Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT

& OUTLINE METHOD STATEMENT:

Whitestone House

Hampstead

London NW3 1EA

REPORT PREPARED FOR:

Jonathan Freegard Architects

5 Tredegar Square

London E3 5AD

REPORT PREPARED BY

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MSc ARB MICFor FArbor A MRICS C Env

Ref: JFA/WSH/AIM/01

Date: 15th July 2014

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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:	Jonathan Freegard Architects	**Case Ref:**	JFA/WSH/AIM/01
Local Authority:	Camden Council	**Date:**	15th July 2014
Site Address: Whitestone House, Hampstead, London NW3 1EA			
Proposal: Refurbishment of existing dwelling			

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

Site Layout					
Site Visit	Y	Date: 01/07/14		Access Full/Partial/None	F
Trees on Site			Y	Off-site Trees	
Trees affected by development			Y	O/s trees affected by development	
Tree replacement proposed:				On or off-site trees indirectly affected by development	

Trees with the potential to be affected
T1 & T3: To be felled on grounds of sound husbandry; T2 & T9 (category C) to be felled to facilitate development Trial pits/further investigations recommended for category U trees T4 & T5 Low impact to T8 (Category U)

Comments
Urgent recommended works for T4, T5 and T8 regardless of development, but also pertinent to maintaining a safe work site.

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 Whitestone House, Hampstead, London NW3 1EA, reviewing any conflicts between the proposals and material tree constraints identified in our survey. There are 10 trees surveyed on or around the site, of which 1 is B category *(Moderate Quality), 5 are C category *(Low Quality) and 4 are U category *(Unsuitable for Retention). It is important to note that three trees require felling on the grounds of sound husbandry (T1, T3 and T10), in addition to the need for urgent further investigation of the decay evident in the category U horse chestnuts T4, T5 and T8 (see Appendix 2).

1.2 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. The trees most likely to be affected are the 3 post mature horse chestnuts, on account of their size. However, whilst they are the most prominent in the landscape, they also have serious irremediable defects, and are therefore (category U trees and) not technically constraints upon development. This statement is likely to prove contentious and will require further investigations / documented evidence (drilling etc.) to support it.

1.3 The principal primary impacts in the current proposals are the felling of the category C trees T2 and T9. The loss of these trees is rated as a low impact, with no significant effect on the visual character of the local conservation area; a replanting scheme would offer considerable enhancement. The proposals would also necessitate the felling of T1 and T3, although both of these trees are recommended for felling on the grounds of sound husbandry independent of the development proposals; the loss of these trees is therefore not rated as an impact arising from the development.

1.4 Other primary impacts include the potentially significant impact from the basement and car lift platform to the category U tree, T4 (19.4% of the theoretical RPA), and low impacts to category U trees T5 & T8. It is likely that the root distribution of T4, T5 and T8 has been significantly affected by the existing landscaping and level changes across the site. Trial pits have been recommended to ascertain the root distribution for T4 and T5, assuming the trees are to be kept. However, all three trees have been recommended for further climbing inspections of their existing decay (substantive in the case of T4 & 5). Subject to the outcome of these investigations, all three trees are likely to require pollarding if not felling on the grounds of sound husbandry. At this stage its seems to me very likely T4 & 5 will be felled, unless they can survive so sever a pollarding as to negate any impacts upon a greater RPA.

1.5 There will always be marginal secondary impacts of honeydew / litter deposition and partial shade on this well-treed site, regardless of development. The proposed pollarding/felling will actually reduce the status quo. Thus, the secondary impacts of development are minimal.

1.5 The site has potential for development without impacting significantly on the wider tree population or local landscape; 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 Jonathan Freegard Architects to provide a survey and an arboricultural impact assessment of proposals for the site: Whitestone House, Hampstead, London NW3 1EA. The report is to accompany a planning application.

2.1.2 The proposals are for the refurbishment of the existing house, including a basement extension. 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: *

Proposals:

*In the absence of a full topographical survey, tree positions may be approximate only.

2.3 Scope of survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, I surveyed the trees on site on 1st July 2014, 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 5.

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 6. General observations and discussion follow, below.

3.0 OBSERVATIONS

3.1 Site description

Photograph 1: Whitestone House, Hampstead, London NW3 1EA

3.1.1	The site comprises a residential dwelling located at the end of Whitestone Lane. The southern elevation faces Whitestone Lane and the site includes a substantial garden, as well as terraces.
3.1.2	The site levels vary with the existing landscaping.
3.1.3	In terms of the British Geological Survey, the site overlies the Bagshot Formation (shown in yellow in fig.1 overleaf)), typical of Hampstead Heath; the associated soils are generally, more sandy and less shrinkable than the surrounding Claygate member and are readily permeable. Such low plasticity soils are less prone to movement: subsidence and heave. The actual limits of soil series are not as clearly defined on the ground as on plan and there may be anomalies between them. Further advice from the relevant experts on the specific soil properties can be sought as necessary.

