Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT:

50 Avenue Road,

London

NW8 6HS

REPORT PREPARED FOR:

Mr Dumasia

C/o KSR architects

14 Greenland Street

London

NW1 0ND

REPORT PREPARED BY

Adam Hollis

MSc ARB MICFor FArbor A MRICS C Env

Ref: KSR/50AR/AIA/01

Date: 10th August 2013

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:	Mr Dumasia	**Case Ref:**	KSR/50AR/AIA/01
Local Authority:	LB Camden	**Date:**	10th August 2013
Site Address: 50 Avenue Road, London NW8 6HS			
Proposal: Demolition of existing house and replacement with a substantial family house including a basement and sub-basement.			

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

Site Layout				
Site Visit	Y	Date: 02/05/13	Access Full/Partial/None	F/P
Trees on Site	Y		Off-site Trees	Y
Trees affected by development	Y		O/s trees affected by development	Y
Tree replacement proposed:	Y		On or off-site trees indirectly affected by development	N

Trees with the potential to be affected
Felling of two category 'C' trees (T8 and T12) Very low/low impacts to RPA's of category 'B' copper beeches T1, T2 and T3's (subject to mitigation) Category C pear tree T5 (c. 20% RPA impact) to be retained with crown reduction Low impacts to off-site category 'C' Leyland cypress T17 Site investigations have indicated no impact to off-site T9, 10, 11, 13, 14 & 15
Comments
Tree root investigation results in Appendix 5.

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	N
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 proposals for 50 Avenue Road, London NW8 6HS, reviewing any conflicts between the proposals and material tree constraints identified in our survey.

1.2 There are 19 trees surveyed on or around the site, of which 7 are 'B' category *(Moderate Quality) and 12 are 'C' category *(Low Quality). In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting.

1.3 The principal primary impacts in the current proposals are felling of two category 'C' trees (T8 and T12). Further primary impacts include the Lower Ground Floor (LGF) Level encroachment of the category 'B' copper beeches T1, T2 and T3's, with the theoretical RPAs encroached by 10.4%, 5.6% and 6.6% area respectively. Whilst beech trees generally have poor tolerance of root disturbance, these trees are in good health and subject to the proposed mitigation (pre-emptive root pruning to 750mm within the limits of the RPA) the impact to these trees will be very low/low. NB the LGF impact to the south of T1 (which gives it the larger of the three impacts) occurs within the existing change of levels and hard-standing, which may well have reduced root colonisation by beech in this area. The category C pear tree T5, will incur a c. 20% RPA impact, but it is hoped that a 25% crown reduction will temporarily reduce the trees water demand through the development phase. The tree is not a significant material constraint on development, but the client would like to keep it. Cultural treatments can follow during the landscape phase.

1.4 The theoretical RPA of the off-site category 'C' Leyland cypress T17 will also be encroached by 9.7%, with the proposed water tank/refuse store leading to a total encroachment from the development proposals of 26.1%. However, this species has a good tolerance to root disturbance and mitigation is available to reduce the combined impacts to a low level and it is not known to what extent a shallow-rooting conifer will have grown below the boundary wall.

1.5 Whilst in theory there would also be encroachments to the off-site trees T9, 10, 11, 13, 14 &15, site investigations have indicated that the rooting within this site from No.52 has been prevented by the c. 1.3m change in level and 1.8m depth of wall. The RPA's have been morphed accordingly, as shown on the Tree Constraint Plan (see Appendix 6). Ground Floor (GF) Level encroachments are similar to those which exist today, requiring the potential cutting back of T11. The potential landscaping impacts will be mitigated by the use of no-dig techniques and pre-emptive root pruning under arboricultural supervision if the ground levels are to be lowered.

1.6 Secondary impacts from the new elevation require pruning to maintain convenient canopy clearance from T11, with minor organic deposition and shading from the retained trees (a scenario that already exists today).

1.7 The site has potential for development without impacting significantly on the wider tree population or local landscape. Thus, with suitable mitigation and supervision the scheme is viable.

* 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 Mr Dumasia, C/o KSR architects, to provide a survey and an arboricultural impact assessment of proposals for the site: 50 Avenue Road, London NW8 6HS. The report is to accompany a planning application.

2.1.2 The proposals are for the demolition of existing house and replacement with a substantial family house, including a basement and sub-basement. This report will assess the impact 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 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: 1730_Site

Proposals: AND-080_BASEMENT/LOWER GROUND PLAN & AND-100_GROUND/ FIRST FLOOR PLAN

2.3 Scope of survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, I surveyed the trees on site on 2nd May 2013, 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

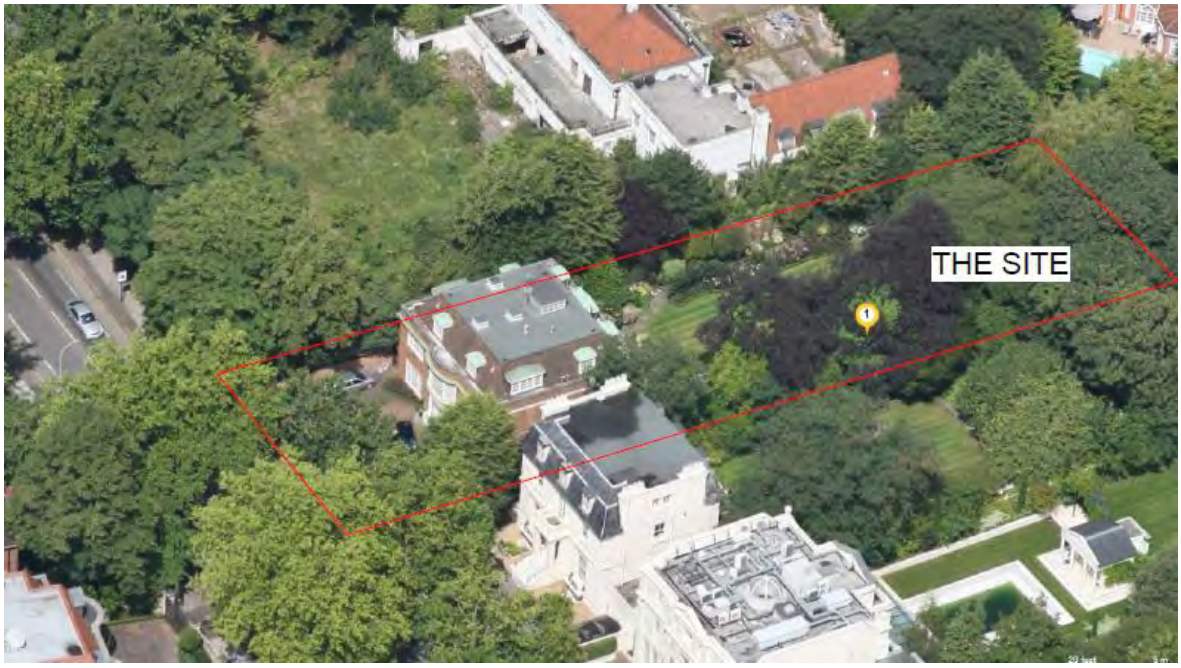
2.4.1 Detailed records of individual trees are given in the survey schedule in Appendix 1 to this report.

