

DEVELOPMENT SITE TREE REPORT

OUR REF: IB/ 1239R /ag

YOUR REF:

DATE: 28th April 2009

CLIENT:

Mr G Florentino c/o Judd Architects & Surveyors Ltd

<u>SITE</u> ADDRESS: Magnolia House 2a Redington Road Hampstead London NW3

DATE/TIME OF VISIT:	AM Tuesday 28 th April 2009
PEOPLE PRESENT:	Mr I Barrow
<u>REPORT COMPLETED BY</u> :	Mr Ian Barrow C Env, Cert (Arb) (RFS) M.Arbor.A

SUMMARY:

This report details the trees that are growing on, or will be affected by development proposals at, the above site. It assesses the impact of the development on those trees using the criteria set out in the British Standard 5837:2005 'Trees in Relation to Construction'. The trees' amenity and landscape values are described and assessments are made of their longevity. Those not suitable for retention are noted, and measures are set out for the successful long-term retention of others. Method statements are provided for tree protection (and special protection measures where works close to prime trees are unavoidable). Site plans are appended showing tree locations, site constraints and location of protection measures.



SCOPE OF REPORT

SURVEY BRIEF

To inspect the trees growing on or adjacent to the site; to assess their condition and identify all trees that may be affected by the proposals.

To provide a report and recommendations suitable for submission with a planning application.

BACKGROUND

The site frontage has been considered for construction of new entrance gates and a slightly enlarged car parking area. The local planning authority (LPA) and the site's architects have requested an impact assessment of the proposals upon the trees and guidance on progressing the project whilst preserving the treescape.

REPORT REFERENCES

As a progressive company, we keep abreast of research data relating to arboriculture. All observations, recommendations and works are based on current industry standard reference material and extensive FA Bartlett research findings derived from the company's own facilities at University of Reading UK and Charlotte in the USA. A selection of pertinent items is shown in Appendix 2. Our impact appraisal identifies the impact on trees and how that affects local landscape character. Arboricultural method statements, setting out any management and tree protection details that <u>must</u> be implemented to ensure successful tree retention, have evolved from material produced by O'Callaghan & Lawson, Trees and Development Conflicts: Trees and Development a technical Guide - Matheny and Clark 1998, and on assumptions that the minimum standards for development issues are those set out in British Standards Institution (2005) BS 5837: Trees in Relation to Construction – Recommendations and the National Joint Utilities Group (1995) Publication Number 10: Guidelines for the planning, installation and maintenance of utility services in proximity to trees. F.A Bartlett's, long, arboricultural expertise is used to interpret these references and provide advice and guidance for good practice related to the specific circumstances on this site.



REPORT LIMITATIONS

This report is restricted to those trees shown on the attached site plans and described in the schedule. Whilst making every effort to identify the trees whose potential impact on the development is most significant, it must be noted that other trees may have an effect on the property in the future and will require a long-term management commitment.

All plans are illustrative and based entirely on provided information. They can only be used for dealing with the tree issues related to the proposal. All scaled measurements <u>must</u> be checked against the original submission documents. The location of all protective measures <u>must</u> be confirmed prior to any works (including site clearance and demolition), they are based on the existing land surveys. It shows the existing trees numbered, and colour coded for amenity/life expectancy as per the British Standard and plan key. Trees to be removed are indicated in red. Plans also show locations of tree protective measures and any new tree planting recommended.

The trees were not climbed and dimensions are approximate but considered a reasonable reflection of the tree details. This includes species identification, height, diameter, crown spread, age range and vigour entered within the tree details. Where necessary soil tests were carried out and samples taken by hand only.

Test boring equipment or other mechanical devices to establish structural integrity of individual trees have not been used. Assessment has been limited to visual inspection. This survey can only therefore be regarded as a preliminary assessment. More detailed investigations can be supplied if required.

All tree safety, hazard and structural assessments undertaken during surveys or inspections either on single trees or multiples of trees, use the methodology set down in the F.A. Bartlett publication 'Tree Risk Management' (Smiley, Fraedrich, Hendrickson 2002), and Principles of Tree Hazard Assessment & Management (HMSO Lonsdale 1999) and as a basic, employ the VTA Methodology suggested by (Mattheck 1997). This format may be specifically detailed in text related to reports on single and smaller groups of trees but will be implicit for large scale surveys unless specified to the contrary by the client.

Tree water uptake measurements are based on NHBC standards 4.2 'Building Near Trees' and Biddle Tree Root Damage to Buildings 1998, LTOA A Risk Limitation Strategy for Tree Root Claims (3rd Edition) 2007.

ECOLOGICAL CONSTRAINTS

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, provides statutory protection to birds, bats, insects and other species that inhabit trees hedges or associated vegetation. These could impose significant constraints on the use and timing of access to the site in addition to any of the tree matters considered in this report. These matters are beyond Bartlett Consulting's area of expertise and you <u>must</u> seek advice from an ecologist to check if any such constraints apply to this site, where we identify any such potential habitat.



