Crown lift if required

5.0

Table 1: Arboricultural Impact Assessment

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (1998))

Hide irrelevant | Show All Trees

Ref: BWR/75AVR/AIA

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
C	8	Plane, London	Demolition of existing landscaping Basement construction within RPA/canopy: eccentric rooting Tertiary branch / twig material (<25mm dm) up to 10m above ground. Evidence indicates no RPA impact - agreed with TO (11/03/15)	78 m^2 11.97 %	Mature	Normal	Good	Low	N/A	Airspade / manual excavation Hand dig / prune top 750mm of path thru. RPA as precautionary measure. Cut back tertiary branches if required
B	G9	Lime, Common	Part affected by demolition of hardstanding	m^2 N/A %	Early Mature	Normal	Moderate	Very Low	N/A	Airspade / manual excavation
B	11	Oak, English	Demolition of existing landscaping Basement construction within RPA/canopy Conventional: 10.5m2/4%	10.5 m^2 3.81 %	Mature	Moderate	Moderate/ good	Low	N/A	Airspade / manual excavation Hand dig / prune top 750mm of path thru. RPA
C	13	Beech, Common	Demolition of existing landscaping	m^2 N/A %	Early Mature	Moderate	Moderate/ poor	Very Low	N/A	Airspade / manual excavation

5.0

Table 1: Arboricultural Impact Assessment

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (1998))

Hide irrelevant | Show All Trees

Ref: BWR/75AVR/AIA

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
B	14	Chestnut, Horse	Demolition of existing landscaping Demolition/rebuild boundary wall. Basement construction within RPA: 2m2/0.7%	2 m^2 .66 %	Mature	Moderate	Moderate	Low	N/A	Airspade / manual excavation Hand dig / prune top 750mm of path thru. RPA
C	15	Pear, Domestic	Demolition/rebuild boundary wall	m^2 N/A %	Mature	Normal	Moderate	Low	N/A	No-dig construction
C	18	Chestnut, Indian Horse	Demolition of existing landscaping & boundary wall /rebuild boundary wall Basement construction within RPA Conventional: 29.8m2/13% Modified:7.6m2/3% Ground floor: all within basement	7.6 m^2 2.99 %	Mature	Moderate	Moderate	Low	N/A	No-dig construction/airspace or manual excavation Hand dig / prune top 750mm of path thru. RPA
U	19	Chestnut, Indian Horse	Demolition of existing landscaping & boundary wall /rebuild boundary wall Basement construction within RPA: Conventional: 3.5m2/3% Modified: None Ground floor: all within basement line	m^2 N/A %	Mature	Moderate	Moderate	Low	N/A	No-dig construction/ airspade or manual excavation Hand dig / prune top 750mm of path thru. RPA. NOTE: further investigation of decay - tree likely to be felled

5.0

Table 1: Arboricultural Impact Assessment

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (1998))

Hide irrelevant | Show All Trees

Ref: BWR/75AVR/AIA

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
B	20	Lime, Common	Demolition of existing landscaping, swimming pool & boundary wall /rebuild boundary Basement construction within RPA Conventional: 23m2/10% Modified:12.5m2/49% Ground floor: all within basement line.	12.5 m^2 4.91 %	Mature	Normal	Moderate	Low	N/A	No-dig construction/ airspade or manual excavation Hand dig / prune top 750mm of path thru. RPA
B	21	Chestnut, Indian Horse	Demolition of existing landscaping & boundary wall /rebuild boundary wall Basement construction within RPA/canopy Conventional: 0.9m2/0.8% Modified: 2m2/1.5% Ground floor: all within basement line	2 m^2 1.52 %	Mature	Normal	Moderate	Low	N/A	No-dig construction/ airspade or manual excavation Hand dig / prune top 750mm of path thru. RPA
B	22	Chestnut, Indian Horse	Demolition of existing landscaping, shed & boundary wall /rebuild boundary wall Basement construction within edge of canopy	2 m^2 2.76 %	Early Mature	Normal	Moderate	Very Low	N/A	No-dig construction/ airspade or manual excavation Remedial tree surgery (see Rec. Works)
B	24	Chestnut, Horse	Demolition of existing landscaping, shed & boundary wall /rebuild boundary wall Basement construction within RPA Conventional: 0.9m2/0.5%	0.9 m^2 .49 %	Mature	Moderate	Moderate	Very Low	N/A	No-dig construction/ airspade or manual excavation Hand dig / prune top 750mm of path thru. RPA

5.0

Table 1: Arboricultural Impact Assessment

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (1998))

Hide irrelevant | Show All Trees

Ref: BWR/75AVR/AIA

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
A	28	Plane, London	Demolition of existing landscaping & boundary wall /rebuild boundary wall Not within modified RPA	m^2 N/A %	Mature	Normal	Good	Very Low	N/A	No-dig construction with existing sub-base where possible
A	29	Plane, London	Demolition of existing landscaping inside site & boundary wall /rebuild boundary Widening of existing access	m^2 N/A %	Mature	Normal	Good	Low	N/A	No-dig construction with existing sub-base where possible Note: Curb is not raised therefore no change in levels expected.
B	30	Plane, London	Demolition of existing boundary wall /rebuild boundary wall	m^2 N/A %	Mature	Normal	Good	Very Low	N/A	No-dig construction with existing sub-base where possible

