Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT

& METHOD STATEMENT:

Site Adjacent to 41 Ferncroft Avenue,

London NW3

REPORT PREPARED FOR:

BUJ Architects LLP.

35 Millharbour

London

E149TX

REPORT PREPARED BY

Adam Hollis

MSc ARB MICFor FArbor A MRICS C Env

Ref: BUJ/FNC/AIA/03

Date: 10th May 2012

APPENDICES

Caveats

This report is primarily an arboricultural report. Whilst comments relating to matters involving built structures or soil data may appear, any opinion thus expressed should be viewed as qualified, and confirmation from an appropriately qualified professional sought. Such points are usually clearly identified within the body of the report.

It is not a full safety survey or subsidence risk assessment survey. These services can be provided but a further fee would be payable. Where matters of tree condition with a safety implication are noted during 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:	BUJ Architects LLP	**Case Ref:**	BUJ/FNC AIA/03
Local Authority:	LB Camden	**Date:**	10/05/12

Site Address: 41 Ferncroft Avenue, London NW3

Proposal: Single-storey garage demolition and reconstruction as a single family dwelling spread over two levels of accommodation, basement and ground.

Report Checklist	**Y/N**		**Y/N**
Arboricultural constraints on site	Y	Trees removed	N
Tree Survey	Y	Topographical Survey	Y
BS5837 Report	Y	Conservation Area	Y
Tree Preservation Orders	N		
Tree Protection Plan:	Y		
Tree Constraints Plan:	Y		
Arboricultural Impact Assessment:	Y		

Site Layout

Site Visit	Y	Date: 17/04/09	Access Full/Partial/None	P
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:	N/a		On or off-site trees indirectly affected by development	Y

Trees with the potential to be affected

Western Boundary: Off-site, semi-mature holly and oak tree overhang proposed demolition and reconstruction. Roots marginally impacted (c.10% RPA) by proposed basement excavation.

Comments

Formative prune / crown lift will clear oak canopy juxtaposition. All RPA impact below recent (post 1998) site development.

Recommendations

1	Proposal will mean the loss of important trees (TPO/CA)	N
2	Proposal has sufficient amelioration for tree loss	N/a
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	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 a revised arboricultural impact assessment of the currently proposed development adjacent to 41 Ferncroft Avenue, London NW3 reviewing any conflicts between the proposals and material tree constraints. There are 4 trees at the site: 2 'B' category *(Moderate Quality), and 2 'C' category *(Low Quality).

1.2 The principal, primary impact in the current proposals is the construction of a single - storey house within / below the canopy of a semi-mature oak tree (T2), although this juxtaposition has been accommodated in the design, necessitating minor pruning only. Construction access will also require the light trimming of the holly (T1). Healthy young specimens of the affected species will tolerate such light pruning readily.

1.3 Excavation of a basement within the theoretical Root Protection Area (RPA) of these two trees also has the potential to cause low impacts (@10 & 13% RPA). However, the entire area of excavation is currently occupied by the recently (1998) constructed garage concrete sub-base and foundation, which are likely to have inhibited subsequent root colonisation by these young (contemporaneous) trees. The actual impact is thus, likely to be very low, which healthy young specimens of the affected species should tolerate readily.

1.4. The principal secondary impact would be the development of nuisance issues in terms of (T2) canopy shade and debris deposition, as well as possible subsidence damage to foundations. However, the building will have a basement and gabled roof and the elevation is very similar in heights to the existing garage. Any future interface with the canopy can be progressively removed with light pruning. Although shade may continue to be an issue, secondary impacts cannot ultimately lead to the felling of the tree, due to its third-party ownership. Common law allows for the right to prune overhanging branches. There will be less pressure to prune the tree, than already arises from No. 37, 5m to the west.

1.5. Thus, the new scheme creates negligible primary impacts (root injury) and maintains or even improves upon the status quo with regards to secondary impacts through sensitivity of design and provision of a basement: the existing garage will not have the same depth of foundation and it is quite foreseeable that the oak would need to be felled to prevent subsidence damage to the garage. The scheme improves the chances that the ill-fated, oak tree will ever succeed in reaching maturity and is therefore, considered arboriculturally viable.

* 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 BUJ Architects, to undertake an arboricultural planning survey in April 2009 of the site: land adjacent to 41 Ferncroft Avenue, London NW3. This revised report is to accompany a fresh planning application to London Borough of Camden.