CARBON SEQUESTRATION PROFILE

Trees: The trees on this site will have a high or low ability to take in and lock up gaseous carbon, within their structures. The rate of this uptake is dependant on the age and species of the tree. We have assessed the tree stock and can advise that trees T1 and T2 have grown beyond the stage at which they are the most valuable carbon sinks. However their principal function now is as a long-term store for carbon in their crown, trunk and root systems.

Soils: Soils, particularly those with high calcium content are able to take in and store gaseous carbon. Intensive cultivation and movement can release CO_2 into the atmosphere negating the beneficial effects of soil carbon sequestration. All groundwork's and landscaping should seek to achieve the desired outcome with as little soil disturbance as possible. Our recommendations for tree retention, works and planting are made with this goal in mind.

Additional soil sampling and potentially soil calcium enhancement can be undertaken by The F.A. Bartlett Tree Expert Company should you wish to pursue this matter.

TREE PRESERVATION ORDER PROTECTION

Trees T1 and T2 are covered by a tree preservation orders No.s 5H-Q81 and 5H-TA2. You cannot carry out any works to the protected trees before a formal permission is issued by the appropriate local planning authority. This can either be as a separate submission for approval prior to development or included in a planning approval application but cannot be acted upon until full local planning authority permission is granted. We would be happy to make the application on your behalf should you wish to proceed with any works arising from this consultation.

<u>PLEASE NOTE</u>: Since October 2008, the level of detail and explanation of requests for works has increased but been made less prone to local interpretation of requirements. A new nationwide application from is now prescribed along with more detailed site mapping and the need to provide three copies of all forms to the LPA.



GENERAL SITE DETAILS

WEATHER CONDITIONS AT TIME OF SURVEY

Sunny.

CLIMATE

Presently fully hydrated due to heavy rainfall in the previous months.

LOCAL LANDSCAPE EVALUATION

The trees on the site being tall and growing from an elevated location provide valuable green space in the locality the hedge TH3 provides a level of screening between properties.



T2 Adjacent property



T1 & T2 & locations of gate parking works



T1 Corsican Pine & hedge TH3 far left



UNDERLYING SOILS - (REF BGS O/S DRIFT MAP)

London clays with sand pockets.

SOIL TESTS

□ Soil tests were not carried out on this occasion.

FLUORIMETER TESTS

□ Fluorimeter tests were not carried out.

These tests assess the ability of the green chlorophyll in tree leaves to turn sunlight in the tree sugars, by this measure using a simple test. The physiological condition of a tree and more importantly its life expectancy can be accurately assessed. This measure can prove effective where uncertainly exists as to the desirability of tree retention on development sites.

BGS = British Geological Survey O/S = Ordinance Survey.



PROPOSED BUILDING TYPE

Construction of new boundary gates and enlargement of the parking area to its eastern side.

EXISTING GROUNDS

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Laid to a small raised lawn on the east side of the garden and a paved area around T1 on the west side.

HEDGES/SHRUBS

Well-tended mixed hedge on the west boundary.

SLOPES/BOUNDARYS

The site is raised some 1.8 m above pavement level with a central parking area at street level, and is bordered by brick walls and some wood panel fencing.

ADJACENT LAND/S

Properties nearby have more densely planted gardens with shrubs and herbaceous perennials. The site is within the Victorian suburban area of Hampstead, north London.

RISK ASSESSMENT OF TREES WITHIN SITE

As part of the assessment of the trees, a brief visual assessment has indicated that no trees could be considered a hazard.

ASSESSMENT OF ECOLOGICAL STATUS OF SITE

Following our survey of the site, and analysis of climax and sub climax vegetation and hedgerow. We believe there is no vegetation on site that indicates habitat potential for protected species.



DEVELOPMENT SITE TREE REPORT BARTLETT CONSULTING

Client: Mr Florentino c/o Judd Architects Ltd								Report No. IB 1239R						
Comp	oleted by: Mr I	Barro)W									Sheet	t No. 1	
Site:	Magnolia Ho	use 2a	Redingto	n Ro	ad N	W3						Date	of Survey: 2	28.4.09
Trees	Tagged: No									Weather: Sunny		Repo	ort to: BS 58	37:2005
Tree No.	Species	Ht (m)	Stem diameter (mm)	I N	Branc (1 E	h spre nm) S	ad W	Height of crown clearance (m)	Age class	Condition	Preliminary management recommendations	Estimated remaining contribution (years)	Category grading	Root Protection Zone (m)
TI	Corsican Pine	17	670	7	8	7	6	8	Mat	Water stressed, poor annual shoot extension, adequate.	Improve rooting environment, reduce area of impermeable surface, install summer irrigation, consider feed for 3vrs.	40+	B1	8.04
T2	Atlas Cedar	11	700	5	9	8	8	3	Mat	Poor form, adequate	None	60+	B1	8.40
TH3	Hedge, Forsyithia, Holm oak,	1.5- 3	10-40		-	1.5-		0	Mid	Good low level screen	None	30+	B2	0.6