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 In the light of the evidence presented and the agreement in principle between the Camden Tree Officer Mr Nick Bell and Landmark trees on the 11th March 2015, the overall impact of the revised proposals has been rated as low. The felling of the category C birch tree (T2) to facilitate development was also agreed in principle, as the tree has co-dominant stems (see Photograph 5 below). The loss will be mitigated within the proposed landscaping scheme by Boyles and Wyre. The revised Lower Ground Floor (LGF) proposals adopt a pragmatic approach to the RPA constraints by following the outline of the pool and consented GF, with a not inconsiderable recess to bridge the gap in-between. Eccentricities notwithstanding, it was agreed that the evidence also indicates there will be no RPA impact on the category B tree T8 from the LGF proposals. The impacts from the proposed GF will be minimal, as it will be cantilevered off the LGF with flexibly placed piles at discrete intervals along the outside.

6.1.2 The alteration / widening of access within the RPA of T29 has also been rated as a low impact, as the existing kerb is not raised therefore no change in levels are involved. During the site meeting, Mr Bell raised no objection in principle.

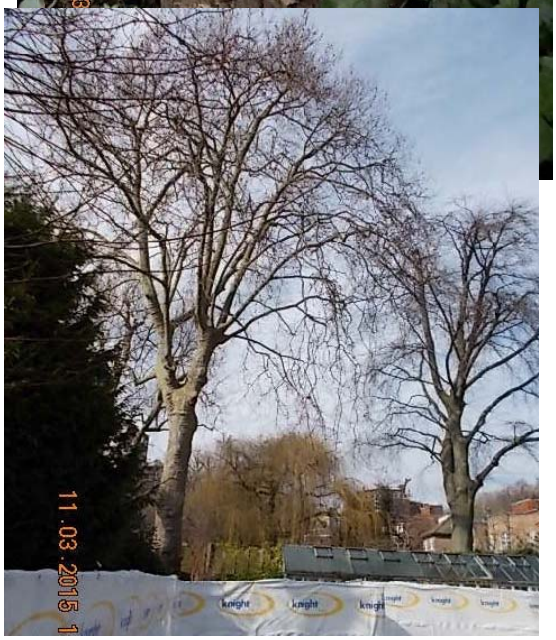
6.1.3 The recent survey has enabled the accurate plotting of the existing canopies. The only tree that overhangs the existing Tree Protection Barrier (TPB) significantly is T8, although this is all tertiary branch / twig material of less than 25mm diameter up to 10m above ground (see Photographs 6 & 7 below); this can be lifted as necessary without injury. Minor tree works may be required to cut back T22 (see Photograph 8), which barely overhangs the TPB.

6.1.4 Low-invasive foundations will be required where the boundary wall is being reconditioned/rebuilt (i.e. either the existing sub-base or discontinuous footings with suspended beam(s)). Flexibility of footing placement (relative to root location) should be built into the design, with the pit locations trial-excavated by hand under supervision.

6.1.5 The substation and adjacent condenser enclosure encroach within the RPAs of T18 (2.8%) and T14 (4.6%) respectively. Whilst these encroachments are rated as a very low impact, the potential for a more significant cumulative impact to T18 in particular exists and therefore, similar mitigation of manual excavation of the limits of the foundations with pre-emptive root pruning is proposed. The adoption of this mitigation will ensure the impacts remain very low overall. The condenser enclosure can be sited on a concrete raft installed using a no-dig method meaning it is of negligible impact to T14 overall.

6.1.6 The condenser enclosure located to the north-west of the site encroaches within the RPA of T7 by 6.5% and T8 by 2.4%. As above, this can be sited on a no-dig concrete raft with negligible impact to either tree.

Photograph 5: Co-dominant stems of T2



Photograph 6: Current overhanging branches of T8

Photograph 7: Current overhanging branches of T8

Photograph 8: Current overhanging branches of T22

6.1.7 The principal of RPA encroachment is established within BS5837:2012 and supported by the source document, National Joint Utilities Guidelines 10 / Vol. 4 1995 / 2010. NJUG

introduced the x12 diameter *Precautionary Zone* for supervised working and *Prohibited Zone* at a universal 1m from the base of the tree. RPA's are frequently confused with the NJUG Prohibited Zone, when they clearly correlate with the NJUG Precautionary Zone.

6.1.8 An RPA encroachment of <20% of RPA may be considered as low impact, given the permissive references to 20% RPA relocation and impermeable paving within BS5837:2012 and other published references to healthy trees tolerating up to 30-50% root severance (Coder, Helliwell and Watson in CEH 2006).

6.1.9 The trees in question are healthy specimens of species with a good resistance to development impacts, and quite capable of tolerating these low impacts.

6.1.10 "In practice 50% of roots can sometimes be removed with little problem, provided there are vigorous roots elsewhere. Inevitably, this degree of root loss will temporarily slow canopy growth and even lead to some dieback" (Thomas 2000). LT do not recommend annexing such high proportions of the root system; rather that within the context of the published science, planning should not be unduly concerned by impacts that are well below the subcritical threshold – *tree health is not at stake.*

6.2 Rating of Secondary impacts

6.1.1 The floor plans show only a stair well and ancillary rooms facing the canopies, therefore the secondary impacts affecting the revised scheme will be minimal. These impacts will also include honeydew and litter deposition. There will always be marginal secondary impacts of honeydew / litter deposition and partial shade on this site, regardless of development. The impacts will not change with the revised development, which is the salient point for planning to consider. Thus, the secondary impacts of revised development are minimal.