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: 50 Avenue Road, London NW8 6HS

3.1.1	The existing residential dwelling lies on the northern side of Avenue Road, to the east of the junction with Elsworthy road. It is a substantial property, with a hard-surfaced front garden and a large rear garden.
3.1.2	The site is relatively level.
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.

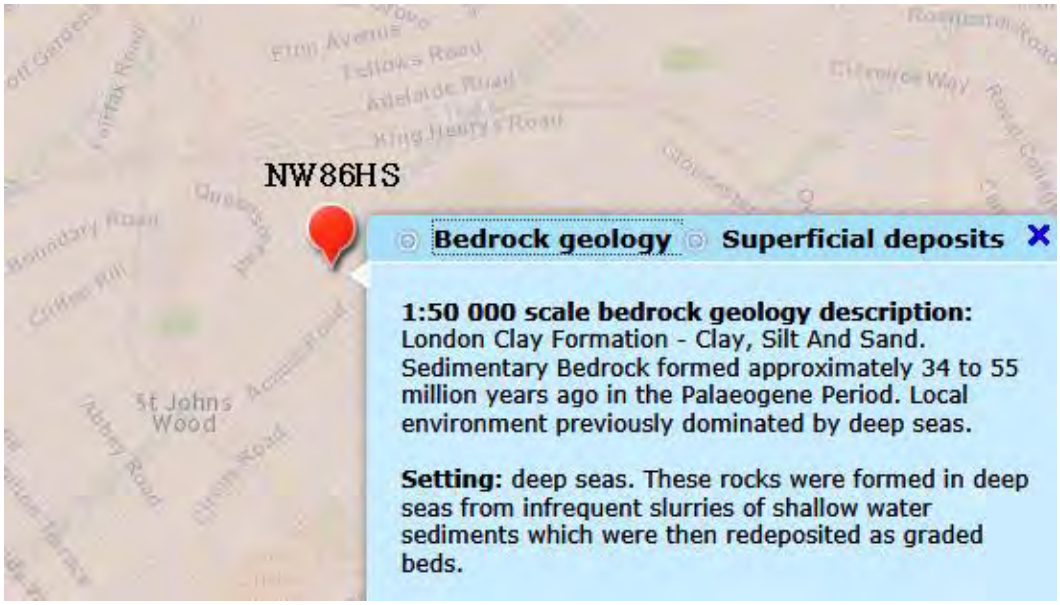


Figure 1: Extract from the BGS Geology of Britain Viewer

3.2 Subject trees

3.2.1	Of the 19 surveyed trees 7 are 'B' category (Moderate Quality) and 12 are 'C' category (Low Quality).
3.2.2	The tree species comprise mainly copper beech, Leyland cypress, lime, London plane and magnolia; a holly, Austrian pine, pear, plum and tree of heaven are also on site.
3.2.3	In terms of age demographics there is a preponderance of mature trees, with some semi mature, early mature and young trees in the population.

3.2.4	Full details of the surveyed trees can be found in Appendix 1 of this report.
3.2.5	There are some arboricultural works required within the existing tree population. These are listed in Appendix 2 and include clearing deadwood from the crowns of T3 and T4, in addition to the need to remove the ivy from T2 then re-inspect for signs of decay.

3.3 Planning Status

3.3.1	We are not aware of the existence of any Tree Preservation Orders, but understand the site stands within the Elsworthy Conservation Area, which will affect the subject trees: it is a criminal offence to prune, damage or fell such trees without permission from the local authority.

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). Alternatively, one need principally remember that RPA's are area-based and not linear – notional rather than fixed entities. Modifications have been made in this instance (please see overleaf).

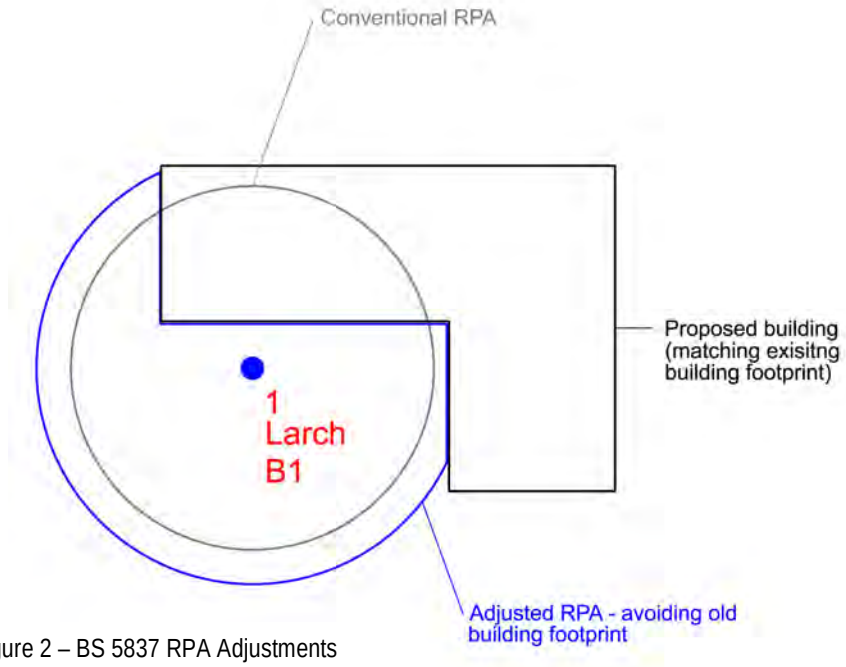


Figure 2 – BS 5837 RPA Adjustments

4.1.3 In BS5837, paragraph 4.6.2 states that RPA's should reflect the morphology and disposition of the roots; 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. Not infrequently, LT are requested by LPA Tree Officers to modify the RPA's to reflect their assumptions that e.g. a road will have drastically limited root growth.