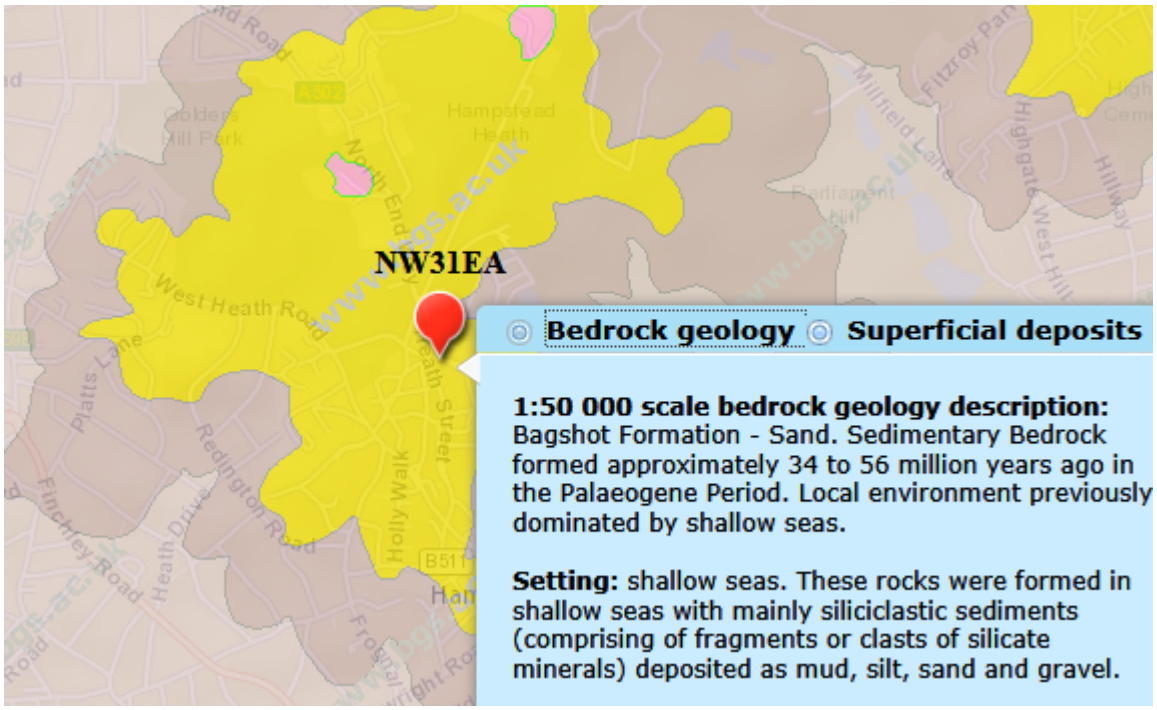


Figure 1: Extract from the BGS Geology of Britain Viewer

3.2 Subject trees

3.2.1	Of the 10surveyed trees 1 is B category (Moderate Quality), 5 are C category (Low Quality) and 4 are U category (Unsuitable for Retention).
3.2.2	The tree species found on site comprise horse chestnut, common ash, common beech, wild cherry, silver birch, magnolia, Lombardy poplar and weeping willow.
3.2.3	In terms of age demographics there is a wide range from post-mature (T4, T5 & T8) through to 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	It is important to note that three trees require felling on the grounds of sound husbandry (T1, T3 and T10), in addition to the need for urgent further investigation of the decay evident in the category U horse chestnuts T4, T5 and T8. These are listed in Appendix 2.

3.3 Planning Status

3.3.1	The trees along Whitestone Lane are subject to a TPO. The site stands within the Hampstead 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. **No modifications have been made in this instance (please see overleaf), though further investigations are recommended to test the assumptions made below at 4.1.10 & 11.**

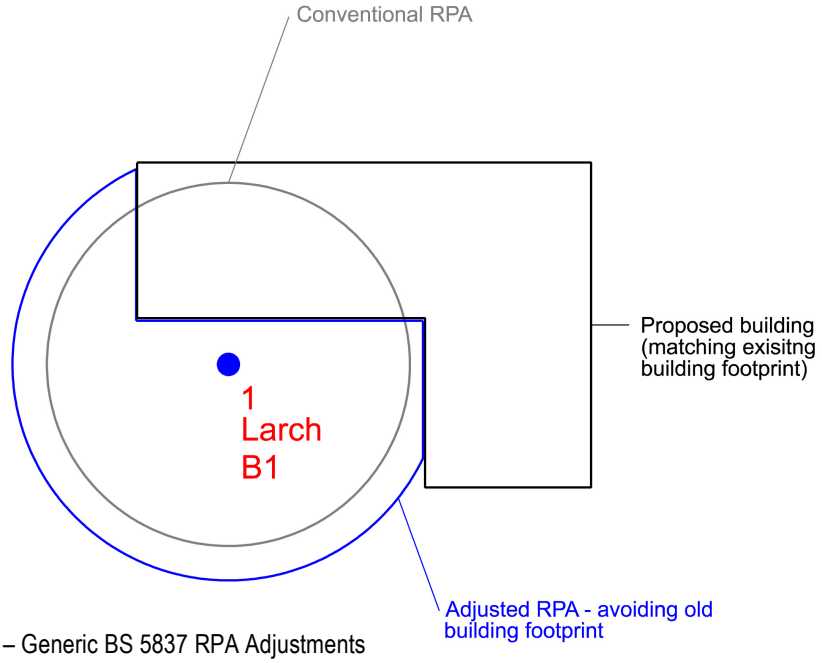


Figure 2 – Generic BS 5837 RPA Adjustments

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 Such assumptions cannot be proved without prior site investigations / trial pits. Where it is not always possible to conduct site investigations (e.g. below busy roads), we can always look to the published science. There seems little support for the popular myth that roads and services will curb root growth: research for the International Society of Arboriculture by Kopinga J (ISA 1994), found that "a constant high moisture content of the soil directly underneath the pavement surface can be considered as a major soil factor in attracting the trees' roots to develop there." By contrast, grass in lawns may actively antagonise tree roots with natural pathogens. Similarly, Professor F Miller (ISA 1994) found that service trenches at > 3m distances from trees had minimal impact on growth or crown shape.

4.1.5 A key misunderstanding, even among professionals, is that we conflate the RPA with the actual root system: RPA's are *prima facie* a notion / convention / treaty and almost entirely theoretical, but readily calculable. Conversely roots are a "known unknown," spatial entity that we predict at our folly. Yet, many are quick to do so.

4.1.6 LT favour the neutrality of a circular RPA, because in a difference of opinion, the tree officer will always have the prerogative to dictate the final modification of shape. With the best will in the world, the free allowance of modifications will tend to lead to inequitable outcomes, prejudicing the applicant and the practice is in our view, best avoided. The neutral circle dispenses with this inequity.