"T" no's refer to site plan and /or tree tags where used. Species – tree species giving English common name. H20 – based on matrix of NHBC classification 1985 Biddle 1979. Ht Height estimated in metres; C.S is crown spread to the cardinal points; DBH is stem diameter measured at 1.5m Ht; Age is assessed as Yng up to 1/3 life, Mid up to ½ life and Mature is fully developed and grown, Veteran is exceptional age for species. Vig is average for species or poor or declining. Category R is remove ASAP; A is high quality specimen; B is moderate quality; C is low/adequate quality. Amen. val Amenity Value As per BS 5837 2005 (where possible) Stem to bldg Distance of stem to nearest building. U/L Underlying soils. All comments to BS 5837 2005.

Holly, Elder, Rose.



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Shenley Lodge Farm, Ridge Hill, Radlett, Herts, WD7 9BG. Tel: 01707-649018 Fax: 01707-649652 consultancy@bartlettuk.com					
Client	Mr Florentino c/o Judd Architects				
Site	2a Redington Road, Hampstead, London				
Drawing Title	Site Constraints Plan - with ref to BS 5837:2005				
Reference	IB 1239R				
Date	28 th April 2009				
Scale	1:200				
Drawn	IB				
Tree Amenity Category	The copyright of this plan is vested in the FA Bartlett Tree Expert Company Ltd. Not to be reproduced without their written authority.				
B Remove	ЛМ				
Extent of Calculated Root Zone	Property Boundary				
© F.A. Bartlett Tree Expert Co. Ltd Development Site Report Page 9 of 17					



	Shenley Lodge Tel:	Farm, Ridge Hill, Radlett, Herts, WD7 9BG. 01707-649018 Fax: 01707-649652 consultancy@bartlettuk.com			
Client		Mr Florentino c/o Judd Architects			
Site		2a Redington Road, Hampstead, London			
Drawing Title		Tree Protection Plan - with ref to BS 5837:2005			
Reference		IB 1239R			
Date		28 th April 2009			
Scale		1:200			
Drawn		IB			
Root Protection Area (RPA)/		The copyright of this plan is vested in the FA Bartlett Tree Expert Company Ltd. Not to be reproduced without their written authority.			
Compaction Protection		ZN			

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DISCUSSION

Impact of proposals on the local amenity

The proposal as presented at present will not result in the loss of any trees.

Significant trees T1 and T2 can be retained.

Construction activity could adversely affect retained trees if appropriate minor protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented as described in the arboricultural method statements attached to this report, the development proposal will have no significant adverse impact on the contribution of the site's trees to the local amenity and its character.

Tree protection with fencing barriers and ground protection

Guidance for fencing design based on BS 5837 recommendations is included in our Appendices.

The location of the permanent and any temporary barriers, and the tree root protection areas they protect is shown on the tree protection plan. The precise location of the barriers and the sequence of their installation and removal <u>must</u> be agreed with the council before any construction or demolition starts. A small box of fencing to protect as much of T2's root area within No. 2a should be erected on the lawn area and a boarded work platform, from this out to the desired extent of the proposed excavation will need to be laid to provide some "tree safe" access to the work area. The hedge TH3 is beyond the works area and needs no protection, to reassure neighbours a lightweight fence could be fixed alongside the hedge face, if desired.

Non-Compacting Ground Protection

Any tree root protection areas beyond the line of protective barriers <u>must</u> be covered in ground protection based on the British Standard 5837 recommendations, until there is no risk of any damage from demolition and construction works. At this site, it <u>must</u> be installed to protect tree T2 as shown on tree protection plan before any demolition and constructions starts. The area above the RPA of T1 is paved, however to prevent compaction and prevent the possibility of soil pollution, this area must not be used in connection with the installation process in any way.

Precautions when working in root protection areas

Any works in root protection areas <u>must</u> be carried out with great care as described below. The enlargement of the parking area on its east side, by aprox 1m (including the width of the retaining wall) will infringe the tree T2's root protection area by $2m^2$ or approximately 5% of the whole RPA. As the garden area within the side of 2a and 71 Frognall are permeable surfaces, this small incursion will not be detrimental to T2. The excavations will need to be by hand only and any roots found within the excavation must be cut back cleanly with a sharp hand-saw or secateurs. Once the excavation is complete the new retaining wall should be erected as quickly as possible. To prevent drying of the exposed soil face and its interspersed root area the face must be covered with a plastic sheet to create shade and prevent evaporation of soil water.

On completion of the new retaining wall the small void between the wall rear and soil face should be filled with pea shingle to aid drainage and provide a benign environment for any cut root ends.