6.3 Preliminary Proposals for Mitigation of Impacts

6.3.1 All plant and vehicles engaged in demolition works should either operate outside the RPA, or should run on a temporary surface designed to protect the underlying soil structure. The temporary surface should comprise ground guards within the site interior (rear and sides) and a 200mm layer of 40/20mm clean angular stone on Treetex T300 Geotextile Separation Fabric on the drive. The demolition of the building should proceed inwards in a "pull down" fashion. Hard surfacing can be lifted with caution by a skilled machine operator again working away from the tree.

6.3.2 The path of foundations through RPAs will be manually excavated to 750mm depth under arboricultural supervision; any roots encountered within the trenches / pits will be cleanly pruned back to an appropriate junction with a sharp pruning saw or secateurs back to a junction. Roots larger than 25mm diameter may only be cut in consultation with an arboriculturalist.

6.3.3 The replacement paving/hard landscaping will require a no-dig construction technique, either using a cellular confinement system with no fines aggregate for the sub-base or simply building upon the existing sub-base without disturbing the ground below. Choice of construction method will initially depend upon root penetration within the existing sub-grade.

6.3.4	The key principle is not to excavate in the presence of roots and to provide a porous surface to promote healthy soil water relations for future root growth. A further consideration in the use of a more expensive cellular confinement system or similar, may be the claimed reduction in risk of possible future slab / surface displacement by roots of trees growing in paved areas.
6.3.5	The immediate canopy encroachment can be avoided with minor tree works (See Appendix 3). Nuisance deposition can be mitigated with regular crown cleaning and filtration traps on the guttering (see Figure 5 below). Alternatively, elements of green roof construction might be considered, where applicable.
6.3.6	The shading impacts can be mitigated by building design, with the provision of dual aspect windows and choice of room layout. Some minor crown reduction may be necessary, but not such as to impose a burden of frequent, repetitive management.

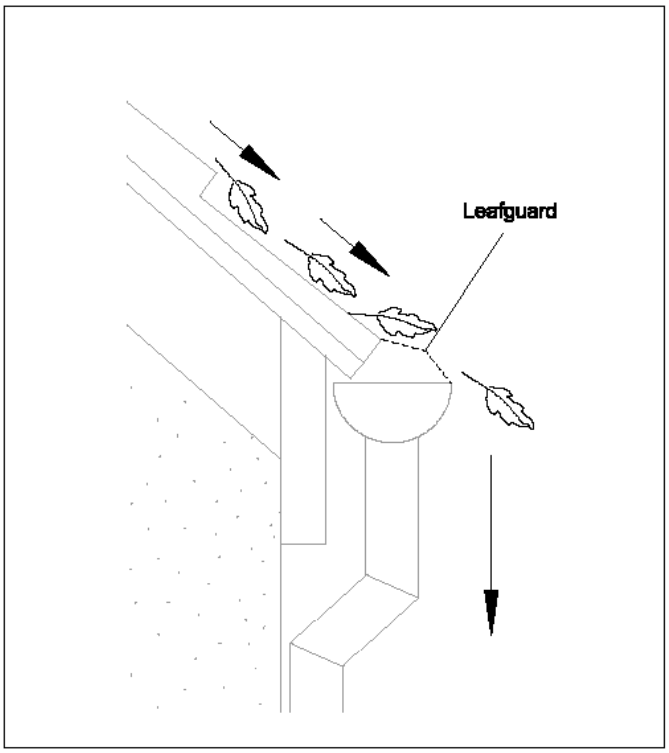


Figure 5: Filtration traps, as shown above, could be fitted on the gutters which can easily be maintained at 2-3m above ground.

6.3.8	The potential root damage from the construction impacts (drive and piling excavation) can be partly mitigated by soil treatment and light pruning (crown cleaning). The former involves soil fertiliser injection / root inoculation and decompaction: a suitable low nitrate, low phosphorous fertilizer and mycorrhizal spores are introduced to the soil profile through compressed air injection (see Figure 6). The spores are mixed with a stimulant, which helps them colonise the roots. A combination of these treatments can relieve the immediate effects of construction damage / disturbance and compaction, though long term environmental deficiencies should be addressed culturally. The case for short-term mitigation through fertiliser application and light pruning is more proven (CEH 2006) than that of the other treatments, which remain anecdotal. Soil injection is not necessarily more effective at delivering fertilizer than broadcast application, but becomes cost-effective where already recommended for decompaction treatments.

Figure 6: Soil fertiliser Injection

7.0 CONCLUSION

7.1	The site investigations and further survey work has enabled an in principle agreement with the Camden Tree Officer Mr Nick Bell; both parties have agreed that the revised proposals will have a low impact on the retained tree resource and the wider tree population or local landscape.
7.2	The full potential of the impacts can be largely mitigated through design and precautionary measures. These measures can be elaborated in Method Statements in the discharge of planning conditions.
7.3	The tree that is recommended for felling has co-dominant stems and is of little individual significance, such that its loss will not affect the visual character of the area. The loss will be mitigated within the proposed landscaping scheme by Boyles and Wyre.
7.4	Therefore, the investigations to date and the extant scheme indicate that the revised proposals will not have any significant impact on either the retained trees or wider landscape. Thus, with suitable mitigation and supervision, in addition to the agreement in principle with the Tree Officer Mr Nick Bell, the scheme is recommended to planning.