4.1.7 Ultimately, the point of the circular RPA is to illustrate areas of concern. The purpose of this report is to consider areas of concern (not to modify them to suit our argument or findings). Therefore, no modifications are made here to the RPA's, regardless of roads etc.

4.1.8 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.

4.1.9 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.

4.1.11 In this instance, the TPO trees along Whitestone Lane theoretically provide significant primary constraints upon development. However, these trees have been rated as Category U (Unsuitable for Retention) and require further investigation of the evident decay. They will require remedial works such as pollarding or potentially felling.

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.

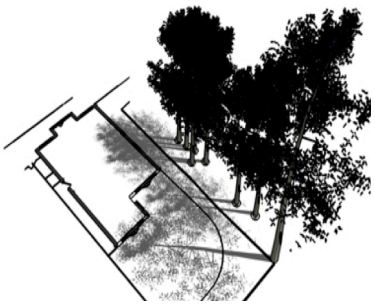


Figure 3 –
Generic Shading Constraints

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.

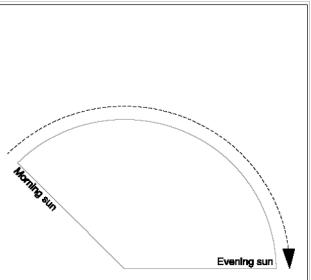


Figure 4 – Shading Arc

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 will provide partial shading constraints, with leaf deposition and honey-dew likely to be as it is today. 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: JFA/WSH/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
U	1	Cherry, Wild (Gean)	To be felled on the grounds of sound husbandry	m^2 N/A %	Mature	Poor	N/A	N/A	Very Low	New planting / landscaping
C	2	Birch, Silver	Basement Construction within RPA Car lift platform in RPA/canopy - Fell to facilitate Development	3.28 m^2 16.44 %	Semi-mature	Normal	N/A	N/A	Low	New planting / landscaping
C	3	Poplar, Lombardy	To be felled on the grounds of sound husbandry	m^2 N/A %	Early Mature	Normal	N/A	N/A	Very Low	New planting / landscaping
U	4	Chestnut, Horse	Basement Construction within RPA : NB recommended tree works Landscaping/level changes likely to have restricted rooting. New landscaping/car lift platform	64.9 m^2 19.39 %	Post-Mature	Moderate	Moderate	Medium	N/A	Trial pits / further investigation of tree condition
U	5	Chestnut, Horse	Basement Construction within RPA : NB recommended tree works Landscaping/level changes likely to have restricted rooting. New landscaping/car lift platform	28 m^2 5.31 %	Post-Mature	Moderate	Moderate	Low	N/A	Trial pits / further investigation of tree condition
U	8	Chestnut, Horse	Basement Construction within RPA : NB recommended tree works Existing landscaping/level changes likely to have restricted rooting. New landscaping	46.8 m^2 6.12 %	Post-Mature	Moderate	Moderate	Low	N/A	Manual excavation of top 750mm of basement line through RPA Pre-emptive root pruning

5.0

Hide irrelevant | Show All Trees

Table 1: Arboricultural Impact Assessment

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

Ref: JFA/WSH/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	9	Magnolia (M. X soulangiana)	Felled to Facilitate Development	1.6 m^2 43.66 %	Young	Normal	N/A	N/A	Low	New planting / landscaping

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 There will always be marginal secondary impacts of honeydew / litter deposition and partial shade on this site, regardless of development. The proposed pollarding/felling will actually reduce the status quo. Thus, the secondary impacts of development are minimal.

6.3 Mitigation of Impacts

6.3.1 Mitigation is somewhat dependant upon the results of the climbing inspections, since it is likely that T1-5 (8) & 9 will be felled, this may largely devolve to new planting. 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

6.3.2 The path of foundations through any retained 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. 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.

6.3.4 The immediate canopy encroachment can be avoided with a crown lift of lower limbs, affecting a 6-7m ground clearance, as part of any pollarding to T4 (& 5).

6.3.5 Nuisance deposition can be mitigated with regular crown cleaning and filtration traps on the guttering (see Figure 5 below).

6.3.6	The shading impacts (of retaining any large trees near building) 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.

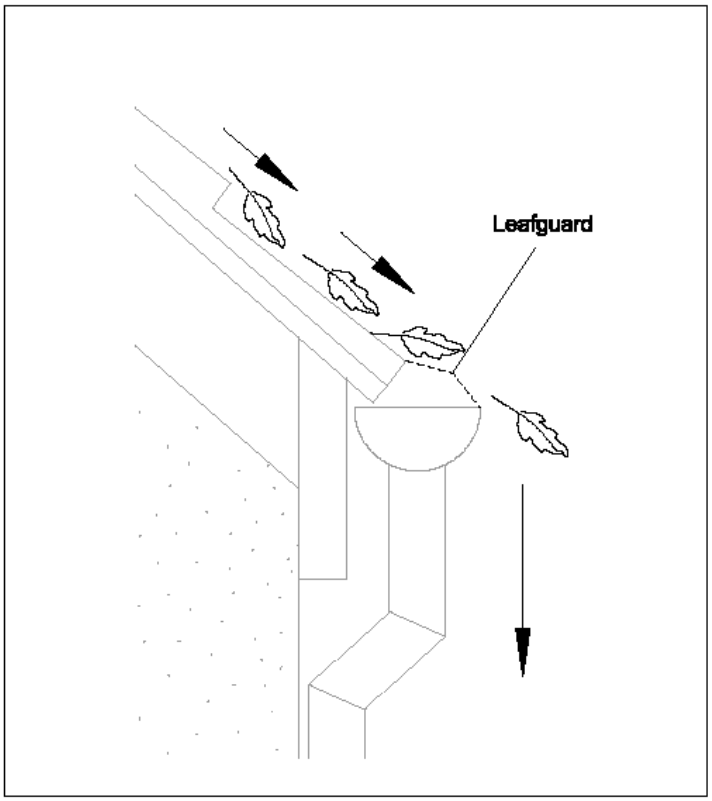


Figure 5: Filtration traps, as shown above, could be fitted on the gutters which can easily be maintained at 2-3m above ground.