The RPA of T1 has for some time been cut into by the pre existing drive/parking area. No works are envisaged for this side of the site and no precautions are required, beyond those noted under 'Non compacting ground protection' above.



RECOMMENDATIONS

Synopsis:

Good tree protection cannot be reliably implemented without regular Arboricultural input. The nature and extent of that provision will vary according to the complexity of the site and the resources available. An Arboricultural Consultant should always be instructed to work within the guidance of this report and local planning authority conditions to oversee implementation of protective measures and tree management proposals detailed in the Arboricultural method statements, attached.

Supervision of local planning authority planning conditions and requirements:

Arboricultural planning conditions cannot be effectively discharge without on site supervision by an Arboricultural Consultant. Any supervisory action <u>must</u> be confirmed by formal letters or log entries circulated to all relevant parties, including the council. These records of site visits will provide proof of compliance and allow planning conditions to be discharged as the development progresses. The proposer or his agent should instruct an Arboricultural Consultant to enable compliance with the local planning authority requirements set out in the planning conditions, before any work begins on site.

Phasing of arboricultural involvement in the development:

Trees can only be properly budgeted for and factored into the developing work programmes if the overall project management takes full account of tree issues once consent is confirmed. An Arboricultural Consultant <u>must</u> be involved in the following phases of the project management:-

Arboricultural preparations before works start on site:

A pre-commencement site visit should be held on site before any of the demolition and construction work begins. This should be attended by the site manager, the Arboricultural Consultant and ideally a council representative. If this is not possible, the Arboricultural Consultant <u>must</u> inform the council in writing of the details of meetings. All tree protection measures detailed in this document <u>must</u> be discussed so that they are fully understood by all the parties. Clarification or modifications to the consented details <u>must</u> be recorded and circulated to all parties in writing. These documents should then form the basis of any supervision arrangements between the Arboricultural Consultant and the proposer.

Recommendations for site supervision:

Once this site is active, the Arboricultural Consultant <u>must</u> visit at intervals agreed at the pre-commencement meeting. The Consultant's initial role is to liaise between proposer and the local planning authority to ensure that appropriate protection measures are in place before any works start. Once the site is working, that role will switch to one of monitoring compliance with Arboricultural conditions and advising on any tree problems as they arise.

Site Management:

It is the proposer's responsibility to ensure that the requirements set out in this Arboricultural report and method statements are known and understood by all site personnel. Copies of the documents should be kept on site at all times and the site manager must brief all personnel who could have an impact on any trees and on their specific protection requirements. This should be a part of all site induction procedures and written into appropriate site management documents.



SUMMARY

1) Install protective fencing, and work platform adjacent T2.

2) Exclude any works access or storage from under T1 and adjacent to TH3.

3) Remove eastern retaining wall, carefully excavate to described minimum width, cleanly and carefully cutting any roots found. Arboricultural supervision can be provided at this stage if required.

4) Construct new wall with pea shingle back fill. Install new gates.

5) Consider installation of permanent timed irrigation for T1, as part of project.

6) To ensure continued vigour and benign soil conditions, each tree should have the root area within the protection fencing de-compacted, and thereafter a programme of slow release soil applied fertiliser applications made over perhaps a period of three years, with applications times and feed content determined by a single analysis of soil type.

Method Statement Attachments

1)	Fencing – Root Protection Area	Yes
2)	Temporary anti compaction protection of 'at risk' root zones	Yes



METHOD STATEMENT 1 FENCING – TREE ROOT PROTECTION AREAS

Date: 28th April 2009

Site: 2a Redington Road, London, NW3 7RG

The fencing to tree protection areas should be constructed of scaffold tube uprights (set at 3m intervals with diagonal braces driven securely into the ground). Faced with 'herras' type fencing attached to uprights with steel strapping or scaffold clamps sited along the protection zone perimeters as per attached site plans.

The fencing shall completely exclude access during the demolition and construction process. The protected areas shall not be used either for the storage of materials or spoil nor for the mixing of substances or the disposal of any residues nor shall be allowed to be contaminated by run off from activities beyond the protection zones. Thus fencing for the root protection zone shall comply to the requirements of British Standard 5837:2005 'Trees in Relation to Construction': 9.1-2 and Figure 2.



(NB This method statement complies to British Standard 5837:2005 'Trees in Relation to Construction').



METHOD STATEMENT 2

TEMPORARY ANTI COMPACTION PROTECTION OF 'AT RISK' TREE ROOT ZONES (Hatched in orange on site plans)

Date: 28th April 2009

Site: 2a Redington Road, London, NW3 7RG

Retained trees bordering access ways, or who's root protection areas extend beyond agreed rigid fencing, are likely to have critical supporting roots beneath 'the worksite' surface.

A protection mat shall be constructed prior to any site works so as to reduce compaction within the area during all works. Please refer to British Standard 5837: 9.3.