2.1.2 The proposals are for the demolition of a garage and reconstruction as a single family dwelling, spread over two levels of accommodation, basement and ground. 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, a Chartered Environmentalist, Chartered Forester and Chartered Surveyor, 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 Landmark Trees in the formulation of our survey plans are:

Topographical survey – N/a*

Existing ground floor - 1045(--)SK Survey Plan

Proposed ground floor – 1045-PL-002B

*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' arboricultural consultant, I surveyed the trees on site on 16th April 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

Photograph of Existing Site Front

3.1.1	The site comprises the western boundary of the garden at No. 41 Ferncroft Avenue, currently occupied by a single storey garage of 1998, brick construction with concrete base and unknown foundations.
3.1.2	The site is bordered by a tree-lined footpath that slopes markedly to the south. The garage base has been made-up to level ground.
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 There are 4 surveyed trees on or around the site: 2 'B' category (Moderate Quality), and 2 'C' category (Low Quality).

3.2.2 In terms of age demographics there is a preponderance of semi-mature trees on the site with no older trees or younger, replacement ones in the population. A mature beech tree in the NW corner of the site was felled as unsound in the 1990's.

3.2.3 T1 is a semi-mature holly in fair condition with a slightly sparse canopy and of fairly indifferent landscape quality. It stands in the public footpath verge on the western site boundary.

3.2.4 T2 is a semi-mature English oak tree, also growing the verge. It is good condition and has the promise of a good landscape tree with commensurate environmental function. However, it will never enjoy the free growth of a parkland oak, with a three-storey house, standing 5m to its west. Some degree of formative pruning will always be required. The same need does not arise to the east, but some degree of basic crown symmetry will be required for aesthetics and balance.

3.2.5 T3 is a semi-mature honey locust that appears in good health and has ample growing room to develop freely.

3.2.6 T4 is an evergreen shrub magnolia, in the neighbouring garden to the south, of no public merit, but close to the proposals and worthy of protection at the very least to its owner and within the context of the conservation area (see below).

3.3 Planning Status

3.3.1 The site lies within a Conservation Area, which protects all trees (>7.5cm diameter at 1.5m above ground). 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, 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.**

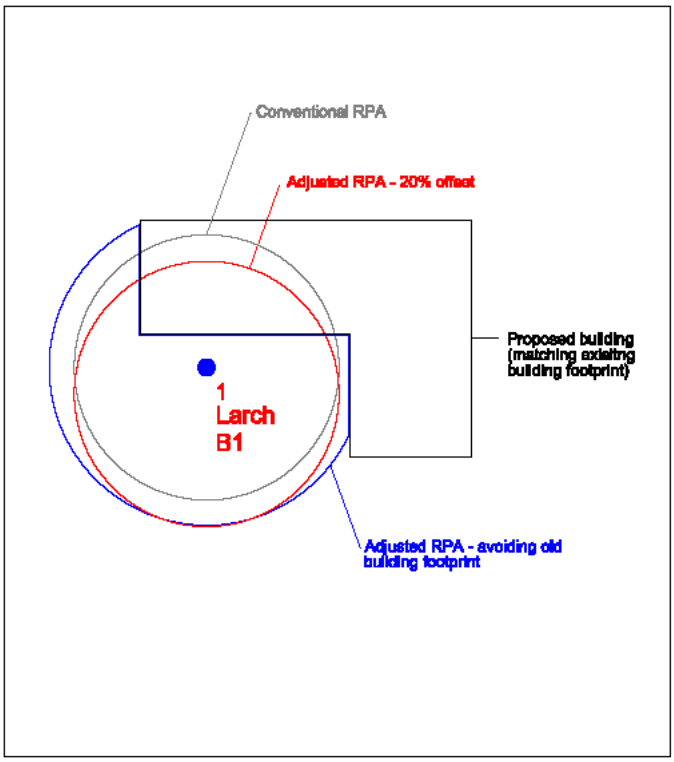


Fig 1. Generic illustration of alternative RPA morphologies.

4.1.2 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.

4.1.3 "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)

4.1.4 In this instance, there are no internal site trees and therefore no on-site primary constraints upon development. However, development to the perimeter will be constrained by off-site trees.

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.