7.0 CONCLUSION

7.1 The potential impacts of development require further investigative work, both in terms of tree works and trial pits to determine first whether any of the mature chestnuts can be retained on site, and if so, what is their actual root distribution *vis a vis* the proposals.

7.2 It is likely that the potential impacts will be nullified by recommended felling / pollarding recommendations, independent of the proposals, but where retention in some diminished (pollarded) form can be safely recommended, any extant impacts can be largely mitigated through design and precautionary measures. These measures are elaborated in the Outline Method Statements below (see Section 9), which allow for some form of retention.

7.3 The trees that are immediately recommended for felling (T1-3 & 9) are of little individual significance, such that their loss will not affect the visual character of the area. The loss of the post mature chestnuts (independent of development) will have a significant landscape impact. However, there are likely to be few viable alternatives.

7.4 Therefore, subject to the further investigation of T4, T5 and T8, along with trial pits, as necessary, the proposals will not have any significant arboricultural impact on the retained tree population and 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 statement in S9.0 below which specifies 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 suitable native 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.

9.0 METHOD STATEMENT

9.1 Outline Method Statement (to be read in conjunction with Appendix 8: Tree Protection Plan)

9.1.1 This outline method statement has been prepared for assistance with the discharge of planning conditions at Whitestone House, Hampstead, London NW3 1EA. The statement will address the precautions that will be undertaken to protect the retained trees on this site during the proposed construction works.

9.1.2 This section of the report lays down the methodology for any proposed works that may have an effect upon the retained trees on the site. It is essential within the scope of any contracts related to the development proposals that this method statement is observed and adhered to. It is recommended that this section form part of the work schedule and specification issued to the building contractors and can be used to form part of the contract.

9.1.3 Copies of this method statement and the Tree Protection Plan (see Appendix 8) will be available for inspection on site. The developer will inform the local planning authority within twenty-four hours if the arboricultural consultant is replaced.

9.2 Sequence of Works

9.2.1 The sequence of works should be as follows:

i) initial tree works: pruning for working clearances;
ii) installation of TPB for demolition & construction;
iii) installation of underground services;
iv) installation of ground protection (if paving not retained);
v) main construction;
vi) removal of TPB;
vii) soft landscaping;

9.2.2 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.
- Contact details for Landmark Trees are provided on the cover to this report.
- Contact details for Local Authority Tree Officer are as follows:

Nick Bell Tree and Landscape Officer London Borough of Camden 5th Floor Town Hall Extension Argyle Street London WC1H 8ND E-mail: tom.little@camden.gov.uk Telephone: 020 7974 5939

9.3 Site Monitoring

9.3.1	Landmark Trees are to be retained as Arboricultural Consultants responsible for site monitoring for the duration of the development. Key personnel are in the main Adam Hollis MSc (Arb) and occasionally James Bell Tech Cert, subject to any new staff intake. Site monitoring will be undertaken by a qualified and experienced arboriculturalist at pre-determined and agreed time intervals.
9.3.2	The arboriculturalist will arrive at the site, check in at the site office and be safely escorted around the site by the site agent, checking the maintenance of tree protection measures. Routine visits will generally be unannounced. However, the arboriculturalist will also visit subject to advance notification and agreement to supervise any agreed works within the RPA.
9.3.3	Monitoring will involve a schedule of routine visits (monthly for the first 6 months and quarterly thereafter, including both site-setup and sign-off inspections) and reports to ensure contractor compliance with tree protection measures and to provide ongoing liaison with all personnel involved in the site development (including the LPA). Any defects requiring rectifying must be notified to the Site Agent and the Client and copied to the LPA by email. Emergencies will be notified to the LPA by phone. Appropriate records will be kept and be made available to the LA if required to show evidence of site monitoring (Appendix 3).
9.3.4	Supervision will not require the arboriculturalist to be present throughout all operations to ensure tasks are carried out as per the approved methodology, but certainly, during the key elements of proposed (and any other unplanned) incursions into the protection areas (subject to LPA agreement and for whatever reasons). Such supervision would require the arboriculturalist to attend site, if not the whole task, to ensure the arboricultural objectives were met. However, where tasks are ongoing, provided the arboriculturalist is satisfied, and after an appropriate briefing, the supervision may be reduced to telephone and email contact between the site foreman/ contractor and arboriculturalist.

9.3.5 In addition, a site log book will be kept by the Site Agent to record all stages of the development from the installation of the fence protection, to routine checks of the fencing through to the completion of the project. This should be made available to the LA if required to show evidence of site monitoring. Site monitoring should include:

- Construction Site Agent Briefing (S.1.5)
- Installation of site facilities (S.3.3)
- Demolition of hard surfaces / structures within RPA's (3.6)
- Construction of new of hard surfaces / structures within RPA's (3.7)
- Site completion meeting (S.5)

9.3.6 The arboricultural consultant should be given responsibility for monitoring of all arboricultural works and issuing a certificate of practical completion. In addition, the arboricultural consultant should be instructed to inspect and monitor any works within exclusion zones; i.e. demolition of hard standing. A record of site visits should be maintained for inspection on site and copies forwarded to the developer / agent and to the local planning authority.

9.4 Pre- Development Site Preparation

9.4.1 The pruning works must be in accordance with British Standard 3998:2010 Tree work and any other prevailing good professional practice.

