Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT:

3 Wadham Gardens,

London, NW3 3DN

REPORT PREPARED FOR:

Mr Keith Black

C/o SHH Architects

1 Vencourt Place

Ravenscourt Park

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REPORT PREPARED BY

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Ref: BLK/WDM/AIA/01

Date: 28th January 2010

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 an inspection they will of course appear in the report.
Inherent in tree inspection 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 Keith Black	**Case Ref:**	BLK/WDM/ AIA/01
Local Authority:	LB Camden	**Date:**	28/01/10

Site Address: 3 Wadham Gardens, London, NW3 3DN

Proposal: basement rear extension

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

Site Layout

Site Visit	Y	Date: 16/11/10	Access Full/Partial/None	F
Trees on Site		Y	Off site Trees	Y
Trees affected by development		Y	O/s trees affected by development	N
Tree replacement proposed on plans:		TBC	On or off-site trees indirectly affected by development	N

Trees with the potential to be affected

Rear garden: removal of T11 magnolia (Category C), T12 & 21 purple plum (Category R), T22 cherry (Category C)and G10.2-4 Camelia shrubs (Category C).
Front garden: marginal encroachment of T8 beech (Category B) RPA by 5% to underpin existing structure.
Side garden: marginal encroachment of T1 London plane (Category B) RPA 2% to pile basement.

Comments

Felling of rear garden Category C-R trees rated individually as very low impact and collectively as low impact (subject to landscaping). Encroachment of Category B trees rated very low impact (subject to Method Statement).

Recommendations

1	Proposal will mean the loss of important trees	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	N
6	The Proposal will result in significant root damage to retained trees	N
7	Further investigation of tree condition recommended	N

RPA= Root Protection Area
TPP= Tree Protection Plan
AMS= Arboricultural Method Statement
AIA = Arboricultural Implication Assessment
BS5837: 2005 'Trees in relation to construction – recommendations'

1. SUMMARY

1.1 This report comprises an arboricultural impact assessment of the proposed basement extension at 3 Wadham Gardens, London, NW3 3DN, reviewing any conflicts between the proposals and material tree constraints identified in our survey.

1.2 Of the 23 surveyed trees or groups on or near the site none are category 'A' (High Quality), 7 are category 'B' (Moderate Quality), 10 are category 'C', 4 are category C/r and 2 are category R. In theory, only the moderate quality trees are a material constraint on development. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting. In general, the proposals have taken into account and preserve, the existing visual envelope, leaving B category trees, concentrated along the boundaries largely unaffected.

1.3 The principal impact in the current proposals is the removal of T11 magnolia (Category C), T12 & 21 purple plum (Category R), T22 cherry (Category C) and G10.2-4 Camelia shrubs (Category C). These are all rear garden, low quality trees that can be removed without significantly impacting the landscape. The collective impact is rated low, subject to new landscaping.

1.4 Basement foundations will require a marginal encroachment of T1 London plane's (Category B) Root Protection Area (RPA) by 2% area. Related underpinning of existing structure to the front will also require a marginal encroachment of T8 beech (Category B) RPA by 5% area (maximum). Both impacts are rated very low.

1.4 There are no significant secondary (post-development pressure) impacts on the basement: tree shadows and organic deposition will extend to the north east away from any light wells.

1.5 Comprehensive ground protection will be required for the RPA's of street trees 1 & 2 London plane, to protect soil from compacting, where plant & personnel may cross the RPA from the access point between them to the rear garden and work area. The remainder will be protected by a barrier.

1.6 Therefore, the site has potential for development without impacting significantly on the visual character of the (conservation) area.