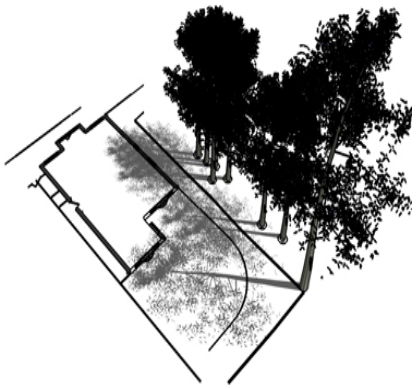
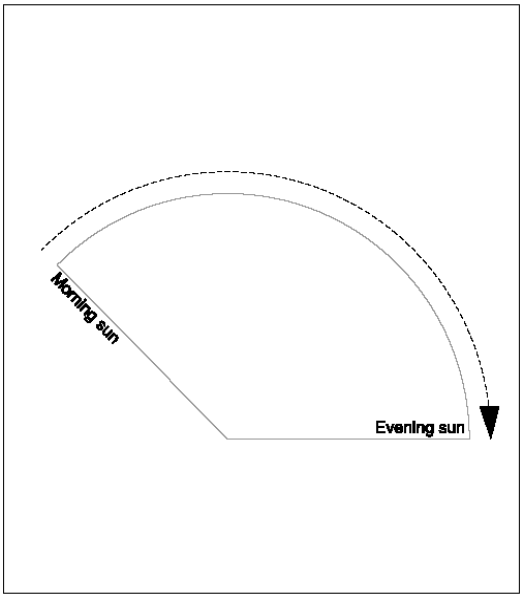


Fig 2. Generic illustration of shade constraint

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 most significant, secondary constraint would be shading or nuisance deposition on to the site from trees along the western boundaries.

5.0 Table 1: Arboricultural Impact Assessment for Retained Trees

Hide irrelevant | Show All 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
C	1	Holly	Basement Construction within "RPA" Of which almost ALL is existing garage	2.5 m^2 10.45 %	Semi-mature	Moderate	Good	Very Low	N/A	Light plant / mini-rigs only & from outside RPA Arboricultural supervision
B	2	Oak, English	Basement Construction within "RPA" Of which almost ALL is existing garage	3.5 m^2 13.43 %	Semi-mature	Normal	Moderate	Very Low	N/A	Light plant / mini-rigs only & from outside RPA Arboricultural supervision

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 The principal, primary impact in the current proposals is the construction of a single -storey house within / below the canopy of a semi-mature oak tree (T2), although this juxtaposition has been accommodated in the design, necessitating minor pruning only. Construction access will also require the light trimming of the holly (T1).

6.1.2 Healthy young specimens of the affected species will tolerate the requisite light pruning readily. Indeed, the lower crown architecture of the oak exhibits crowded branching at the stem union at 4-5m above ground. The tree will ultimately benefit from a thinning of this nexus, and objectives can be combined to remove a single, long, lowest limb therein and relieve immediate canopy-roof conflicts. The remaining lower branches are shorter (c. 3m long) and naturally sub-dominant to the lead stem and should not prove intrusive until maturity, when apical dominance is lost, by which time the crown can have been successively raised to clear the building completely (as necessary). Nuisance / shading is considered in S. 6.2 below.

6.1.3 Excavation of a basement within the theoretical Root Protection Area (RPA) of these two trees also has the potential to cause low impacts (@10 & 13% RPA). However, the entire area of excavation is currently occupied by the recently (1998) constructed garage concrete sub-base and foundation, which are likely to have inhibited subsequent root colonisation by these young (contemporaneous) trees. The actual impact is thus, likely to be very low.

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 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 The principal secondary impact would be the development of nuisance issues in terms of canopy juxtaposition and debris deposition, as well as possible subsidence damage to foundations.