8.0 RECOMMENDATIONS

8.1 Specific Recommendations

8.1.1 Current tree works recommendations are found in Appendix 2 to this report, with works to facilitate development in Appendix 3 and a selection of columnar tree species cultivars for constricted sites provided in Appendix 4. Any tree removals recommended within this report should only be carried out with local authority consent.

8.1.2 Excavation and construction impacts within the RPA's of trees identified in Table 1 above, will need to be controlled by method statements specifying mitigation methods suggested in para 6.3 above and by consultant supervision as necessary. These method statements can be provided as part of the discharge of conditions.

8.1.3 Replace felled tree T2 with suitable nursery stock under current best practice; i.e. conforming to and planted in accordance with the following:

- BS 3936:1980 Nursery Stock;
- BS 4043:1966 Transplanting Semi-Mature Trees; and
- BS 5236:1975 Cultivation and Planting of Trees in the Advanced Nursery Stock Category.
- All replacement stock should be planted and maintained as detailed in BS 4428:1989 (Section 7): Recommendations for General Landscape Operations.

8.2 General Recommendations for Sites Being Developed with Trees

8.2.1 A Tree Protection Barrier (TPB) is already erected on site. The TPB should remain in its original form on-site for the duration of works and removed only upon full completion of works. Additional ground protection will also be required; the temporary surface should comprise ground guards within the site interior (rear and sides) and a 200mm layer of 40/20mm clean angular stone on Treetex T300 Geotextile Separation Fabric on drive.

8.2.2 A TPB may no longer be required during soft landscaping work but a full arboricultural assessment must be performed prior to the undertaking of any excavations within the RPA of a tree. This will inform a decision about the requirement of protection measures.

8.2.3 The use of heavy plant machinery for building demolition, removal of imported materials and grading of surfaces should take place in one operation. The necessary machinery should be located above the existing grade level and work away from any retained trees. This will ensure that any spoil is removed from the RPAs. It is vital that the original soil level is not lowered as this is likely to cause damage to the shallow root systems.

8.2.4 Any pruning works must be in accordance with British Standard 3998:2010 Tree work [BS3998].

8.2.5 Where sections of hard surfacing are proposed in close proximity to trees, it is recommended that "No-Dig" surfacing be employed in accordance with BS5837:2012 and 'The Principles of Arboricultural Practice: Note 1, Driveways Close to Trees, AAIS 1996 [APN1]'.

8.2.6 If the RPA of a tree is encroached by underground service routes then BS5837:2012 and NJUG VOLUME 4 provisions should be employed. If it is deemed necessary, further arboricultural advice must be sought.

8.2.7 Numerous site activities are potentially damaging to trees e.g. parking, material storage, the use of plant machinery and all other sources of soil compaction. In operating plant, particular care is required to ensure that the operational arcs of excavation and lifting machinery, including their loads, do not physically damage trees when in use.

8.2.8 To enable the successful integration of the proposal with the retained trees, the following points will need to be taken into account:

1) Plan of underground services.
2) Schedule of tree protection measures, including the management of harmful substances.
3) Method statements for constructional variations regarding tree proximity (e.g. foundations, surfacing and scaffolding).
4) Site logistics plan to include storage, plant parking/stationing and materials handling.
5) Tree works: felling, required pruning and new planting. All works must be carried out by a competent arborist in accordance with BS3998.
6) Site supervision: the Site Agent must be nominated to be responsible for all arboricultural matters on site. This person must:
   - be present on site for the majority of the time;
   - be aware of the arboricultural responsibilities;
   - have the authority to stop work that is causing, or may cause harm to any tree;
   - ensure all site operatives are aware of their responsibilities to the trees on site and the consequences of a failure to observe these responsibilities;
   - make immediate contact with the local authority and/or a retained arboriculturalist in the event of any tree related problems occurring.

8.2.9 These points can be resolved and approved through consultation with the planning authority via their Arboricultural Officer.

8.2.10	The sequence of works should be as follows:
	i) initial tree works: felling, stump grinding and pruning for working clearances;
	ii) installation of TPB for demolition & construction;
	iii) installation of underground services;
	iv) installation of ground protection;
	v) main construction;
	vi) removal of TPB;
	vii) soft landscaping.

9.0 REFERENCES

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APPENDIX 1

TREE SCHEDULE

Notes for Guidance:

1. Height describes the approximate height of the tree measured in metres from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is expressed as an average of NSEW aspect if symmetrical.
3. Ground Clearance is the height in metres of crown clearance above adjacent ground level.
4. Stem Diameter (Dm) is the diameter of the stem measured in millimetres at 1.5m from ground level for single stemmed trees. BS 5837:2012 formula (Section 4.6) used to calculate diameter of multi-stemmed trees. Stem Diameter may be estimated where access is restricted and denoted by '#'.
5. Protection Multiplier is 12 and is the number used to calculate the tree's protection radius and area
6. Protection Radius is a radial distance measured from the trunk centre.
7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak), Dead (dead or dying tree).
8. Structural Condition - Good (no or only minor defects), Fair (remediable defects), Poor - Major defects present.
9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to (British Standard 5837:2012 section 4.5) and refers to tree/group quality and value; 'A' – High, 'B' - Moderate, 'C' - Low, 'U' - Unsuitable for retention. The following colouring has been used on the site plans:
    - High Quality (A) (Green),
    - Moderate Quality (B) (Blue),
    - Low Quality (C) (Grey),
    - Unsuitable for Retention (U) (Red)
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