Either for heavy site usage:

The area shall be protected by the laying of an impervious membrane onto the site surface. Any leveling of the surface shall be made using soil or aggregate infill of hollows to build up to a general site level, no excavation or grading of surfaces will be allowed. Onto this base shall be laid a geotextile pocketed mat, in-filled with inert coarse aggregate to a depth of 15cm spread and leveled to form a wearing surface.

Or for lightweight vehicle and pedestrian access:

A temporary impervious membrane shall be laid over the area hatched in orange on the site plans, so as to prevent any ground pollution from construction residues. Onto this layer road plates (such as Ground Guard) to the appropriate capacity shall be laid as per manufacturers specifications so as to prevent ground compaction during the works process.

For lightweight (pedestrian access) on sloping sites or over retained ground features an impervious membrane shall be laid over the existing surface, over this, supported on a scaffold low level framework shall be constructed a planked boardwalk, as per Fig 3 part 9.3 of the British Standard 5837:2005 'Trees in Relation to Construction'. [diagram below]





Additionally:

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For exceptional or temporary loads, the first mentioned surface can be re-enforced with the addition of steel or manufactured road plates or heavy timber baulks to act as a work platform for example for mobile cranes or large pile driving rigs etc.

 \underline{NB} : Under no circumstances should any excavations be made into the site surface for bases of fencing or to locally level protective overlays.

(NB This method statement complies to British Standard 5837:2005 'Trees in Relation to Construction').



I trust this report is helpful to you, should you have any queries or require further advice, please do not hesitate to contact me.

REPORT CLASSIFICATION: British Standard 5837:2005 'Trees in Relation to Construction'

REPORT STATUS: Completed

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REPORT COMPLETED BY: Mr Ian Barrow C Env Cert (Arb) (RFS) M.Arbor.A Principal Arboricultural Consultant

SIGNATURE:	.DATE	<u>eq14-109</u>
REPORT REVIEWED BY:	DATE	"(
REPORT AUTHORISED FOR ISSUE BY A Potter	.DATE	¹ (



APPENDIX 1 – DEFINITIONS

Arboriculture

- This is the science, study and practice of the management of trees and shrubs, aimed primarily at the provision of amenity both in urban and rural situations.
- 2 Site
 - For the purpose of this report, the 'site' is the property for which the report has been commissioned. Boundary
- 3 This can be described as the physical and/or legal demarcation of a defined area.
- Underground/Overhead services
- These are utility services such as Gas, Water, Sewerage, Electricity, Telephone and Cable television that are either buried below ground, or suspended cables overhead. 5 Local planning restrictions
- Local planning restrictions related to trees come in the form of tree preservation orders or conservation areas. Under these restrictions it is an offence under statute law to cut, wilfully damage or destroy a tree.
- 6 **Deeds of Covenant**
- This is a legal act or document to secure an item of value or importance to the owner. With reference to trees this is usually recorded with the land registry.

7 Subsidence and Heave

Subsidence can be defined as the downward movement of a building foundation, caused by loss of support of the soil beneath the foundations. This is associated with changes in the subsoil such as shrinkage in clay soils, or the compression of peaty soils.

Heave on the other hand, is the upward movement of a building foundation caused by an increase in volume of the soil beneath the foundation. This is commonly associated with changes in the subsoil, such as rehydration in clay soils.

8 Monitoring

This is a cyclical series of inspections over a period of time, by experienced and/or qualified personnel. The objective for the arboriculturalist is to record changes in tree condition, and/or the effect of recommended work on specific tree(s).

9 Roots

These are subterranean structures of the tree that are used for anchorage and extraction of nutrients and water from the soil. As a guideline it is assumed that the root system can extend approximately a distance of one and a half the height of the tree, or half the tree's height in the case of conifers and more upright species.

10 Trench root barries

A measure carried out to limit the extent of a tree's root system where it may be in conflict with a neighbouring building or structure. The intention being to temporarily resolve the possibility of any direct or indirect action by roots on the building or structure in question

11 Direct action of roots/trunks

This is a force applied to an object, structure and/or building as a result of increasing diameter of the roots and/or trunk of a tree through normal growth.

12 Indirect action of roots

The shrinkage or swelling of soils and consequent effect on a substrate as a result of soil moisture extraction by tree roots.

13 DBH

Diameter at breast height. Tree stem diameter measured with a calibrated tape at 1.5m.

Crown 14

This is the branch system which grows upwards and outwards from the trunk of the tree. Recommended works that mention the crown, pertain soley to this area of the tree and not to the trunk

15 Crown spread

This is the radial measurement of the crown of the tree, from trunk to its furthest extent in a specific direction. A mean crown radius is the average figure taken from several radius measurements in various directions 16

Crown reduction/Re-shaping

This is a reduction of the crown size, by height, spread, and to some extent, density. The reduction is measured from the top of the crown to crown base, and is not a reduction of the height of the tree overall. Branches should be cut back to a side bud or branch (where possible) to leave a flowing crown silhouette without stumps. 17 Crown thin

This is the removal of a portion of the secondary branch growth throughout the crown to produce a well-balanced branch structure, of an even density. The volume of timber removed will be approximate and expressed as a percentage

18 Crown lift

This is the removal/reduction of low branches or limbs, (generally back to a side bud, branch or the main trunk) to give a specified height of the crown above the ground surface or other structure.