9.4.2 The retained trees 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 (this is also Figure 2 of BS5837: Trees in Relation to Design, Demolition and Construction in paragraph 6.2.2.2 – see below). The position of the TPB is shown on the TPP in Appendix 4, which can be used as part of the discharge of conditions.

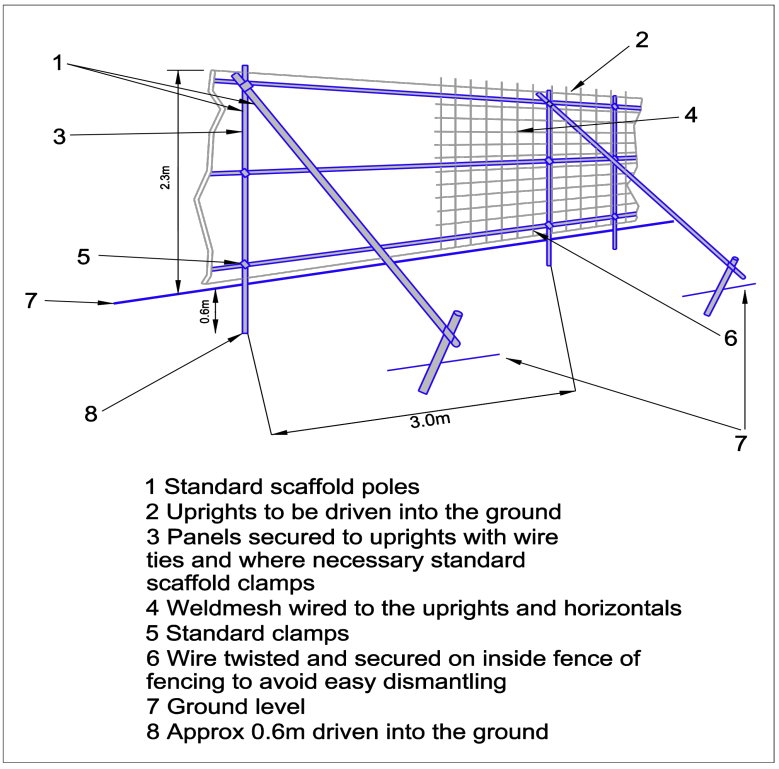
9.4.3 This TPB is to be erected before any work commences on site, is to remain 'in situ' undamaged for the duration of all work or each phase, and only to be removed once all work is completed. If any work is deemed necessary prior to the erection of fencing a Landmark Trees representative should be informed to enable their presence to oversee the work being carried out.

9.4.4 The only other exception is the completion of soft landscaping but if any excavations, however minor, are to be carried out as part of soft landscaping within RPAs, an arboricultural assessment must be carried out beforehand and any arboricultural protection measures incorporated. The TPB should carry waterproof warning notices denying access within the RPA.

9.4.5 The Tree Protection Plan in Appendix 8 illustrates where the protective fencing will be located to form the boundary of the Tree Protection Zone (TPZ). The TPZ is an exclusion zone and suitable steps will be taken to prevent access by pedestrians and vehicles and the storage of any works materials and equipment will be located outside of the TPZ.

9.4.6 Ground outside the TPZ must be protected from site traffic and not left exposed during construction. As far as practical, existing hard surfaces should be retained as initial ground protection (where fit for purpose for anticipated loading) until the landscaping phase and / or substituted / supplemented with appropriate materials (e.g. Cellweb, Ground Guards etc.), capable of withstanding anticipated loads. **NB the provision of ground protection on plan does not prohibit the consented laying of services and related works in those areas. It means that those operations should proceed under caution and protect adjacent ground to that immediately requisitioned for the work in hand.**

9.4.7 Upon completion of the tree works and installation of the protection measures, the standard of work can be checked by the retained arboricultural consultant who can then liaise with the local authority. If there are any amendments to either the tree works or additional protection measures, they will be agreed at this meeting and confirmed in writing.



1 Standard scaffold poles
2 Uprights to be driven into the ground
3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps
4 Weldmesh wired to the uprights and horizontals
5 Standard clamps
6 Wire twisted and secured on inside fence of fencing to avoid easy dismantling
7 Ground level
8 Approx 0.6m driven into the ground

Fig 2 of BS5837:2012

9.5 Development Phase

9.5.1 The following general precautions will apply:

- No fires shall be made on any part of the site, or within 20m of any tree to be retained.
- No spilling or pouring of fuels, oils, solvents, tar shall be made on any part of the site.
- No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within 10 metres of the trunk of a tree that is to be retained.
- No spillage or discharge of wet mortar or concrete shall be made on any part of the site.
- No storage of materials shall be made within the protective fences.
- No breaching or moving of the protective fences without the approval of an arboriculturist.
- Alterations in levels within the tree protection fence areas shall be avoided.

9.5.1 Site access will be as existing and accommodation will make use of the existing hardstandings as necessary. If the hard landscaping is removed, the new sub-base can be laid as initial ground protection, with the finished paving overlaid in the landscape phase.

9.5.2 Pedestrian access will run parallel, but separate to vehicular access.

9.5.3 Delivery lorries will be excluded from RPA by the tree protection fencing and ground protection. Adequate allowance will be made for vehicle heights and ground clearance, where the tree canopy overhangs the access route. Any further pruning for working clearances must be discussed first with the arboriculturalist; once agreed in principle these works should be approved by the appropriate tree officer and approved in writing by the LPA. Materials can be unloaded onto protected ground within RPA's and stored throughout the interior of the site away from protected trees

9.5.4 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.

9.6 Routing & Installation of Services

9.6.1 Every effort should be made to ensure that the routing and instillation of services avoid the RPA at the design stage; however if unavoidable then it may be possible with written permission from the LPA to implement the provisions of BS5837 and NJUG VOLUME 4 (e.g. radial trenching and /or mole trenching) under arboricultural supervision.