4.1.4 On this site, the assumption that the foundations of the existing boundary wall has modified the RPA's of the off-site trees has been tested with site investigations / trial pits. These modifications are illustrated on the Tree Constraints Plan contained in Appendix 5.

4.1.5 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. As discrete, internal trees, their removal will not affect the wooded envelope that encloses much of the site.

4.1.6 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 Site investigations have indicated that the rooting within this site from No.52 has been prevented by the c. 1.3m change in level and 1.8m depth of wall (see Appendix 5). The RPA's have been morphed accordingly, as shown on the Tree Constraint Plan (see Appendix 6). It is also possible that the change of levels and hard-standing to the south of T1 may have reduced root colonisation by beech in this area, though no changes to the RPA have been made in the absence of site investigations.

4.1.11 In this instance, the three category 'B' copper beech trees T1 – 3 represent significant constraints to future development. The current proposals have evolved in the light of these known constraints and trial pit findings (see Appendix 5).

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 – 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.

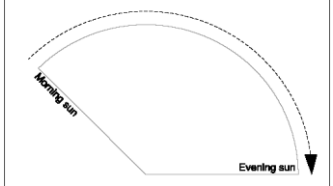


Figure 4 – Shading Arc

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 and position of the on-site trees will ensure that shading constraints are minimal, with leaf deposition and honey-dew likely to be as it is today. However, the off-site trees 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.

Table 1: Arboricultural Impact Assessment for Trees

Hide irrelevant | Show All Trees

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

Ref: KSR/50AVRD/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	1	Beech, Copper	Basement: 17m2 (reduced from 25m2) Landscaping impacts	17 m^2 10.44 %	Mature	Good	Poor	Medium	N/A	Manual excavation to 750 mm within RPA with pre-emptive root pruning No-dig construction
B	2	Beech, Copper	Basement: 8.5m2 Landscaping impacts	8.5 m^2 5.58 %	Mature	Good	Poor	Low	N/A	Manual excavation to 750 mm within RPA with pre-emptive root pruning No-dig construction
B	3	Beech, Copper	Basement: 10m2 Landscaping impacts	10 m^2 6.57 %	Mature	Good	Poor	Low/ Medium	N/A	Manual excavation to 750 mm within RPA with pre-emptive root pruning No-dig construction
C	4	Tree of Heaven	Landscaping impacts	m^2 N/A %	Mature	Moderate	Good	Very Low	N/A	No-dig construction
C	5	Pear, Domestic	Basement and canopy impact: 24m2 Landscaping impacts	24 m^2 19.62 %	Mature	Moderate	Moderate	Medium	Low	Remedial tree surgery (see Rec. Works) No-dig construction
C	7	Cypress, Leyland	Landscaping impacts	m^2 N/A %	Semi-mature	Moderate	Good	Very Low	N/A	No-dig construction

Table 1: Arboricultural Impact Assessment for Trees

Hide irrelevant | Show All Trees

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

Ref: KSR/50AVRD/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	Cypress, Leyland	Felled to Facilitate Development	m^2 N/A %	Early Mature	Normal	Poor	N/A	Low	New planting / landscaping
B	9	Pine, Austrian	Basement: 21m2 (to standard RPA) Landscaping impacts	m^2 N/A %	Early Mature	Normal	Good	N/A	N/A	Site investigations indicate no roots on site No-dig construction
C	10	Plum, Purple	Basement: 5m2 (to standard RPA) Landscaping impacts	m^2 N/A %	Early Mature	Moderate	Moderate	N/A	N/A	Site investigations indicate no roots on site No-dig construction
C	11	Cypress, Leyland	Basement: 39m2 (to standard RPA) Landscaping impacts	m^2 N/A %	Mature	Normal	Good	N/A	N/A	Site investigations indicate no roots on site No-dig construction
C	12	Magnolia (M. grandiflora)	Felled to Facilitate Development	m^2 N/A %	Semi-mature	Normal	N/A	N/A	Very Low	New planting / landscaping
B	13	Lime, Common	Basement: 80m2 (to standard RPA) Landscaping impacts	m^2 N/A %	Mature	Normal	Moderate	N/A	N/A	Site investigations indicate no roots on site No-dig construction

Table 1: Arboricultural Impact Assessment for Trees

Hide irrelevant | Show All Trees

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

Ref: KSR/50AVRD/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	14	Holly, variegated	Basement: 1m2 (to standard RPA) Landscaping impacts	m^2 N/A %	Mature	Moderate	Moderate	N/A	N/A	Site investigations indicate no roots on site No-dig construction
B	15	Lime, Common	Basement: 7m2 (to standard RPA) Landscaping impacts	m^2 N/A %	Mature	Normal	Moderate	N/A	N/A	Site investigations indicate no roots on site
C	17	Cypress, Leyland	Basement: 11m2 (9.7%) Water tank: 9.5m2 (8.4%) Refuse/meter: 9m2 (8%)	29.5 m^2 26.08 %	Mature	Moderate	Good	Medium	N/A	Manual excavation to 750 mm within RPA with pre-emptive root pruning for LGF No-dig construction for GF level impacts

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 The principal primary impacts in the current proposals are felling of two category 'C' trees (T8 and T12). Further primary impacts include the Lower Ground Floor (LGF) Level encroachment of the category 'B' copper beeches T1, T2 and T3's, with the theoretical RPAs encroached by 10.4%, 5.6% and 6.6% area respectively. Whilst beech trees generally have poor tolerance of root disturbance, these trees are in good health and subject to the proposed mitigation (pre-emptive root pruning to 750mm within the limits of the RPA) the impact to these trees will be very low/low. NB the LGF impact to the south of T1 (which gives it the larger of the three impacts) occurs within the existing change of levels and hard-standing, which may well have reduced root colonisation by beech in this area. The category C pear tree T5, will incur a c. 20% RPA impact, but it is hoped that a 25% crown reduction will temporarily reduce the trees water demand through the development phase. The tree is not a significant material constraint on development, but the client would like to keep it. Cultural treatments can follow during the landscape phase.