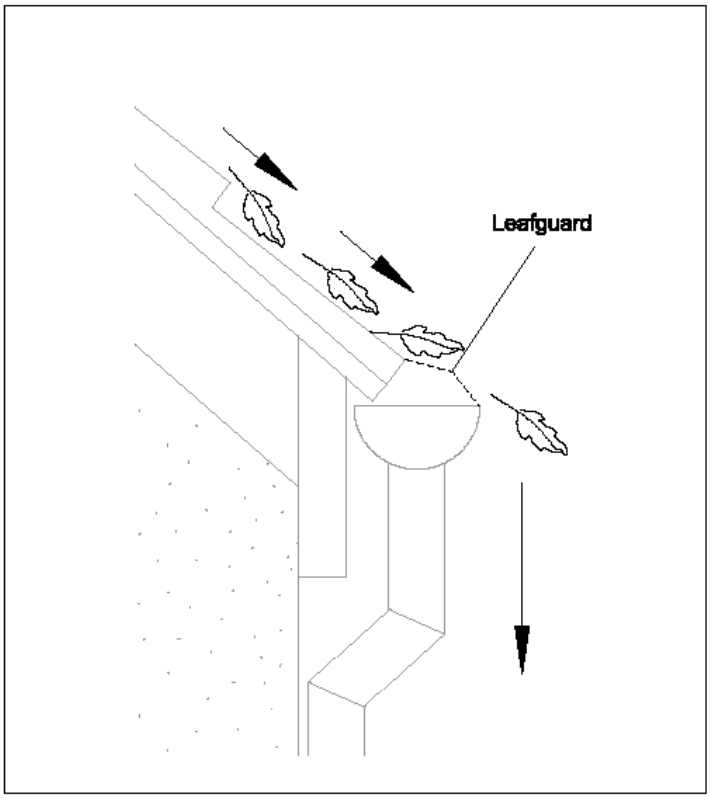
6.2.2 The principal secondary impact would be the development of nuisance issues in terms of (T2) canopy shade and debris deposition, as well as possible subsidence damage to foundations. However, the building will have a basement and gabled roof and the elevation is very similar in heights to the existing garage. Any future interface with the canopy can be progressively removed with light pruning. Although shade may continue to be an issue, secondary impacts cannot ultimately lead to the felling of the tree, due to its third-party ownership. Common law allows for the right to prune overhanging branches. There will be less pressure to prune the tree, than already arises from No. 37, 5m to the west

6.2.3 Thus, the new scheme creates negligible primary impacts (root injury) and maintains or even improves upon the status quo with regards to secondary impacts through sensitivity of design and provision of a basement: the existing garage will not have the same depth of foundation and it is quite foreseeable that the oak would need to be felled to prevent subsidence damage to the garage. The scheme improves the chances that the ill-fated, oak tree will ever succeed in reaching maturity.

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	The RPA encroachments should be trial excavated in the demolition of the sub-base. Roots encountered therein, can be cut cleanly under arboricultural supervision and piling allowed to proceed. A mini-piling rig will be required to avoid canopy intrusion and damage. The western wall may need to be constructed over hand without scaffolding.
6.3.3	The immediate T2 canopy encroachment can be avoided with a crown clean of the lower limbs of, affecting a 5-6m ground clearance as one moves away from the stem. T2 will simply be lightly trimmed back to achieve the requisite clearance
6.3.5	Nuisance deposition can be mitigated with the use of a green roof and the fitting of filtration traps on the guttering.
6.3.6	The shading impacts has been mitigated by building design, with the provision of a substantial open aspect to north and south. Progressive crown lifting and minor crown reduction may be necessary, but not such as to impose a burden of frequent, repetitive management or to depart from the existing future burden on management in consideration of the three-storey house to the west.



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 overall RPA or canopy percentage.

7.2 The full potential of the impacts can be largely mitigated through design and precautionary measures, elaborated in the outline method statements below (S. 8.2).

7.3 The species affected are generally tolerant of root disturbance / crown reduction and the young specimens are generally in good health and capable of sustaining these reduced impacts.

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

8.0 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 constricted sites provided in Appendix 3. 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 protection measures outlined in the method statement below.

8.1.3 The trees should be pruned as described in Appendix 2, demolition should proceed with caution (pull back) to avoid incidental damage and the RPA's should be trial excavated in the demolition of the sub-base. Roots encountered therein, can be cut cleanly under arboricultural supervision and piling allowed to proceed. A mini-piling rig will be required to avoid canopy intrusion and damage. The western wall may need to be constructed over hand without scaffolding.