9.7 Changes in Grade

9.7.1 The upper layer of top soil contains the majority of a tree's roots and if this is disturbed by a reduction in ground level, serious damage can be caused. If such soil is to be disturbed within the TPZ / RPA, it will be done only with hand tools and the supervising arborist will be informed if roots are exposed. If ground levels need to be marginally altered within the RPA of any tree, prior agreement must be sought from the Tree Preservation Officer and given in writing by the LPA.

9.8 Construction Measures

Detailed method statements and risk assessments will be obtained from all specialist subcontractors involved in the new build and these will be scrutinised by the site agent to ensure the AMS requirements have been considered therein.

9.8.1 The basement line will be laid out and manually excavated to a depth of 750mm where it falls within an RPA. Any significant root found will be pre-emotively pruned under arboricultural supervision. The basement will be constructed with traditionally constructed reinforced concrete underpinning to the existing walls excavated and cast in short sections not exceeding 1.5 metres in length. A concrete slab will be cast at basement level.

9.8.2 The excavation of the basement should proceed inwards in a "pull back" fashion. Hard surfacing can be lifted with caution by a skilled machine operator again working away from the tree. Where levels of dust build-up on trees are likely, it may be necessary to seek the advice of Landmark Trees on remedial measures, e.g. hose down the tree(s) immediately following any significant accumulation of dust.

9.8.3 JCB to excavate to required depth. All spoil to be loaded into trucks fitted with loading grabs Construction materials will generally be delivered on lorries with mechanical off load avoiding any overhanging canopies.

9.8.4 During the construction phase and throughout dry periods on site regular hosing down will be carried out to control dust pollution. In the event of dust build up on trees occurring arboricultural advice will be sort and if necessary remedial measures such as hosing down the trees will be taken.

9.8.5 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. 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. .

9.9 Removal of Ground Protection & Post Construction Landscaping & Treatment

9.9.1	The tree protection may be removed upon completion of the construction phase and when all drainage and service runs have been installed and any site machinery has been removed from the RPA.
9.9.2	Any further landscaping works should avoid the changing of ground levels or deep digging. Heavy machinery should not be used in the vicinity of the retained tree.
9.9.3	If herbicides are to be used they should be appropriate to their purpose and not in such a way as to damage the retained tree or vegetation; they must be applied by a suitably qualified person i.e. a holder of a recognised 'certificate of competence'.
9.9.4	Ideally, the retained trees should remain in a shrub area as this reduces the chances of compaction and disturbance of root systems.
9.9.5	Any new planting schemes adopted should consider aspects of the site such as current design, layout and future use. Consideration should also be given to the soil type, climate and overall character of the landscape.

9.10 Completion

9.10.1	Following completion of the works listed above, a Landmark Trees consultant will meet with a local authority representative and agree upon any remedial works deemed necessary.
9.10.2	A separate LT post-development tree inspection (with specific reference to the retained tree) is recommended to facilitate a constructive meeting. Any works agreed in this meeting will be confirmed in writing and will be performed to BS 3998: 2010 Tree Works.
9.10.3	It is recommended that, in due course, acceptance of the recommendations in this section is demonstrated by, for example, the architect specifying in writing to the building contractor that tree care conditions apply in execution of the contract, and by an estimate or written undertaking from the contractor to the architect demonstrating that the practical aspects of observation of such recommendations have been priced in.
9.10.4	If conflicts between any part of a tree and the building(s) arise in the course of development these can often be resolved quickly and at little cost if a qualified arboriculturist is consulted promptly. Lack of such care is often apparent quickly and decline and death of such trees can spoil design aims and can of course affect saleability, and reflect poorly on the construction and design personnel involved. Trees that have been the recipients of careful handling during construction add considerably to the appeal and value of the finished development.

10.0 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: Whitestone House, London

Date: 1 July 2014

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd
020 7851 4544
Surveyor(s): Adam Hollis
Ref: JFA/WSH/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
1	Cherry, Wild (Gean)	10	2323	5.0	370	Mature	4.4	Poor	Fair	U		<10	Bacterial canker Bleeding on lower stem Pollarded
2	Birch, Silver	12	3121	2.5	210	Semi-mature	2.5	Normal	Fair	C	2	20+	Topped out Restricted rooting NSEW
3	Poplar, Lombardy	14	2111	8.0	400	Early Mature	4.8	Normal	Fair	C	2	20+	Topped out Restricted rooting NSEW Wholly unsuitable for location
4	Chestnut, Horse	14	5325	2.5	860	Post-Mature	10.3	Moderate	Hazardous	U		<10	Decay in trunk, crossing limbs Leaning (slightly) SW over path Large cavity 0-2m abg / to main fork, c. 10cm sound wood SE
5	Chestnut, Horse	14	5577	2.5	1080	Post-Mature	13.0	Moderate	Hazardous	U		<10	Decay in trunk and crown Ex-pollard Large cavity 2-7m abg / thru main forks. Daylight through
8	Chestnut, Horse	16	6565	4.0	1300	Post-Mature	15.6	Moderate	Hazardous	U		<10	Canker in crown Ex-pollard Suspected decay in heads Dieback at branch tips
6	Beech, Common	10	3	2.0	250	Semi-mature	3.0	Normal	Fair	B	2	>40	Co-dominant limbs

Landmark Trees

Site: Whitestone House, London

Date: 1 July 2014

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: JFA/WSH/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
7	Willow, Weeping	10	2755	1.5	300	Semi-mature	3.6	Moderate	Fair	C	2	10+	Dying back (inner crown) Leaning (slightly) SE Suffering from patio construction to immediate N
9	Magnolia (M. X soulangiana)	5	1	1.5	90	Young	1.1	Normal	Good	C	1	>40	
10	Ash, Common	6	2	1.0	135	Young	1.6	Normal	Good	C	1	>40	Self-sown / unsuitable location