19 To "deadwood"

This is the removal of dead, dying and diseased branches in excess of 5cm diameter from the crown/trunk of the tree, which can constitute a considerable potential hazard. This also includes the removal of any split limbs, broken or dying and hanging branches.

20 Formative prune

This is the pruning of small trees and/or saplings to help prevent major problems associated with shape and structure arising in the future.

21 Pollard

This can be either a considerable reduction in height and spread of a tree, back to a truncated framework of major branches or the removal of re-growth from a previous pollarding, back to original points or bollings.

22 Cyclical pruning

This is the regular pruning of a tree, for example, on a periodic or yearly cycle in order to regulate its size or crown density. This also reduces, and to some extent regulates, the tree's uptake of water from the soil, and will go a long way to alleviating some of the problems associated with soil dehydration.

23 Fell

This is the removal of a tree by cutting its stem through at, or just above, existing ground level.

23 Stump poisoning

This is used when it is necessary to kill a remaining stump and root system, in situations where stump removal is impractical, or to prevent unwanted re-growth, with or without stump grinding.

NHBC 24

NHBC guidelines refer to the listing of tree species based on work carried out in the late 1970's for the national house building council the Building Research establishment and the insurance industry. To identify the soil water taken up by each type of tree and thus the potential level of soil drying possible. This table has been amended and modified over the years in the light of continued research particularly by Dr Charles Biddle. Our assessments are based on the latest available interpretation of the tables.



APPENDIX 2 – BIBLIOGRAPHY

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All observations, assessments and recommendations contained within this report are based around and/or subject to the following documentation:

E.A.C 2/2005. (European Arboricultural Council Tree Pruning Guide)

BS 3998: 1989 (British Standard Recommendations for Tree Work)

BS 5837: 2005 (British Standard of Trees in Relation to Construction)

A Risk Limitation for Tree Root Claims 2007 (London Tree Officers Association 3rd Edition May 2007.)

Arboricultural Advisory and Information Services (AAIS) Research notes. In Particular.

Tree root damage to buildings; (P G Biddle) Volume one- Causes, diagnosis and remedy. Volume Two-Patterns of soil drying in proximity to trees on clay soils.

Published papers in the Arboricultural Associations journal. In particular...

Interactions Between Tree Roots and Construction Work. (D F Cutler) February 1993

Pre-planning Tree Surveys: Safe Useful Life Expectancy (SULE) is the Natural Progression. (Jeremy Barrell): February 1993

Failure criteria for trees. (C Matteck, K Bethge and D Erb): May 1993

Trees and the Law. (Charles Mynors): November 1993

Trees and Foundations. (Paul F McCombie): November 1993

Field Guide for Visual Tree Assessment (VTA). (Claus Mettheck and Helge Breleor): February 1994

Trees and Buildings. (John M Mead): May 1994

The prediction of Building Foundation Damage Arising from the Water Demand of Trees. (Paul F McCombie): 1995

Principles of Tree Hazard Assessment and Management (Lonsdale 1999).

The Body Language of Trees (C Mattheck, H Breloer 1994)

Tree Preservation Orders - A Guide to Law and Good Practice - (DETR 2000)

Plant Health Care Recommendations (Dr G Percival - FA BARTLETT TREE EXPERTS 2006)

Tree Risk Management - (T Smiley, B Fredrich, M Hendrison 2002).

Trees & Development - (Matheny & Clark 1998)



APPENDIX 4 STANDARD TERMS & CONDITIONS FOR TREE CONSULTANCY

The term 'Company' shall mean Bartlett Tree Experts Ltd

The term 'Client' shall mean person or persons who have authorized the contract

The term 'Contract' shall men the formal agreement between the client and the company

1.0 CONDITIONS OF CONSULTANCY CONTRACTS

1.1 Contracts

All tree related contracts undertaken shall be confirmed on a written quotation under the company's heading and logo and subject to the company's standard conditions of contract for tree consultancy. In addition, all consultancy shall be subject to the objectives and limitations listed on that particular report. Variations to contract can only be accepted in writing, and added to the original quotation and/or report after the initial survey and inspection and at an extra cost. The company issues all quotations, and carries out all works and consultancy on the understanding that the client is fully insured with regard to third party insurance cover. This includes any injury or accident to staff or representatives of Bartlett Tree Expert Ltd arising from hazards on site.

Bartlett Tree Expert Ltd issues all quotations, and carries out all consultancy works on the understanding that the client, as specified, is the current owner of any tree(s), property or land, and has their permission to so act. In certain cases, we may require written proof of this fact along with a copy for our records.