8.2 Method Statement

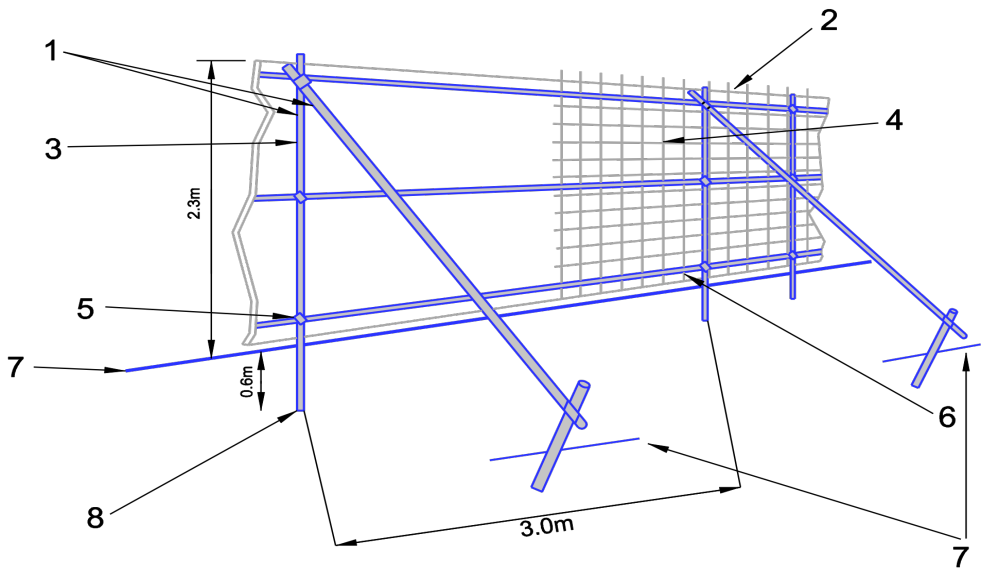
8.2.1 Any trees which are in close proximity to buildings proposed for demolishing should be protected with a Tree Protection Barrier (TPB). This TPB should comprise steel, mesh panels 2.2m in height ('Heras') and should be mounted on a scaffolding frame (shown in Fig 2 of BS5837). The position of the TPB is shown on plan in Appendix 7. 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 All pruning works must be in accordance with British Standard 3998:1989 Tree work [BS3998].

8.2.4 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.

8.2.4 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. 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.



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

8.2.5 Existing hard surfaces within RPA's to be removed by hand held (power) tools or by light plant under arboricultural supervision only. Tree roots exposed by such operations should be wrapped in dry, clean hessian sacking to prevent desiccation and exposure to extreme temperature fluctuations. Roots smaller then 25mm diameter may be cut cleanly with a sharp pruning saw or secateurs back to a junction. Roots larger then 25mm diameter may only be cut in consultation with an arboriculturalist.

8.2.6 Where scaffolding installation is required within the RPA the provisions of Figure 3 of BS5837 with regard to ground protection must be employed. However, there is unlikely to be sufficient room for scaffolding along the western boundary, in which case "over hand" construction will be required.

8.2.7 If the RPA of a tree is encroached by underground service routes then BS5837 and NJUG 10 provisions should be employed. If it is deemed necessary, further arboricultural advice must be sought.

8.2.8 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.

8.2.9 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: a 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.

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

8.2.11 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

9.0 REFERENCES

- British Standards Institute. 2005. Trees in Relation to Construction BS 5837: 2005 HMSO, London.
- Barlow JF & Harrison G. 1999. Shade By Trees, Arboricultural Practice Note 5, AAIS, Farnham, Surrey.
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APPENDIX 1

TREE SCHEDULE - Notes for Guidance

Dm -	is the diameter of the trunk in millimetres at 1.5m above ground level.
Spread -	is in metres at the points of the compass relevant to the woodland boundary
Class/Colour -	refers to the retention classifications in Section 5.2 BS5837: 2005 and colouring on the site map - Highly High Quality (A) (Green), Moderate Quality (B) (Blue), Low Quality (C) (Grey), Poor Quality (R) (Red)

Landmark Trees Ltd
Tel: 020 7851 4544

Tree Survey Schedule

Site: 41 Ferncroft Avenue, NW3 7PG
Date: 16th April 2009

Surveyor: Adam Hollis
Ref:

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	Holly	7	2222	3	Semi-mature	230	12	2.8	Moderate	Fair	Low	C	2	20-40	A sparser than normal canopy
2	Oak, English	12	3554	4	Semi-mature	240	12	2.9	Normal	Good	Medium	B	2	>40	Crowding of branches on E side at 5m abv ground including long vertical lateral over existing roof. Remaining lower eastern canopy arcs upwards away from roof line.
3	Honey Locust	8	3333	3	Semi-mature	200	12	2.4	Normal	Good	Medium	B	1	>40	Remote survey only (estimated position & size)
4	Magnolia (M. grandiflora)	5	2222	1	Semi-mature	100	12	1.2	Normal	Good	Low	C	2	20-40	Remote survey only (estimated position & size)

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 millimeters at 1.5m from ground level for single stemmed trees or at ground level for multi-stemmed trees. Stem Diameter may be estimated where access is restricted.
5. Protection Multiplier is 12 for single stemmed and 10 for multi-stemmed trees 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, 'R' - Remove.
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

Landmark Trees Ltd
Tel: 0207 851 4544

Recommended Tree Works

Hide irrelevant | Show All Trees

Site: 41 Ferncroft Avenue, NW3 7PG

Surveyor: Adam Hollis

Date: 16th April 2009

Ref:

Tree No.	English Name	Height	Stem Diameter	Crown Spread	Recommended Works	Comments/ Reasons
1	Holly	7	230	2222	CB1m	A sparser than normal canopy Recommended to permit development
2	Oak, English	12	240	3554	CCL i.e. remove long lateral	Crowding of branches on E side at 5m abv ground including long vertical lateral over existing roof. Remaining lower eastern canopy arcs upwards away from roof line. 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 %.
DDD - Decay Detection Device recommended.
Fell - Fell to ground level.
Fell2 - Fell and treat stump to prevent re-growth.
Pol - Pollard or re-pollard.
YM - Carry out normal maintenance of a young/newly planted tree.
RE - Remove Epicormic Growth (specific notes may be made).

APPENDIX 3: TREE SELECTION FOR CONSTRICTED SITES

Table 4: Rosaceous Tree Species for Constricted Planting Sites

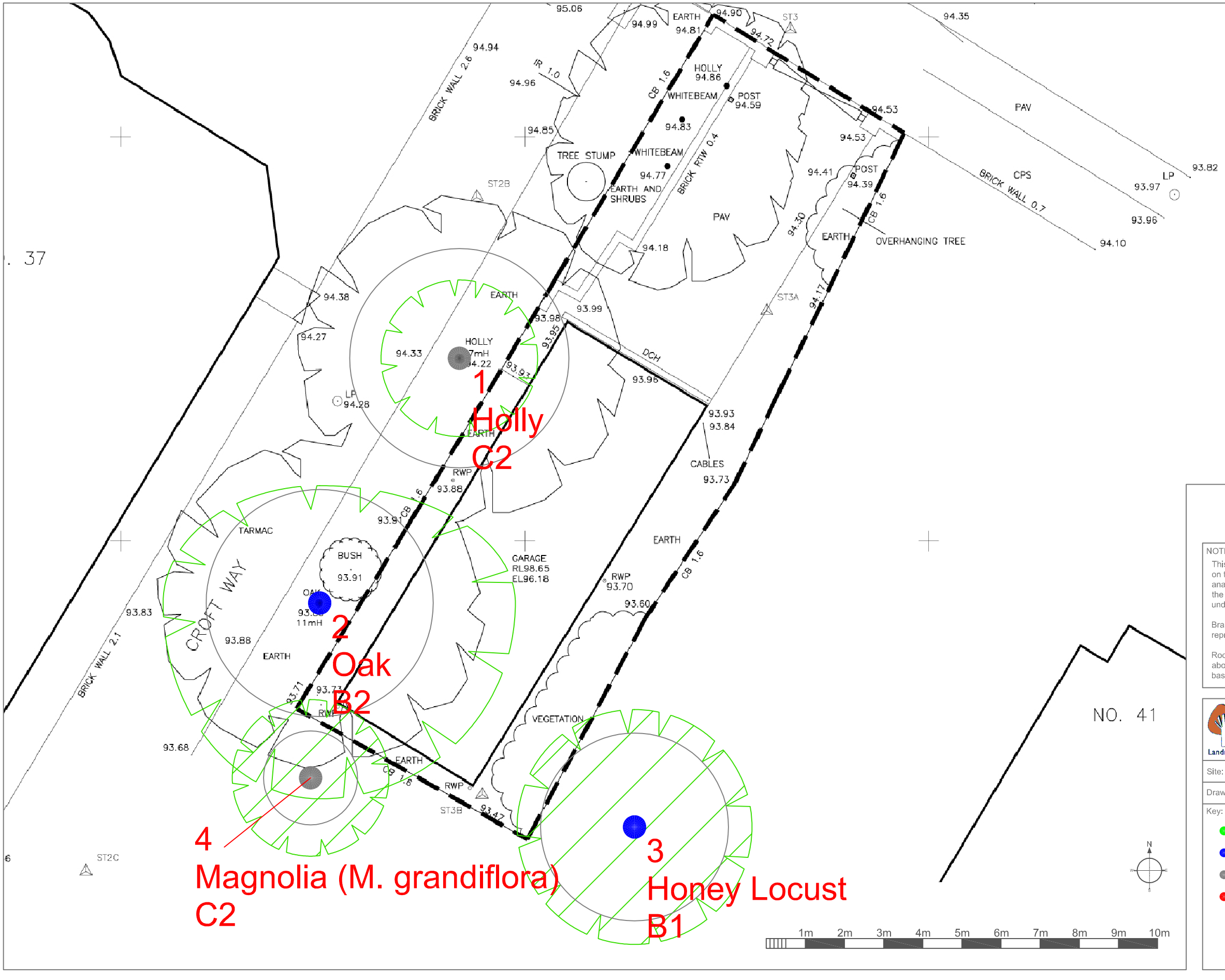
Common Name	Species	Selected Form
Hawthorn	Crataegus monogyna	Stricta
Cockspur	Crataegus prunifolia	Splendens
Cherry	Prunus x hillieri	Spire
Bird cherry	Prunus padus	Albertii
Rowan / Mountain ash	Sorbus aucuparia	Cardinal Royal
Rowan / Mountain ash	Sorbus aucuparia	Rossica Major
Rowan / Mountain ash	Sorbus aucuparia	Sheerwater Seedling
Swedish whitebeam	Sorbus intermedia	Brouwers
Bastard 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 4