APPENDIX 2

RECOMMENDED TREE WORKS

Notes for Guidance:

Husbandry 1 - Urgent (ASAP), 2 - Standard (within 6 months), 3 - Non-urgent (2-3 years)

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: Whitestone House, London
Date: 1 July 2014

Surveyor(s): Adam Hollis
Ref: JFA/WSH/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
1	Cherry, Wild (Gean)	U	10	5.0	2323	Fell	Bacterial canker Bleeding on lower stem Pollarded Recommended husbandry 3
3	Poplar, Lombardy	C	14	8.0	2111	Fell	Topped out Restricted rooting NSEW Wholly unsuitable for location Recommended husbandry 3
4	Chestnut, Horse	U	14	2.5	5325	FInv Climbing inspection with micro drill Felling / pollarding likely	Decay in trunk, crossing limbs Leaning (slightly) SW over path Large cavity 0-2m abg / to main fork, c. 10cm sound wood SE Recommended husbandry 1
5	Chestnut, Horse	U	14	2.5	5577	FInv Climbing inspection with micro drill Felling / pollarding likely	Decay in trunk and crown Ex-pollard Large cavity 2-7m abg / thru main forks. Daylight through stem Recommended husbandry 1
8	Chestnut, Horse	U	16	4.0	6565	FInv Climbing inspection with micro drill Repollarding likely	Canker in crown Ex-pollard Suspected decay in heads Dieback at branch tips Recommended husbandry 1
6	Beech, Common	B	10	2.0	3	FP Formative prune to favour one lead stem	Co-dominant limbs Recommended husbandry 3
7	Willow, Weeping	C	10	1.5	2755	Mon Monitor ongoing condition	Dying back (inner crown) Leaning (slightly) SE Suffering from patio construction to immediate N Recommended husbandry 3

Landmark Trees

Site: Whitestone House, London
Date: 1 July 2014

Appendix 2

Surveyor(s): Adam Hollis
Ref: JFA/WSH/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
10	Ash, Common	C	6	1.0	2	Fell	Self-sown / unsuitable location 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: Whitestone House, London NW3 1EA

Date: 1 July 2014

Surveyor(s): Adam Hollis

Ref: JFA/WSH/AIA

Appendix 3

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	12	2.5	3121	Fell	Topped out Restricted rooting NSEW To facilitate development
9	Magnolia (M. X soulangiana)	C	5	1.5	1	Fell	To facilitate development

APPENDIX 4: TREE SELECTION FOR CONSTRICTED LOCATIONS

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

SITE MONITORING SHEET

Landmark Trees

Site Monitoring Report Sheet

Client:		**Planning Ref:**	
Local Authority:		**Date:**	
Site Address:			
Proposal:			

Visit Checklist	**Y/N**		**Y/N**
Tree protection barrier (TPB) in place		TPB as per approved	
Ground protection (GP) in place		GP as per approved	
TPB / GP breached		Trees damaged	
Site Agent briefed by LT			
LT briefed by Site Agent			
LPA informed			
Remedial action required			