Landmark Trees

Site: 73-75 Avenue Road, London

Date: 11th March 2015

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: BWR/75AVR/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
2	Birch, Silver	10	3244	4.5	262	Semi-mature	3.1	Normal	Fair	C	2	10+	Co-dominant stems Included bark in main stem unions
3	Hawthorn, Common	5	2	3.0	200	Early Mature	2.4	Moderate	Fair	C	2	10+	
4	Pittosporum	3223	2	1.5	100	Semi-mature	1.2	Normal	Fair	C	2	20+	Note: diameter from base only
5	Pittosporum	6	2355		150	Semi-mature	1.8	Normal	Fair	C	2	20+	Note: diameter from base only
7	Beech, Common	17	6685	4.0	700	Mature	8.4	Normal	Good	A	2	>40	Forked into 2 stems at 5m Remote survey only
8	Plane, London	23	9998	2.5	1200	Mature	14.4	Normal	Poor	C	1	10+	Large cavity at base 50cm deep, 1.5m in height, 40cm wide. Cavity in pruning wound 6mabg w Evidence of fibre buckling

Landmark Trees

Site: 73-75 Avenue Road, London

Date: 11th March 2015

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd
020 7851 4544
Surveyor(s): Adam Hollis
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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
G9	Lime, Common	10	1	8.0	400	Early Mature	4.8	Normal	Fair	B	2	20+	Pollarded in the past at 8m Note: E most stem separate from group has 2m growth
11	Oak, English	18	6763	7.0	780	Mature	9.4	Moderate	Fair	B	2	>40	Cavity in pruning wound 4mabg E Tree reduced in past at 16m Minor deadwood
12	Maple, Norway	15	2220	3.0	300	Early Mature	3.6	Moderate	Fair	C	2	10+	Suppressed by adjacent trees Decay in multiple pruning wounds
13	Beech, Common	15	1150	9.0	340	Early Mature	4.1	Moderate	Fair	C	2	10+	Suppressed by adjacent tree Die-back Codominant W 5mabg Decay in multiple pruning wounds
14	Chestnut, Horse	16	3683	7.0	820	Mature	9.8	Moderate	Fair	B	2	20+	Forked into 2 at 2m Adjacent wall cracked near roots Cankered limb over road recently reduced. Girdling root W
15	Pear, Domestic	8	1322	3.0	300	Mature	3.6	Normal	Fair	C	2	10+	Asymmetry (major) unbalanced growth over road Recently cut back

Landmark Trees

Site: 73-75 Avenue Road, London

Date: 11th March 2015

Appendix 1

BS5837 Tree Constraints Survey Schedule

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020 7851 4544
Surveyor(s): Adam Hollis
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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
18	Chestnut, Indian Horse	14	4634	4.0	750	Mature	9.0	Moderate	Poor	C	2	10+	Branches extend over road significantly Canker & decay through crown Cankered limb over road recently reduced
19	Chestnut, Indian Horse	15	6422	6.0	560	Mature	6.7	Moderate	Poor	U		<10	Canker on main trunk Honey fungus at base / graft Blunt probe penetrates 100mm through graft union
20	Lime, Common	16	4		750	Mature	9.0	Normal	Good	B	2	>40	Reduced in the past to 14m
21	Chestnut, Indian Horse	10	4532	5.0	540	Mature	6.5	Normal	Fair	B	2	20+	Significant lean over road
22	Chestnut, Indian Horse	13	5534	6.5	400	Early Mature	4.8	Normal	Good	B	1	20+	A tree with insignificant defects
24	Chestnut, Horse	14	3535	6.0	640	Mature	7.7	Moderate	Fair	B	2	20+	Included bark unions COBRA cable in canopy Canker lesions in crown

Landmark Trees

Site: 73-75 Avenue Road, London

Date: 11th March 2015

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: BWR/75AVR/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
28	Plane, London	20	10	10.0	1100	Mature	13.2	Normal	Good	A	2	>40	Pollarded at 10m in past
29	Plane, London	22	10	6.0	1130	Mature	13.6	Normal	Good	A	2	>40	Pollarded at 8m in past
30	Plane, London	20	10	6.0	870	Mature	10.4	Normal	Good	B	2	>40	Pollarded at 8m in past

APPENDIX 2

RECOMMENDED TREE WORKS TO FACILITATE DEVELOPMENT

Notes for Guidance:

RP - Pre-emptive root pruning of foundation encroachments under arboricultural supervision.
CB - Cut Back to boundary/clear from structure.
CL# - Crown Lift to given height in meters.
CT#% - Crown Thinning by identified %.
CCL - Crown Clean (remove deadwood/crossing and hazardous branches and stubs).
CR#% - Crown Reduce by given maximum % (of outermost branch & twig length)
DWD - Remove deadwood.
Fell - Fell to ground level.
FInv - Further Investigation (generally with decay detection equipment).
Pol - Pollard or re-pollard.
Mon - Check / monitor progress of defect(s) at next consultant inspection which should be <18 months in frequented areas and <3 years in areas of more occasional use. Where clients retain their own ground staff, we recommend an annual in- house inspection and where practical, in the aftermath of extreme weather events.
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