6.1.1 The theoretical RPA of the off-site category 'C' Leyland cypress T17 will also be encroached by 9.7%, with the proposed water tank/refuse store leading to a total encroachment from the development proposals of 26.1%. However, this species has a good tolerance to root disturbance and mitigation is available to reduce the combined impacts to a low level and it is not known to what extent a shallow-rooting conifer will have grown below the boundary wall.

6.1.2 Whilst in theory there would also be encroachments to the off-site trees T9, 10, 11, 13, 14 &15, site investigations have indicated that the rooting within this site from No.52 has been prevented by the c. 1.3m change in level and 1.8m depth of wall (see Appendix 5). The RPA's have been morphed accordingly, as shown on the Tree Constraint Plan (see Appendix 6). Ground Floor (GF) Level encroachments are similar to those which exist today, requiring the potential cutting back of T11. The potential landscaping impacts will be mitigated by the use of no-dig techniques and pre-emptive root pruning under arboricultural supervision if the ground levels are to be lowered.

6.1.3 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.

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

6.1.5 "**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

6.2.1 The secondary impacts from the new elevation are pruning to maintain convenient canopy clearance from T11, with minor organic deposition and shading from the retained trees remaining much as it is today.

6.3 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 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 RPA piling encroachments will be pre-emptively excavated by hand or with an Airspade under arboricultural supervision. Roots smaller then 25mm diameter may be cut cleanly 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 potential landscaping impacts will be mitigated by the use of no-dig techniques, 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. 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. Any changes in level within a RPA will require arboricultural supervision, with pre-emptive root pruning if the ground levels are to be lowered.

6.3.4 The immediate canopy encroachment can be avoided by pruning T11 to give sufficient clearance.

6.3.5 Nuisance deposition can be mitigated with regular crown cleaning and filtration traps on the guttering (see Figure 5 below). Alternatively, a green roof construction might be considered.

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.

6.3.7 The landscape impact of tree losses can be offset by the landscape proposals, ideally involving new planting of ornamental varieties of native species, and where appropriate with columnar or compact form. A selection of columnar tree species cultivars for constricted sites is provided in Appendix 4.

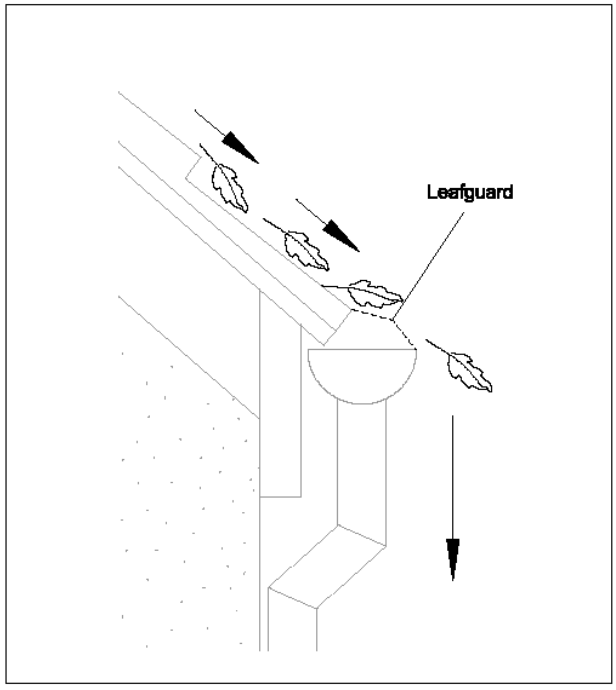


Figure 5: Filtration traps, as shown above, could be fitted on the gutters which can easily be maintained at 2-3m above ground.

7.0 CONCLUSION

7.1 The potential impacts of development are all relatively low in terms of both quality of trees removed and also RPA encroachments of trees retained.

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 retained trees are generally in good health and capable of sustaining these reduced impacts.

7.4 The trees that are recommended for felling are of little individual significance, such that their loss will not affect the visual character of the Conservation Area.

7.5 Therefore, the proposals will not have any significant impact on either the retained trees or wider landscape.

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 trees with native ornamental 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

8.2.1 Any trees which are in close proximity to buildings proposed for demolition should be protected with a Tree Protection Barrier (TPB). This TPB should comprise steel, mesh panels 2.4m in height ('Heras') and should be mounted on a scaffolding frame (shown in Fig 2 of BS5837:2012). The position of the TPB can be shown on plan as part of the discharge of conditions, once the lay out is agreed with the planning authority. The TPB should be erected prior to commencement of works, remain in its original form on-site for the duration of works and removed only upon full completion of works.

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. It is important that all TPBs have permanent, weatherproof notices denying access to the RPA.

