DEVELOPMENT SITE TREE REPORT

OUR REF: JPL/R2080/R/dlm

DATE: Tuesday 21st January 2014

CLIENT: Mr Timothy Allan

SITE ADDRESS: Infill House
62 Mansfield Road
Hampstead
London
NW3 2HU

DATE/TIME OF VISIT: AM Thursday 5th December 2013

PEOPLE PRESENT: Mr J Percy-Lancaster and Mr M Cerati

REPORT COMPLETED BY: Mr J Percy-Lancaster

1.0 SUMMARY:

This report details the trees that 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 5837:2012 'Trees in Relation to design, demolition and construction - Recommendations'. 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.

2.0 SCOPE OF REPORT

2.1 SURVEY BRIEF

To inspect the trees growing 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.

2.2 BACKGROUND

The site is being considered for potential development of an infill detached residential dwelling. The site's architects (Mr Timothy Allen, c/o Barbara Weiss Architects) have requested an impact assessment of the proposals upon the trees and guidance on progressing the project whilst preserving the treescape.

2.3 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 must 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 (2012) BS 5837: Trees in Relation to design, demolition and construction – Recommendations and the National Joint Utilities Group (2007) Publication Volume 4: Issue 2 Guidelines for the planning, installation and maintenance of utility apparatus 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.

2.4 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 must be checked against the original submission documents. The location of all protective measures must 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 any new tree planting recommended.

BS 5837:2012 does not include arguments for or against development, or for the removal or retention of trees. Where development is to occur the standard provides guidance on how to decide which trees are appropriate for retention.

2.4 REPORT LIMITATIONS (Continued...)

A Basic* tree risk assessment and tree health inspection were conducted on each tree identified in the scope-of works. Trees not included in the scope-of-work were not inspected. Tree details are approximations made to a level that is required for the purposes of this report. These tree details include species identification, tree dimensions, age range and vigour entered within the report. Observations were made from the ground level, the tree were not climbed.

(*Basic assessment as described in the ISA BMP for tree risk assessment is a detailed visual inspection of a tree and surrounding site that may include the use of simple tools. It requires that a tree risk assessor walk completely around the tree trunk looking at the site, aboveground roots, trunk and branches).

All tree risk assessments undertaken during surveys or inspections either on single trees or multiples of trees, use the methodology established by the International Society of Arboriculture, in the publication, "Best Management Practice – Tree Risk Assessment" (Smiley, Matheny and Lilly 2011) and in the F.A. Bartlett publication 'Tree Risk Management' (Smiley, Fraedrich, Hendrickson 2009), Principles of Tree Hazard Assessment & Management (HMSO Lonsdale 1999), Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines, 4th Edition (Harris, Clark and Matheny 2004). 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.

It is not possible to maintain trees free of risk; some level of risk must be accepted in order to experience the full range of benefits that trees provide. As such we reference the recently published document by the National Tree Safety Group (NTSG), Common sense risk management of trees (Forestry Commission 2011). This document provides guidance on trees and public safety in the UK for owner's managers and advisors.

All observations were made from within the boundaries of the property, or from public land unless otherwise stated. Trees within neighbouring properties are inspected as closely as is reasonably possible from within the boundaries of the property or from public land or were accessed with permission from the landowner.

This report only considers the trees which may be affected be the proposals.

Validity, accuracy and findings of the report will directly relate to the accuracy of information provided at the time of the survey.

The findings of this tree report are only valid for one year.

Such findings will become invalid if any building works are undertaken; soil levels are altered or tree work undertaken. If there are any such alterations made, it is recommended that the tree survey or report be updated.

The report does not comment on possible effects of trees on neighbouring properties, including in relation to subsidence or heave, or with regard to possible hazards presented by trees surveyed. Neighbouring owners of trees that are identified as posing a possible risk to the property or site in question should seek their own advice as to possible effects of the recommendations given within this report.

2.5 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 must seek advice from an ecologist to check if any such constraints apply to this site, where we identify any such potential habitat.