Landmark Trees

Site: 73-75 Avenue Road, London

Date: 11th March 2015

Surveyor(s): Adam Hollis

Ref: BWR/75AVR/AIA

Appendix 2

Recommended Tree Works

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
8	Plane, London	C	23	2.5	9998	FInv	Large cavity at base 50cm deep, 1.5m in height, 40cm wide. Cavity in pruning wound 6mabg w Evidence of fibre buckling Recommended husbandry 2
G9	Lime, Common	B	10	8.0	1	POL 8m i.e. Pollard E stem to match rest of group	Pollarded in the past at 8m Note: E most stem separate from group has 2m growth Recommended husbandry 2
11	Oak, English	B	18	7.0	6763	DWD FInv Climbing inspection	Cavity in pruning wound 4mabg E Tree reduced in past at 16m Minor deadwood Recommended husbandry 2
13	Beech, Common	C	15	9.0	1150	Mon	Suppressed by adjacent tree Die-back Codominant W 5mabg Decay in multiple pruning wounds Recommended husbandry 3
14	Chestnut, Horse	B	16	7.0	3683	Mon Monitor ongoing condition	Forked into 2 at 2m Adjacent wall cracked near roots Cankered limb over road recently reduced. Girdling root W Recommended husbandry 3
18	Chestnut, Indian Horse	C	14	4.0	4634	FInv Climbing inspection	Branches extend over road significantly Canker & decay through crown Cankered limb over road recently reduced Recommended husbandry 2
19	Chestnut, Indian Horse	U	15	6.0	6422	FInv Likely to be felled given the presence of substantial decay in the graft union at the base of the tree	Canker on main trunk Honey fungus at base / graft Blunt probe penetrates 100mm through graft union Recommended husbandry 1

Landmark Trees

Site: 73-75 Avenue Road, London
Date: 11th March 2015

Appendix 2

Surveyor(s): Adam Hollis
Ref: BWR/75AVR/AIA

Recommended Tree Works

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
21	Chestnut, Indian Horse	B	10	5.0	4532	Mon Monitor ongoing condition	Significant lean over road Recommended husbandry 3
24	Chestnut, Horse	B	14	6.0	3535	Mon Monitor ongoing condition	Included bark unions COBRA cable in canopy Canker lesions in crown Recommended husbandry 3

APPENDIX 3

RECOMMENDED TREE WORKS TO FACILITATE DEVELOPMENT (See Table 1)

Notes for Guidance:

RP - Pre-emptive root pruning of foundation encroachments under arboricultural supervision.
CB - Cut Back to boundary/clear from structure.
CL# - Crown Lift to given height in meters.
CT#% - Crown Thinning by identified %.
CCL - Crown Clean (remove deadwood/crossing and hazardous branches and stubs).
CR#% - Crown Reduce by given maximum % (of outermost branch & twig length)
DWD - Remove deadwood.
Fell - Fell to ground level.
FInv - Further Investigation (generally with decay detection equipment).
Pol - Pollard or re-pollard.
Mon - Check / monitor progress of defect(s) at next consultant inspection which should be <18 months in frequented areas and <3 years in areas of more occasional use. Where clients retain their own ground staff, we recommend an annual in- house inspection and where practical, in the aftermath of extreme weather events.
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

Landmark Trees

Site: 73-75 Avenue Road, London

Date: 11th March 2015

Appendix 3

Surveyor(s): Adam Hollis

Ref: BWR/75AVR/AIA

Recommended Tree Works To Facilitate Development

Hide irrelevant

Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
2	Birch, Silver	C	10	4.5	3244	Fell	Co-dominant stems Included bark in main stem unions To facilitate development
8	Plane, London	C	23	2.5	9998	CL9m CR15% FInv No substantial branches <10m abg	Large cavity at base 50cm deep, 1.5m in height, 40cm wide. Cavity in pruning wound 6mabg w Evidence of fibre buckling To facilitate development
22	Chestnut, Indian Horse	B	13	6.5	5534	CB Minor trimming to facilitate piling works	A tree with insignificant defects To facilitate development

APPENDIX 4

TREES FOR CONSTRICTED SITES

Table A4.1: Rosaceous Tree Species for Constricted Planting Locations

Common Name	Species	Selected Form
Hawthorn	Crataegus monogyna	Stricta
Cockspur	Crataegus prunifolia	Splendens
Cherry	Prunus x hillieri	Spire
Bird cherry	Prunus padus	Albertii
Rowan / Mountain ash	Sorbus aucuparia	Cardinal Royal
Rowan / Mountain ash	Sorbus aucuparia	Rossica Major
Rowan / Mountain ash	Sorbus aucuparia	Sheerwater Seedling
Swedish whitebeam	Sorbus intermedia	Brouwers
B. whitebeam	Sorbus x thuringiaca	Fastigiata

Table A4.2: Specimen Tree Species for Constricted Planting Locations

Common Name	Species	Selected Form
Chinese red bark birch	Betula albosinensis	Fascination
Swedish birch	Betula pendula	Dalecarlica
Hornbeam	Carpinus betulus	Fastigiata Frans Fountaine
Turkish Hazel	Corylus colurna	
Maidenhair tree	Gingko biloba	
Pride of India	Koelreuteria paniculata	Fastigiata
European larch	Larix decidua	Sheerwater Seedling
Tulip tree	Liriodendron tulipfera	Fastigiata

APPENDIX 5

ROOT EXCAVATION REPORT BY ARBORAERATION (26th February 2015)

Root Excavation Report

73 Avenue Road

London

Undertaken by

David Abbott, Arboraeration

26th February 2015

Introduction

Site Address: 73 Avenue Road, London

Seven trial pits were excavated by David Abbott from Arbor Aeration on the 26th of February 2015. Plots were excavated using an air spade and manual digging tools.