Comments

Recommendations

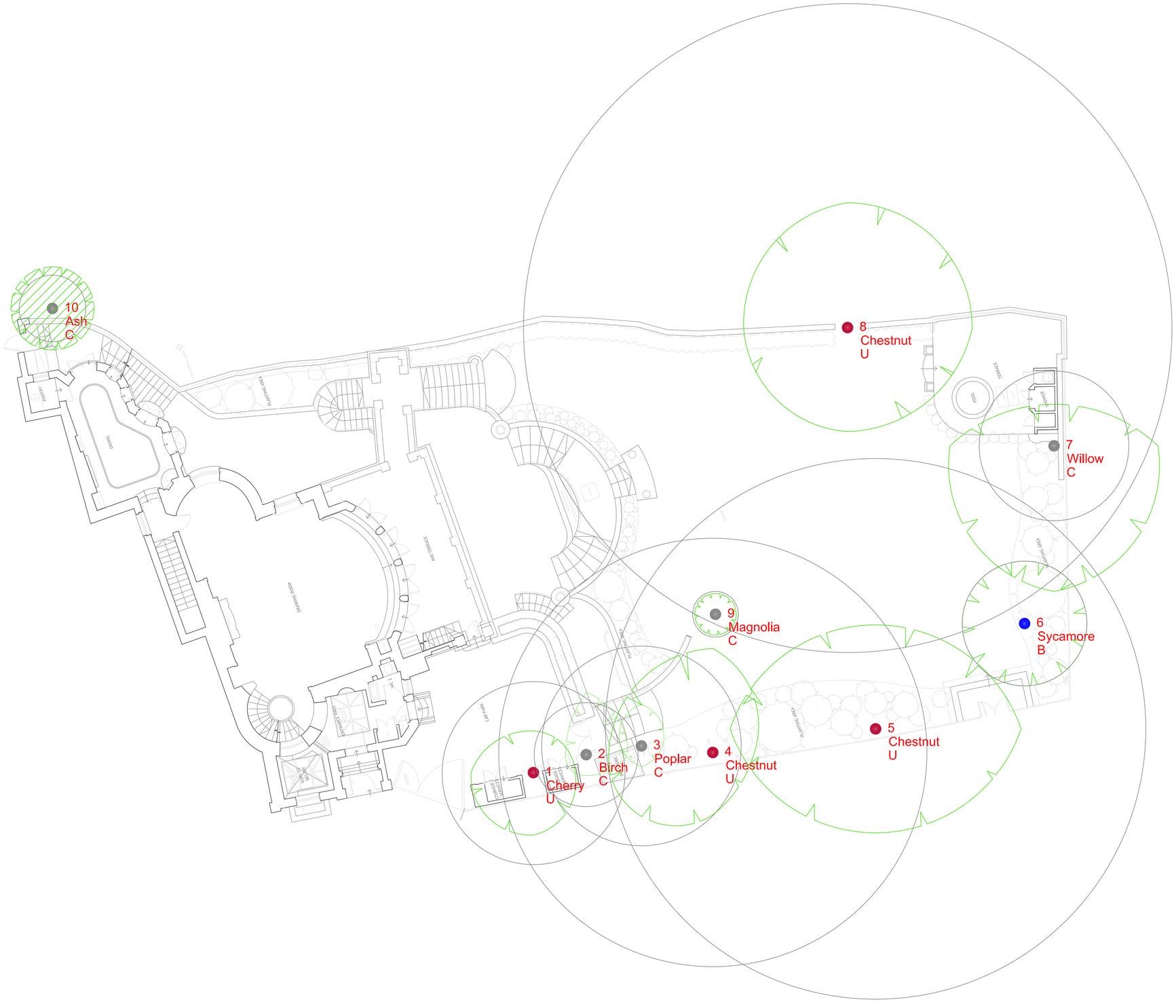
Outcome		
1		
2		
3		
4		

Web: www.landmarktrees.co.uk
e-mail: info@landmarktrees.co.uk
Tel: 0207 851 4544

London Office: 20 Broadwick Street, W1F 8HT, London
Registered Office: Grange Cottage, All Cannings, Devizes, Wiltshire, SN10 3NR

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

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Site: Whitestone House	1:100@ A1
Drawing Title: Tree Constraints Plan	July 2014

Key:

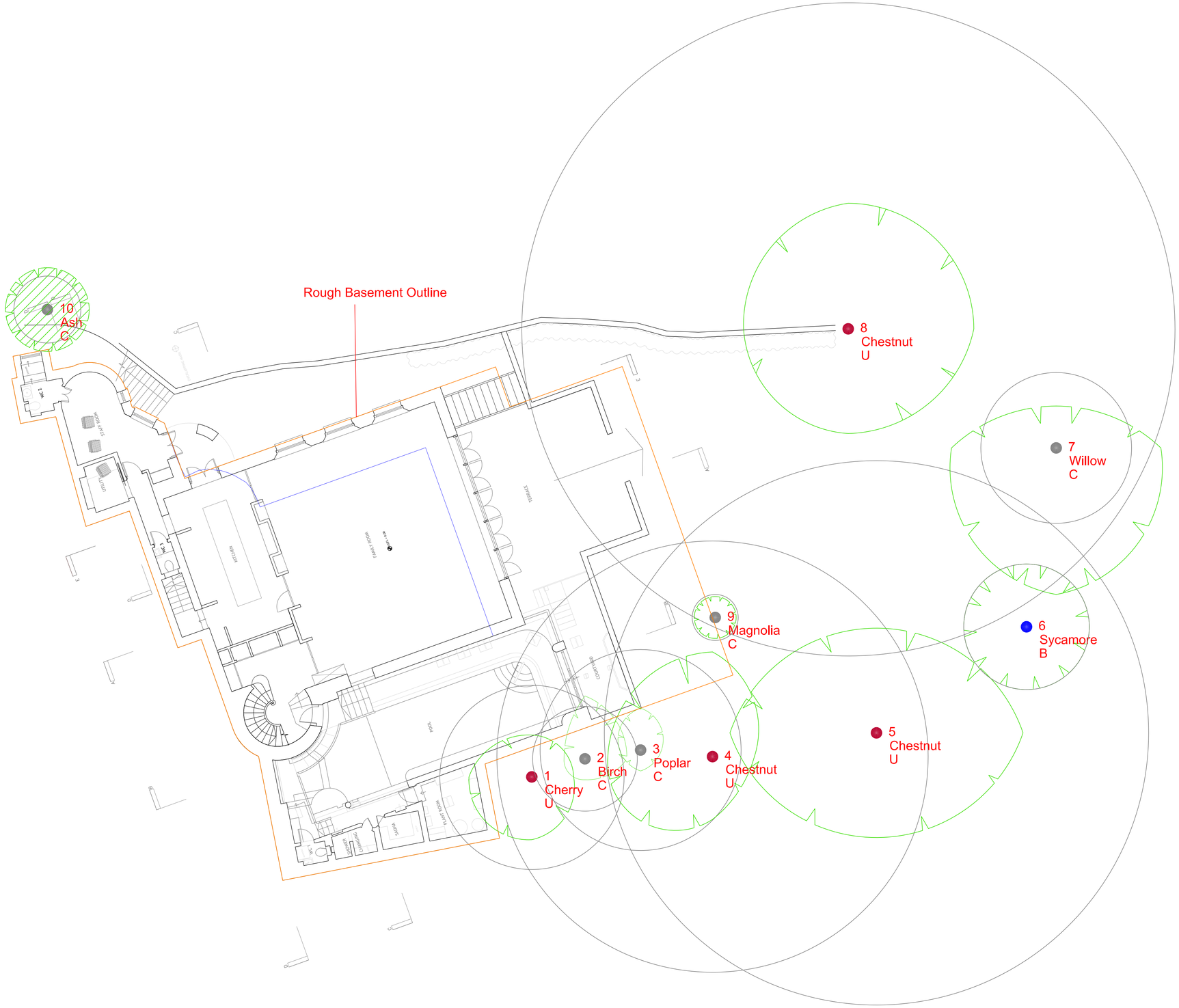
- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category U Trees Unsuitable for Retention

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

Tree Position Approximate (not shown on original survey)

APPENDIX 7

ARBORICULTURAL IMPACT ASSESSMENT PLAN



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: Whitestone House	1:100@ A1
Drawing Title: Arboricultural Impact Assessment	July 2014

Key:

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

Category
Root Protection Area
13
Birch
C
Crown Spread
Tree Number
Species
Category
Tree Position Approximate (not shown on original survey)

APPENDIX 8

TREE PROTECTION PLAN

(TBC subject to results of climbing inspections)