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) or immediately above the root flare for multi-stemmed trees.

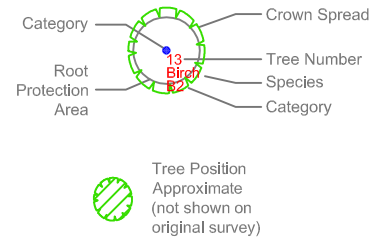
Landmark Trees

2 Clifford Gardens, London, NW10 5JD
Tel: 0800 055 6912 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: Ferncroft Avenue	1-100@A3
Drawing Title: Tree Constraints Plan	April 2009

Key:

- Category A High Quality
- Category B Good Quality
- Category C Moderate Quality
- Category R Poor Quality



Tree Position Approximate (not shown on original survey)

APPENDIX 5

ARBORICULTURAL IMPACT ASSESSMENT PLAN

CROFT WAY

CROFT AVENUE

1
Holly
C2

2
Oak
B2

3
Honey Locust
B1

4
Magnolia (M. grandiflora)
C2

Basement outline

Existing garage outline

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

N

NOTE:

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Site: Ferncroft Avenue	1-100@A3
Drawing Title: Arboricultural Impact Assessment	Rev C, May 2012

Key:

- Category A High Quality
- Category B Good Quality
- Category C Moderate Quality
- Category R Poor Quality

Category
Crown Spread
13
Birch
A2
Tree Number
Species
Root Protection Area
Category

Tree Position Approximate (not shown on original survey)

APPENDIX 6

TREE PROTECTION PLAN

CROFT WAY

CROFT AVENUE

1
Holly
C2

2
Oak
B2

3
Honey Locust
B1

4
Magnolia (M. grandiflora)
C2

Basement outline

Existing garage outline

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

N

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) or immediately above the root flare for multi-stemmed trees.

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Site: Ferncroft Avenue	1-100@A3
Drawing Title: Tree Protection Plan	Rev C, May 2012

Key:

- Category A High Quality
- Category B Good Quality
- Category C Moderate Quality
- Category R Poor Quality

Category — Crown Spread
Root Protection Area — 13 Birch B2 — Tree Number, Species, Category

Tree Protection Fencing

Tree Position Approximate (not shown on original survey)

Ground Protection