Reason for trial pits

Trial pits were excavated to determine the extent of a rooting area belonging to two Chestnut's and a lime tree growing on the south east boundary of the site. A seventh plot was excavated to determine the rooting extent belonging to a plane tree growing in the North West corner of the property.

Trial Pit Results – Located as per plans

Trial Pit 1	1.5m Long, 40cm Wide, 12cm Deep. 1x60mm root Number of fibrous roots
Trial Pit 2	1.5m Long, 40cm wide18cm Deep. 1x 50mm Root
Trial Pit 3	1.5m long, 35cm wide, 13cm Deep 1x45mm root 1x50mm root
Trial Pit 4	90cm long, 40cm wide, 12cm deep 2x30mm roots 1x25mm root
Trial Pit 5	1.5m long plot containing 2x 40mm roots, chased this back into the lawn to determine point that roots reduce <25mm. 2.5m out from initial plot (11m from boundary wall) roots are still 30mm in diameter.
Trial Pit 6	1.5m long, 40cm wide, 20cm deep 1x45mm root 1x30mm root
Trial Pit 7	1.5m longx1.5m long "L", 40cm wide, 70cm deep No Roots

Further Information

The rooting area of the 3 boundary trees appears to exceed far beyond the consented RPA and it would prove very difficult to reduce this further.

Photographic Evidence

Trial Pit 1

Trial Pit 2

Trial Pit 3

Trial Pit 4

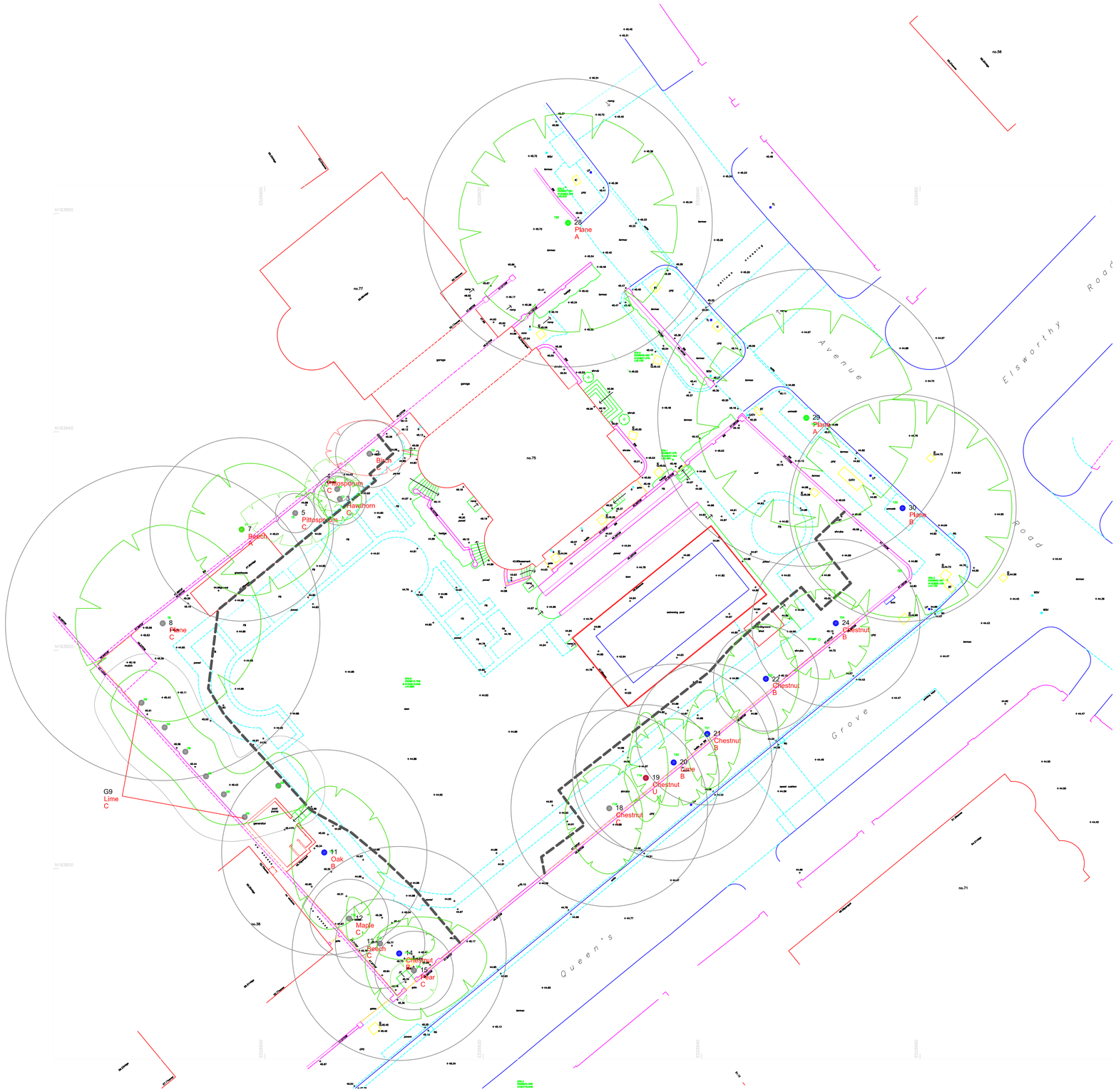
Trial Pit 5

Trial pit 6

Trial Pit 7

APPENDIX 6

TREE CONSTRAINTS PLAN



NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base).