1.2 Tree Surveys & Inspections

All surveys and inspections are based on an elementary visual inspection of each of the specified trees from the ground level. Each inspection details obvious tree defects and potential risks to the property and/or neighbouring properties, the client and/or the general public. Where applicable, trees that are beyond the property boundaries that may have a sphere of influence upon that property, will be included in the report.

1.3 Limits & Restrictions of Surveys & Reports

The consultant representative will advise the client as to the number of trees that are to be included in the report, and the fee involved, as soon as is reasonably possible. With certain reports, the client may wish to specify the tree(s) to be surveyed, and so vary the number of trees (refer to 1.4). In such cases Bartlett Tree Expert Ltd can accept no liability for trees that have not been inspected during the initial survey. All reports are based on the information available at the time of inspection. They are a snapshot in time of the tree(s) and their surroundings, and are closely related to the tree condition (structural integrity, health and safety). Alterations in site conditions such as further building/excavation, change of soil levels and drainage etc, could be detrimental to the general condition of the tree(s) and would invalidate the findings of the report. Future local climate trends cannot be predicted but may affect future tree management considerations. This report is valid for a period of 12 months.

The presence of underground services will be noted where they fall within the current radius of the tree(s). If requested, such investigation will be undertaken by a specialist drainage contractor (refer to 1.10) at additional cost.

1.4 Standard Tree Inspection Report

This type of report is often referred to as a 'Tree Surgeons Report', or 'Mortgage Report'. Our company's Standard Tree Inspection Report includes a site survey and inspection of up to a maximum of 5 trees that may have a sphere of influence over the property. The report will include individual inspections and assessments of each tree specified, future management recommendations and a sketch map. If it is necessary for the report to encompass more than 5 trees, each additional tree will be charged at a rate of £45.00 per tree. Unless otherwise specified, the client should allow 5 full working days after the date of the site survey for completion of the report (Refer to Payment 1.16).

1.5 Tree Management Report

With large estates, or areas containing many trees (20+), this is often more cost effective method of inspection. This includes setting up a database of collected survey data, and incorporating it into a structured management plan covering a specified period. Trees can be managed individually or as groups with a view to health and safety, visual amenity and the overall impact on their surroundings. A preliminary site inspection will be necessary to ascertain the cope and scale of the survey and report. After which a written quotation, with a full survey and completion date, will be forward to the client.

1.6 Pre-Purchase Report

This is similar in format to the Standard Tree Inspection Report. This is a proactive service for estate agents, prospective and purchasers of properties, whereby selected properties with significant trees adjacent can be surveyed prior to showing, pre-empting requests for a report by mortgage lenders and insurance companies. Unless otherwise specified, the client should allow 5 working days after the date of the site survey for completion of the report (Refer to Payment 1.15).

1.7 Tree Evaluation

The ISCA plant valuation method or the Helliwell system of amenity tree assessment are used to determine a tree's amenity value and it's importance to the surrounding landscape. Using this system, a monetary value can be attached to each tree surveyed. This may be invaluable for the purposes of planning applications/appeals, litigation involving trees or can be used to identify underlying property values. An additional fee of £120.00 per tree will be charges for this service.



1.8 Insurance

The company and our associates are covered by $\pounds 1,000,000$ professional cover. This protects the company against potential claims made by its clients, for providing advice that may after examination have been deemed to be erroneous.

1.9 Soil Investigation

The physical relationships between the trees, the soil and the buildings/structures on the survey site are outside the scope of the reports detailed in section 1.4, 1.5 and 1.6. To facilitate it's inclusion, the company would require the client to instruct us to call in outside specialist expertise to investigate the underlying soil/subsoil and plasticity index along with the foundation type and depth of any buildings/structures within a particular tree's sphere of influence. This would of course incur additional cost and increase the completion time of the report. (Often this information is available within surveyors reports related to alleged damage to structures by tree roots.)

1.10 Sub-contractors

Employment of sub-contractors on behalf of the client shall be at the client's own risk. Assistance, guidance and administration can be undertaken by the company, for a fee to be agreed between the company and client. Charges for specialist services shall be met directly by the client. Additionally, FA Bartlett are able to provide a wide range of arboricultural services.

1.11 Investigation and Planning Restrictions

Client should be aware that trees may be subject to local planning authority restrictions and/or deeds of covenant. Unless specifically requested, the company will not undertake investigation of their existence.

1.12 Measurements

All measurements are expressed in metres except for DBH (Diameter of trunk at Breast Height in millimeters). Due to the type of inspection (refer to 1.2 Tree Surveys & Inspections) all measurements for the height and crown radius of trees are approximate.

1.13 Map

A sketch map will only be included in the reports details in sections 1.4 and 1.5 (unless otherwise specified). This is to aid in identifying the position of trees, vegetation, buildings or other relevant structures. All locations on maps are approximate. If Ordnance Survey quality maps or plans are required these can be provided at a cost of $\pounds 25-50$ per plan/map.