* British Standards Institute. 2005. Trees in Relation to Construction BS 5837: 2005 HMSO, London

2. INTRODUCTION

2.1 Terms of reference

2.1.1	LANDMARK TREES were asked by Mr Keith Black, C/o SHH Architects, to undertake an arboricultural planning survey of the site: 3 Wadham Gardens, London, NW3 3DN. The report is to accompany a planning application.
2.1.2	The proposals are for the construction of a basement extension to the rear (north east) with associated underpinning of the existing building to the front and 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 20 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: Topographical survey – 13825_01_T_rev0 Proposed LG floor –620(SK)002 & 620(SK)020

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2.3 Scope of survey

2.3.1	As Landmark Trees' arboricultural consultant, James Bell surveyed the trees on or near the site on 16th November 2009, recording relevant qualitative data in order to assess both their suitability for retention and their constraints upon the site, in accordance with British Standard 5837:2005 Trees in relation to construction – Recommendations [BS5837].
2.3.3	Our survey of the trees, the soils and any other factors, is of a preliminary nature. The trees were inspected 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). I have not taken any samples for analysis and the trees were not climbed, but inspected from ground level.
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 4.
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: 2005) overlain onto it. These constraints are then overlain in turn onto the client's proposals to create an Arboricultural Impact Assessment Plan in Appendix 5. General observations and discussion follow, below.

3.0 OBSERVATIONS

3.1 Site description

3.1.1 The site is the rear garden of a residential detached property on the corner of Wadham Gardens and Harley Road. The property contains a front garden to the southwest and rear garden to the north east. The grounds are mostly laid to turf and bedding with a substantial tree population: mature forest trees on the boundaries and dense fruit trees / ornamental shrubs within the interior.

3.1.2 The site is relatively level. Vehicular access is of Wadham Gardens with pedestrian access from Harley Road..

3.1.3 In terms of the Soil Survey of England and Wales, the soil lies within the unsurveyed area of Greater London where the soils are generally, highly shrinkable clay; e.g. slowly permeable seasonally waterlogged fine loam over clay. Such soils are prone to compaction during development. Damage to soil structure can have a serious impact on tree health. Design of foundations near problematic tree species will also need to take into consideration subsidence risk. A structural engineer may be able to advise further on the local geology and its implications for development.

3.2 Subject trees

3.2.1	Of the 23 surveyed trees or groups on or near the site none are category 'A' (High Quality), 7 are category 'B' (Moderate Quality), 10 are category 'C', 4 are category C/r and 2 are category R. for details see Appendices 1 & 2.
3.2.2	In terms of species demographics, there a good mix of species and age classes within the population.

3.2.3	The significant onsite trees are the beech tree (T7) within the front garden and the Trees of Heaven (T15 & 16) along the rear boundary. The former appears in good health, but a frosted fruit body of suspected root decay fungus, Meripilus was observed at the southeast base of the tree during the survey. Subsequent testing with a Resistograph microdrill revealed minor decay only. The tree is rated B/r since a period of consultant monitoring (at least summer / autumn inspection) is required to more fully determine the tree's current condition and to provide a positive fungal identification. The Trees of Heaven could be inspected at the same time determine overall condition, given the pruning impacts to the crown architecture.
3.2.4	The significant off-site, street trees are the London plane trees (T1, 2 & 9). These trees are in good condition and within active management (pollarding). They are unlikely to constrain the proposals significantly, but will need to considered in terms of site access and appropriate root protection.

3.3 Planning Status

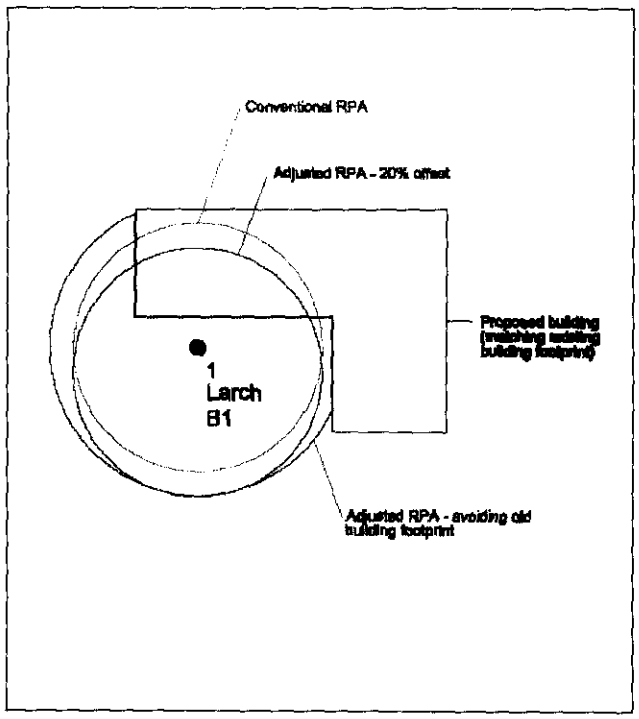
3.3.1	We are not aware of the existence of any Tree Preservation Orders, which may affect trees on the site, but believe that it stands within a Conservation Area. It is a criminal offence to disturb or damage such trees without permission from the local authority.