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

- Barlow JF & Harrison G. 1999. Shade By Trees, Arboricultural Practice Note 5, AAIS, Farnham, Surrey.
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- Centre for Ecology & Hydrology. 2006. Tree Roots in the Built Environment, HMSO, London.
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- Thomas P, 2000. Trees: Their Natural History, Cambridge University Press, Cambridge.
- Trowbridge J & Bassuk N (2004) Trees in the Urban Landscape: Site Assessment, Design, and Installation; J Wiley & Sons inc. NJ USA

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 Ltd
Tel: 020 7851 4544

BS5837 Tree Constraints Survey Schedule

Site: 50 Avenue Road, London NW8 6HS

Surveyor(s): Adam Hollis

Date: 02/05/13

Ref: KSR/50AVRD/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
1	Beech, Copper	13	5655	3	Mature	600.0	12	7.2	Good	Good	High	B	2	>40	Flush pruning wound 3m abg W Rampant creeper over S crown
2	Beech, Copper	>40	4	3	Mature	580.0	12	7.0	Good	Fair	High	B	2	20-40	Ivy clad Leaning (significantly) over boundary Rampant creeper over S crown
3	Beech, Copper	16	6555	6	Mature	580.0	12	7.0	Good	Good	High	B	2	>40	Deadwood (minor) throughout crown
4	Tree of Heaven	15	7344	5	Mature	430.0	12	5.2	Moderate	Good	Medium	C	2	20-40	Deadwood (minor) throughout crown A sparser than normal canopy Dieback in lower crown
5	Pear, Domestic	10	4	2	Mature	520.0	12	6.2	Moderate	Fair	Medium	C	2	10-20	Deadwood (minor) throughout crown Leaf/shoot disorders Moderate decay in stem
G6	Cypress, Leyland x 4	13	2	2	Semi-mature	200.0	12	2.4	Normal	Good	Low	C	2	20-40	
7	Cypress, Leyland	9	2	2.5	Semi-mature	230.0	12	2.8	Moderate	Good	Low	C	2	20-40	Suppressed by nearby tree

Notes:

1. Height describes the approximate height of the tree measured in meters 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 meters of crown clearance above adjacent ground level.
4. Stem Diameter 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.
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 5837:2005 Table 1) and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Unsuitable for Retention.
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 Ltd
Tel: 020 7851 4544

BS5837 Tree Constraints Survey Schedule

Site: 50 Avenue Road, London NW8 6HS

Surveyor(s): Adam Hollis

Date: 02/05/13

Ref: KSR/50AVRD/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
8	Cypress, Leyland	11	4	2.5	Early Mature	360.0	12	4.3	Normal	Good	Low	C	2	20-40	Co-dominant stems Included bark in main stem unions
9	Pine, Austrian	10	3443	2.5	Early Mature	400.0	12	4.8	Normal	Good	Medium	B	2	>40	RS
10	Plum, Purple	9	3	2.5	Early Mature	259.8	12	3.1	Moderate	Fair	Low	C	2	10-20	RS
11	Cypress, Leyland	16	5544	2.5	Mature	509.9	12	6.1	Normal	Fair	Low	C	2	10-20	RS
12	Magnolia (M. grandiflora)	5	2	1	Semi-mature	134.5	12	1.6	Normal	Good	Low	C	2	20-40	
13	Lime, Common	17	5255	12	Mature	707.1	12	8.5	Normal	Fair	Medium	B	2	>40	Tipped back to boundary to 12m Damaging wall RS
14	Holly, variegated	10	3	2	Mature	200.0	12	2.4	Moderate	Fair	Low	C	2	10-20	Ivy smothered RS

Notes:

1. Height describes the approximate height of the tree measured in meters 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 meters of crown clearance above adjacent ground level.
4. Stem Diameter 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.
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 5837:2005 Table 1) and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Unsuitable for Retention.
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.

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BS5837 Tree Constraints Survey Schedule

Site: 50 Avenue Road, London NW8 6HS

Surveyor(s): Adam Hollis

Date: 02/05/13

Ref: KSR/50AVRD/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
15	Lime, Common	17	5455	6	Mature	450.0	12	5.4	Normal	Fair	Medium	B	2	>40	Ivy clad Damaging wall RS
16	Magnolia (M. X soulangiana)	4	3	2	Mature	100.0	12	1.2	Normal	Good	Low	C	2	10-20	
17	Cypress, Leyland	10	3	5	Mature	500.0	12	6.0	Moderate	Fair	Low	C	2	10-20	Lopped & topped RS
18	Plane, London	13	6	6	Mature	510.0		0.0	Normal	Fair	High	B	2		Large basal wound N
19	Plane, London	6	2	3	Young	120.0		0.0	Normal	Good	Low	C	2		Leaning (slightly) SE

Notes:

1. Height describes the approximate height of the tree measured in meters 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 meters of crown clearance above adjacent ground level.
4. Stem Diameter 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.
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).
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9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to (British Standard 5837:2005 Table 1) and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Unsuitable for Retention.
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.

APPENDIX 2

RECOMMENDED TREE WORKS

Notes for Guidance:

1, 2, 3 - Urgent (ASAP), Standard (within 6 months), Non-urgent (2-3 years)
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 - Monitor ongoing condition (annually by staff / owners & every 2-3 yrs by consultant).
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

Landmark Trees Ltd
Tel: 0207 851 4544

Recommended Tree Works

Hide irrelevant | Show All Trees

Site: 50 Avenue Road, London NW8 6HS

Surveyor(s): Adam Hollis

Date: 02/05/13

Ref: KSR/50AVR/AIA

Tree No.	English Name	Height	Stem Diameter	Crown Spread	Recommended Works	Comments/ Reasons
3	Beech, Copper	16	580.0	6555	DWD	Deadwood (minor) throughout crown Advisable for good arboricultural practice
2	Beech, Copper	>40	580.0	4	Svr Ivy FInv i.e. re-inspect stem post-ivy clearance	Ivy clad Leaning (significantly) over boundary Rampant creeper over S crown Advisable for good arboricultural practice
4	Tree of Heaven	15	430.0	7344	DWD	Deadwood (minor) throughout crown A sparser than normal canopy Dieback in lower crown Advisable for good arboricultural practice
5	Pear, Domestic	10	520.0	4	Mon	Deadwood (minor) throughout crown Leaf/shoot disorders Moderate decay in stem Advisable for good arboricultural practice
8	Cypress, Leyland	11	360.0	4	Mon	Co-dominant stems Included bark in main stem unions Advisable for good arboricultural practice