1.14 Cancellations

Bartlett Tree Experts Ltd reserves the right to change a fee of 50% of the quoted price, should the client fail to arrange access to the site on the date and time specified. Should the report be cancelled after the site survey has taken place 100% of the quoted fee will be charged.

1.15 Payment

It is our company practice that all reports will be released on settlement of our fee. With reference to Tree Management Reports, Bartlett Tree Experts Ltd will raise an invoice on completion of the survey, allowing for payment to be sent and the report forwarded to the client. In the case of a Standard Tree Inspection Report this is often not practical due to the immediate nature of the service. These reports, accompanied with an invoice, will often be delivered by a courier if required at an additional cost TBA, and released on full settlement of the account. Reports required within the minimum time period will be subject to a surcharge of 20% of the quote fee.

1.16 Acceptance of Quotation

Bartlett Tree Experts Ltd understands that a client has accepted the company's quotation and terms and conditions contained herein when contact is made with a representative of the company, and an initial survey date agreed. The client is to complete and return the company's acceptance form, which acts as written acknowledgement that the client wishes the report to be carried out.

1.17 Safety at Work & Industry Standards

As a progressive company we are in touch with all research relating to arboriculture. All observations, recommendations and works are based on the current standards, in particular: BS 3998: 1989 (British Standard Recommendations for Tree Work): BS 5837: 2005 (Trees in Relation to Construction): A Risk Limitation Strategy for Tree Root Claims (unpublished: London Tree Officers Association): Arboricultural Advisory and Information Service (A.A.I.S) research notes, the Environmental Protection Act 1984 and the Control of pollution Act 1974. All tree safety, hazard and structural assessments undertaken during surveys or inspections either on single trees or multiples of trees, use the methodology set down in the F.A. Bartlett publication 'Tree Risk Management' (Smiley, Fraedrich, Hendrickson 2002), and Principles of Tree Hazard Assessment & Management (HMSO Lonsdale 1999) and as a basic, employ the VTA Methodology suggested by (Mattheck 1997). This format may be specifically detailed in text related to reports on single and smaller groups of trees but will be implicit for large scale surveys unless specified to the contrary by the client. In addition, all operations shall be undertaken in accordance with Government Health and Safety Regulations.

1.18 Amendments to Reports

Following the release of a report, if it becomes necessary to amend a report due to inadequate information not being provided prior to the report being completed, a £50.00 amendment fee will apply.

Bartlett Tree Experts Ltd reserves the right to change and/or revise any of the above Standard Terms and Conditions without notice. It is the clients' interest to ensure they possess a current copy of Terms and Conditions, which the company will provide on request. E & O.E.



APPENDIX 5 – FLUORIMETER TESTING

We are pleased to offer a NEW SERVICE TO CLIENTS INVOLVED IN BUILDING new homes and structures, extending existing homes or designing and developing sites, where trees are in close proximity.

Since October 2005 projects like these are required to take into account the effect on trees nearby, by engaging a professional tree person to carry out an impact assessment of the trees. Detailed guidelines are set out in the British Standard 5837:2005 'Trees in Relation to Construction'.

We at Bartlett Consulting and Science have been heavily involved into this process from the beginning. One of the factors we are required to assess is the condition, life expectancy and the trees ability to survive and flourish after construction has finished. These criteria are presently based on a surveyors experience and what the tree outwardly shows by way of weakness or ill health.

In deciding whether a tree is retained or removed, argument often arises between client and the local council planners, and can mean changing carefully laid plans, inappropriate tree loss or refusal of planning permissions.

For several years we have been assessing a simple test that is able to measure tree vitality - (it's internal health and life expectancy) – that has proved extremely accurate. We are now able to offer this assessment service as an addition to our range of Tree Surveys that enables us to show clearly whether a tree can be reliably and successfully retained on a site in a precise and quantifiable manner.



The process is simple and uses either a portable field test of tree leaves or a laboratory test for larger quantities of leaf samples, utilising a small test computer known as a Fluorimeter to a) measure the green chlorophyll concentration in tree leaves and b) the tree chemical's ability to react to sunlight (photosynthesis) to produce food within the tree. The rate and quality of these two processes are measured and in turn used to accurately predict the health of a tree. (We are happy to provide a more scientific description of the process if you need!).

The tests add extra time to our site surveys and potentially 7-10 days to the production of a Development Site Survey. However, we feel these measurements greatly enhance the accuracy of the tree report, which we believe can and will prove valuable where tree loss or retention proves costly to those wishing to design, build and act responsibly towards our valuable green environment.

To: Add this service to our standard Development Site Surveys, will cost £45.00 per tree as part of the survey.

The test can also be used in conjunction with hazard assessments and tree structure surveys. Prices can be advised dependant on quantities and your needs.

Fluorimeter Information