Landmark Trees

20 Broadwick Street, London, W1F 8HT
Tel: 0207 851 4544 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 73-75 Avenue Road	1:200@ A1
Drawing Title: Tree Constraints Plan	February 2015

Key:

- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category U Trees Unsuitable for Retention

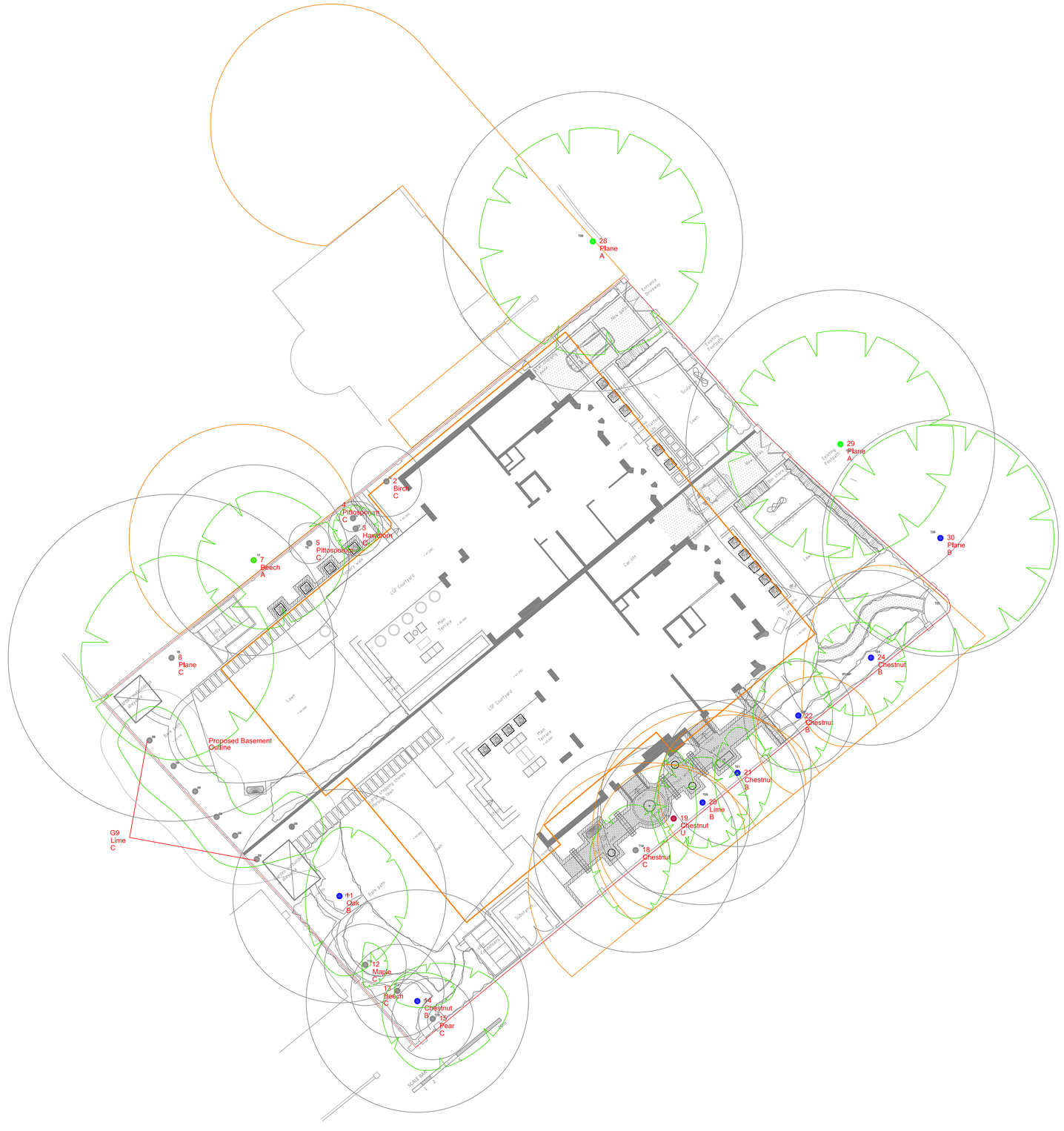
Category, Crown Spread, Root Protection Area, Tree Number, Species, Category

13 Birch B2

- 2014 consented Tree Protection Barrier

APPENDIX 7

ARBORICULTURAL IMPACT ASSESSMENT PLAN



Proposed Lower Ground Floor Plan

NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base).

Landmark Trees

20 Broadwick Street, London, W1F 8HT
Tel: 0207 851 4544 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 73-75 Avenue Road	1:200@ A1
Drawing Title: Arboricultural Impacts Assessment	March 2016

Key:

- Category A
  High Quality
- Category B
  Moderate Quality
- Category C
  Low Quality
- Category U
  Trees Unsuitable for Retention