Notes:
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 - Monitor ongoing condition (annually by staff / owners & every 2-3 yrs by consultant).
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

APPENDIX 3

RECOMMENDED TREE WORKS TO FACILITATE DEVELOPMENT (See Table 1)

Notes for Guidance:

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 - Monitor ongoing condition (annually by staff / owners & every 2-3 yrs by consultant).
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

Landmark Trees Ltd
Tel: 0207 851 4544

Recommended Tree Works To Facilitate Development

Hide irrelevant
Show All Trees

Site: 50 Avenue Road, London NW8 6HS

Surveyor(s): Adam Hollis

Date: 02/05/13

Ref: KSR/50AVR/AIA

Tree No.	English Name	Height	Stem Diameter	Crown Spread	Recommended Works	Comments/ Reasons
5	Pear, Domestic	10	520.0	4	CR25% Pre-emptive root pruning of top 700mm of piling trench	Deadwood (minor) throughout crown Leaf/shoot disorders Moderate decay in stem Recommended to permit development
8	Cypress, Leyland	11	360.0	4	Fell	Co-dominant stems Included bark in main stem unions Recommended to permit development
11	Cypress, Leyland	16	509.9	5544	CB Cut back from new elevation	RS Recommended to permit development
12	Magnolia (M. grandiflora)	5	134.5	2	Fell	Recommended to permit development

Notes:

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 - Monitor ongoing condition (annually by staff / owners & every 2-3 yrs by consultant).
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

APPENDIX 4: TREE SELECTION FOR CONSTRICTED SITES

Table 4: Rosaceous Tree Species for Constricted Planting Sites

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 5: Specimen Tree Species for Constricted Planting Sites

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

TREE ROOT INVESTIGATION RESULTS

Summary from KSR Architects

18th July 2013

50 AVENUE ROAD

TREE ROOT INVESTIGATION SUMMARY | KSR ARCHITECTS |

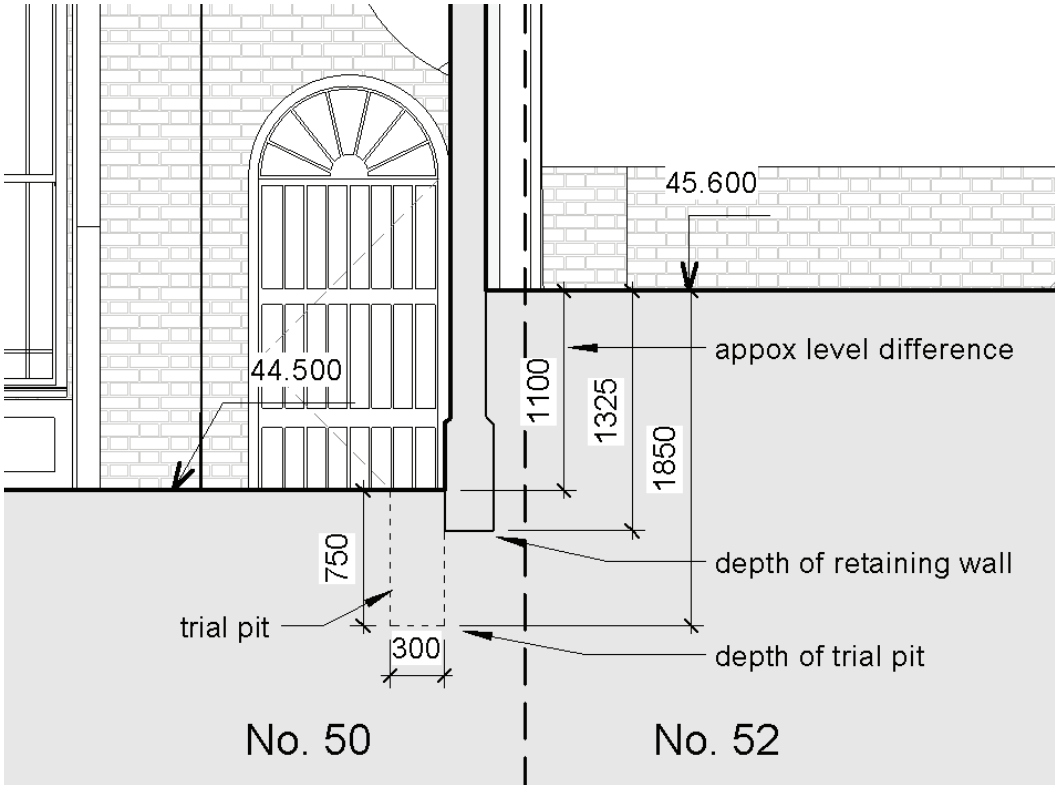
(18th July 2013)

Trial pit (300x750x1500mm wide) excavated.

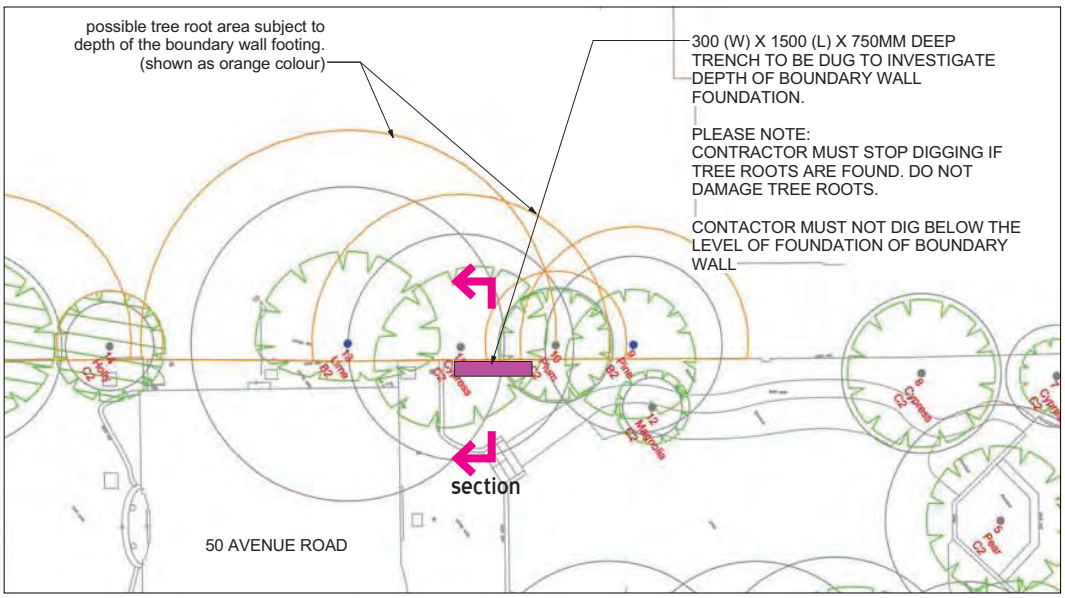
No roots has grown into the site from No.52 found

Retaining brickwall has no footing with 3 brick courses below the soil level.