4.0 DEVELOPMENT CONSTRAINTS

4.1 Primary constraints

4.1.1 BS5837: 2005 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 generally 12-x stem diameter at 1.5m above ground level, except where basal diameters are used in the case of multi-stemmed trees, and the radius is set at 10x the diameter.

4.1.2 Circular RPA's are appropriate for individual specimen trees grown freely such as these, but where there is ground disturbance, **as in this case,** the morphology of the RPA can be modified to an alternative polygon, and where appropriate shifted 20% in the direction of undisturbed ground, as shown in the diagram below. In less fanciful terms, one needs to remember that RPA's are area-based and not linear. ***No modifications have been made in this instance (as in practice, these can rarely be agreed between interested parties).***



4.1.3 R Category trees are discounted from the process. 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.

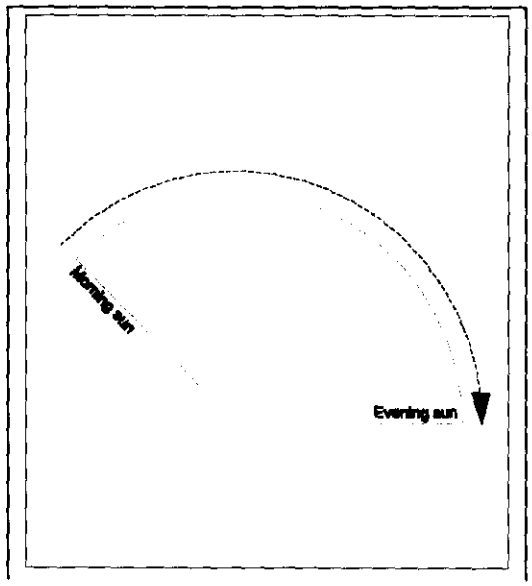
4.1.4 "Care should be exercised over misplaced tree preservation. Attempts to retain too many or unsuitable trees on a site are liable to result in excessive pressure on the trees during development work and subsequent demands for their removal. The end result is usually fewer and less suitable trees than would be the case if proper planning, selection and conservation had been applied from the outset." (BS5837: 2005)

4.1.5 In theory, only the moderate quality trees are a material constraint on development. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting. In general, the proposals have taken into account and preserve, the existing visual envelope, leaving B category trees, concentrated along the boundaries largely unaffected.

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, honeydew deposition or perceived risk of harm.

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.



4.2.3 This arc 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 The principal secondary constraint would be shading of any light wells on to the site from trees along the south and west boundaries. Therefore, only T1 & T2 are likely to constrain their positioning.

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 for Retained Trees

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

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	Plane, London	Basement Construction within RPA	3.5 m^2 1.83 %	Mature	Normal	Good	Very Low	N/A	Not required
B	7	Beech, Copper	Underpinning of existing structure within RPA	10 m^2 5.4 %	Mature	Moderate	Poor	Low	N/A	Pre-emptive root pruning Arboricultural supervision
C	10	Camelia	10.2-10.4 Felled to Facilitate Development	m^2 N/A %	Semi-mature	Normal	N/A	N/A	Very Low	Not required
C	11	Magnolia (M. X soulangiana)	Felled to Facilitate Development	m^2 N/A %	Semi-mature	Normal	N/A	N/A	Very Low	New planting / landscaping
C/r	12	Plum, Purple	Felled to Facilitate Development	m^2 N/A %	Mature	Normal	N/A	N/A	Very Low	New planting / landscaping
R	21	Plum, Purple	Felled to Facilitate Development	m^2 N/A %	Early Mature	Poor	N/A	N/A	Very Low	New planting / landscaping