SECTION DIAGRAM (nts)



TRIAL PIT LOCATION (nts)



50 AVENUE ROAD

TREE ROOT INVESTIGATION SUMMARY | KSR ARCHITECTS |

PHOTOGRAPHS

Photo1

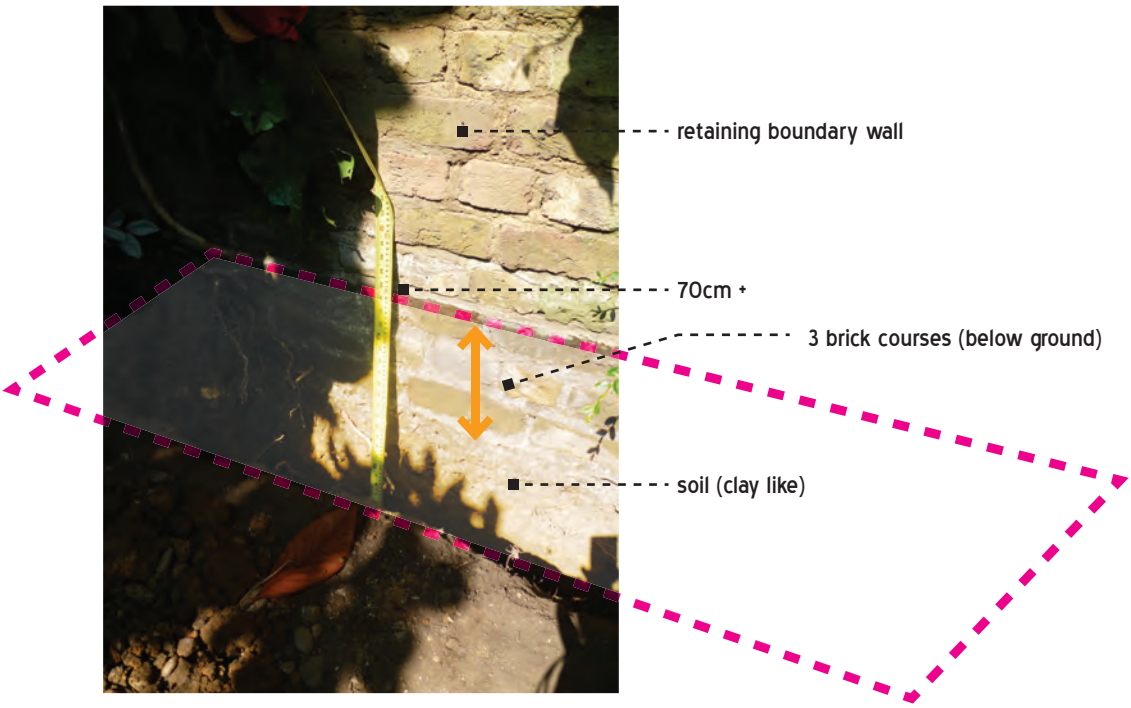
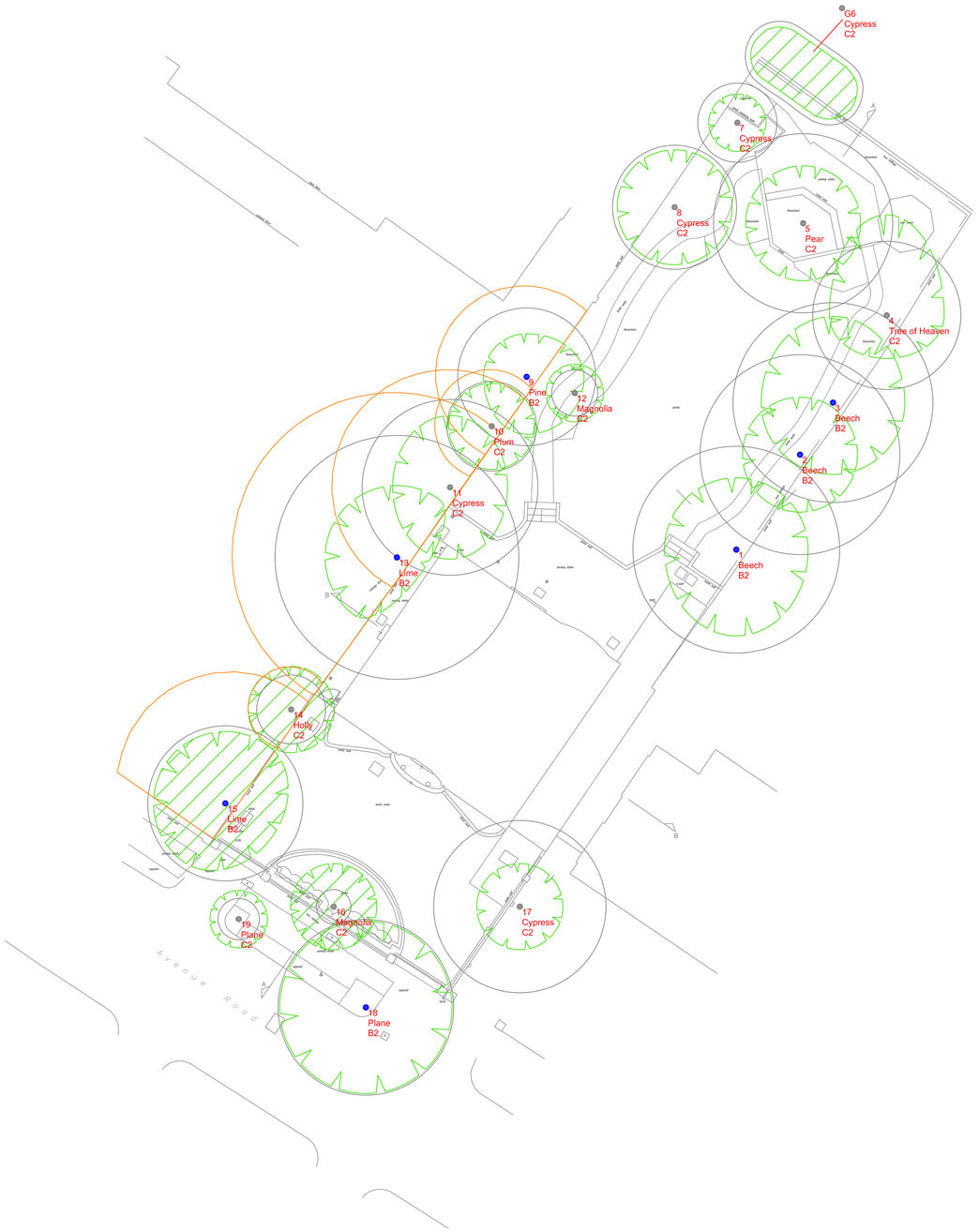