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

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	22	Cherry, Flowering	Felled to Facilitate Development	m^2 N/A %	Early Mature	Moderate	N/A	N/A	Low	New planting / landscaping

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 The principal impact in the current proposals is the removal of T11 magnolia (Category C), T12 & 21 purple plum (Category R), T22 cherry (Category C) and G10.2-4 Camelia shrubs (Category C). These are all rear garden, low quality trees that can be removed without significantly impacting the landscape. The collective impact is rated low, subject to new landscaping.

6.1.2 Basement foundations will require a marginal encroachment of T1 London plane's (Category B) Root Protection Area (RPA) by 2% area. Related underpinning of existing structure to the front will also require a marginal encroachment of T8 beech (Category B) RPA by 5% area (maximum). Both impacts are rated very low: 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 and other published references to healthy trees tolerating up to 30-50% root severance (Coder, Helliwell and Watson in CEH 2006).

6.2 Rating of Secondary impacts

6.2.1 There are no significant secondary (post-development pressure) impacts on the basement: tree shadows and organic deposition will extend to the northeast away from any light wells.

6.3 Mitigation of Impacts

6.3.1	The landscape impact of tree losses can be offset with new landscape proposals, ideally involving 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 3

6.3.2	Mitigation will take the form of pre-emptive, manual root pruning (rather than arbitrary piling impacts) along the piling lines. A small / mini-piling rig and contiguous piling will be used in the front garden to confine excavation "overspill" and avoid significant impact to the canopy of T7 (for more details see Method Statement para 8.2.10, below).
6.3.3	The potential root damage from the construction impacts (piling excavation) can be partly mitigated by soil treatment and light pruning (crown cleaning). The former involves soil fertiliser injection / root inoculation and decompaction: a suitable low nitrate, low phosphorous fertilizer and mycorrhizal spores are introduced to the soil profile through compressed air injection. The spores are mixed with a stimulant, which helps them colonise the roots. A combination of these treatments can relieve the immediate effects of construction damage / disturbance and compaction, though long-term environmental deficiencies should be addressed culturally. The case for short-term mitigation through fertiliser application and light pruning is more proven (CEH 2006) than that of the other treatments.
6.3.4	All plant and vehicles engaged in construction works should either operate outside the RPA, or should run on a temporary surface designed to protect the underlying soil structure.

7.0 CONCLUSION

7.1 The potential impacts of development are rated low, both in terms of tree loss and RPA encroachment.

7.2 The removals are all rear garden, low quality trees that can be felled without significantly impacting the landscape. The RPA encroachments of Category B trees amount to less than 5% of area.

7.3 There are no significant secondary (post-development pressure) impacts on the basement.

7.4 Wider tree protection measures are elaborated in the Method Statement below.

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

8.0 RECOMMENDATIONS & OUTLINE METHOD STATEMENT

8.1 *Specific Recommendations*

8.1.1 Tree surgery recommendations are found in Appendix 2 to this report, with a selection of columnar tree species cultivars for landscaping of constricted sites provided in Appendix 3. Further observation of T7, when in leaf would be informative to assess overall canopy density. Any tree works 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 the Method Statement below.

8.2 Outline Method Statement (to be read in conjunction with Appendix 6: Tree Protection Plan, and developed further with a contractor post-planning)

8.2.1 The sequence of works should be as follows:

* initial tree works: felling, stump grinding and pruning for working clearances
* installation of TPB for demolition & construction
* installation of underground services
* installation of ground protection
* main construction
* removal of TPB
* soft landscaping

8.2.2 Site supervision: the Site Agent must be nominated to be responsible for all arboricultural matters on site. They 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.

8.2.3 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 **and pre-emptive excavation of piling line and any service trenches.** 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.