Photo2

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).

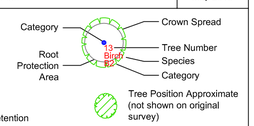
Landmark Trees

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: 50 Avenue Road	1:200 @ A1
Drawing Title: Tree Constraints Plan	May 2013

Key:

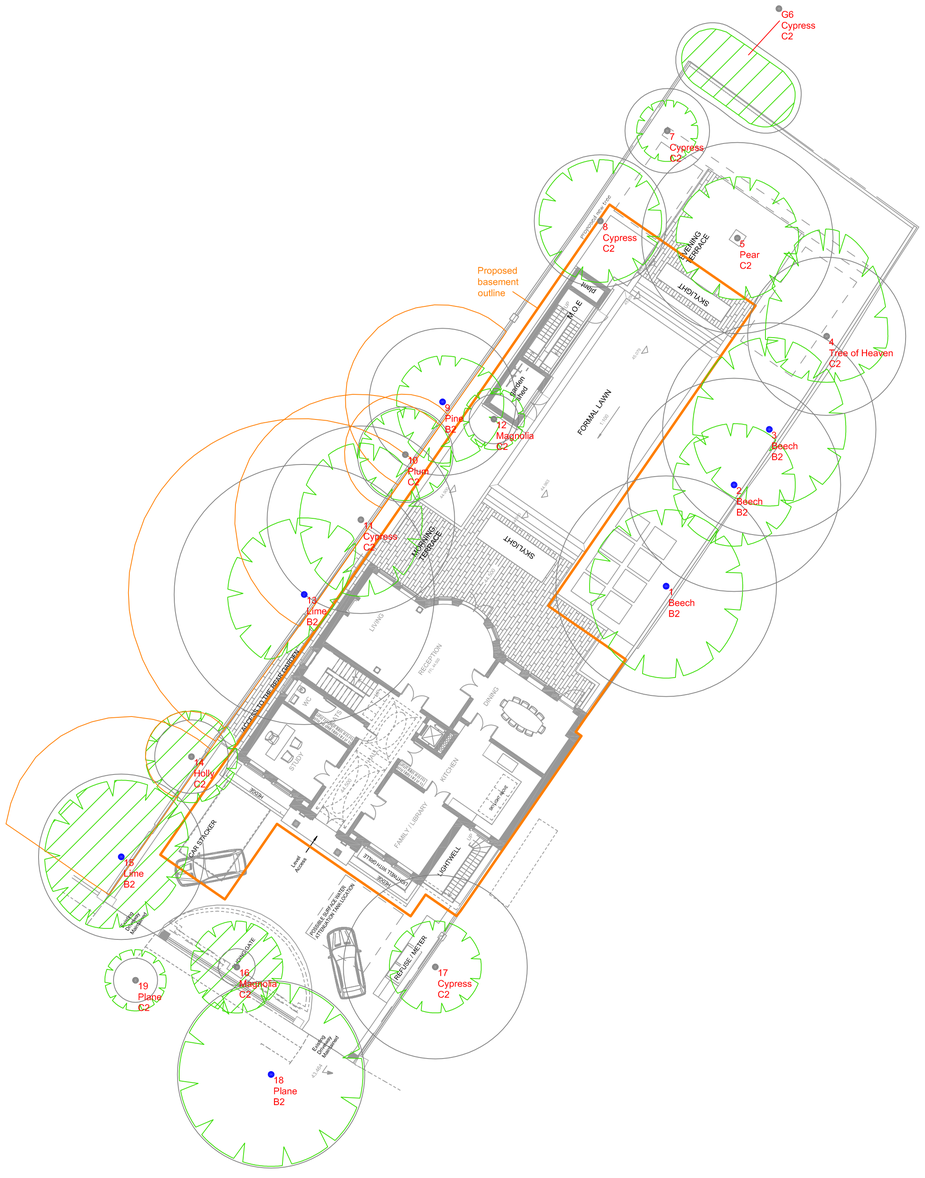
- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category U Trees Unsuitable for Retention



Tree Position Approximate (not shown on original survey)

APPENDIX 7

ARBORICULTURAL IMPACT ASSESSMENT 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).

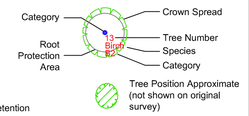
Landmark Trees

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: 50 Avenue Road	1:200 @ A1
Drawing Title: Arboricultural Impact Assessment	Rev C, August 2013

Key:

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



Tree Position Approximate (not shown on original survey)