Picture 1 showing the application site highlighted in red in relation to its immediate surroundings, image courtesy of Google Earth

2.6 TREE PRESERVATION ORDER PROTECTION

None of the trees within or adjacent to this site are subject to a Tree Preservation Order (TPO). However it has been established that the site does stand within a designated conservation area, as administer by the Local Planning Authority (LPA); London Borough of Camden. This is known as Mansfield Conservation Area.

Under the Town and Country Planning Act 1990, a Section 211 Notice must be served upon the LPA, providing them with 6 weeks' notice of any intention to implement works to trees.

The purpose of this notice is to provide the LPA an opportunity to consider whether a Tree Preservation Order (TPO) should be made in respect of the trees.

3.0 GENERAL SITE DETAILS

3.1 WEATHER CONDITIONS AT TIME OF SURVEY

Sunny, clear and windy.

3.2 CLIMATE

Soil considered fully hydrated due to adequate rainfall in the previous months.

3.3 LOCAL LANDSCAPE EVALUATION

The trees adjacent to the site provide a valuable greenspace in the locality and provide a level of sylvan screening between properties.

Picture 2 showing the site as viewed from Courthope Road

3.4 UNDERLYING SOILS – (REF BGS) website data as of 10/01/2014 (www.bgs.ac.uk)

London Clay Formation – Clay, silt and sand.

BGS = British Geological Survey.

3.5 SOIL TESTS

- It was determined by the consultant that soil testing was not relevant in this particular project.

3.6 PROPOSED BUILDING TYPE

Detached, brick built house.

3.7 STOREYS

One storey, plus basement.

3.8 EXISTING GROUNDS

Laid to impervious concrete hard standing.

3.9 SLOPES AND BOUNDARIES

The site is predominantly level.

3.10 ADJACENT LANDS

Properties nearby have small grounds but are well stocked with vegetation. The site is surrounded by residential properties and commercial premises and stands within the suburban area of Hampstead.

3.11 RISK ASSESSMENT OF TREES WITHIN SITE

As part of the assessment of the trees a brief visual assessment has indicated that none of the trees in the vicinity of the application site could be considered as hazardous and do not require further investigation.

3.12 ASSESSMENT OF ECOLOGICAL STATUS OF SITE

Following our survey of the site, and analysis of climax and sub-climax vegetation, we believe there is no vegetation on site that indicates habitat potential for protected species. In the event that you have information to the contrary, I would ask that you obtain the advice of a qualified ecologist who can undertake a phase one habitat and protected species survey and assessment.

Picture 3 showing the view of Courthope Road whilst viewed from Mansfield Road

Picture 4 showing the site boundary wall adjacent to Courthope Road and the street trees T1 and T2 behind.

3.12 ASSESSMENT OF ECOLOGICAL STATUS OF SITE (Continued...)

Picture 5 showing T1 and T2 – London Plane in relation to the street scene

DEVELOPMENT SITE TREE REPORT

Client:	Mr. Timothy Allen, c/o Barbara Weiss Architects	*Report No:*	JPL/R/ss
Completed by:	Mr J Percy-Lancaster	*Report to:*	BS 5837:2012
Site:	Infill House, Rear of 62 Mansfield Road, Hampstead, London. NW3 2HU.	*Date of Survey:*	5th December 2013
Trees Tagged:	No	*Weather:*	Sunny, clear & windy

Tree No.	Species	Ht (m)	Stem diameter (mm)	Branch spread (m) N E S W	Height of lowest live branch (m)	Top height of live crown (m)	Life stage	Condition	Preliminary management recommendations	Estimated remaining contribution (years)	Category grading	Root Protection Area Radius (m)
T1	London Plane	7.50	340	N: 1.90 E: 1.60 S: 1.50 W: 1.30	4.60	4.60	SM	• Local Planning Authority 'Street Tree'. • Adequate structural condition. • Adequate physiological condition. • Stem has 10º lean to east, not considered a significant concern. • Regularly pollarded to boles (recently undertaken). • Evidence of displacement of paving slabs in vicinity of tree. • Stem sounds solid when struck with a sounding mallet.	▪ No works currently required.	40+	B1	4.08

Tree No.	Species	Ht (m)	Stem diameter (mm)	Branch spread (m) N E S W	Height of lowest live branch (m)	Top height of live crown (m)	Life stage	Condition	Preliminary management recommendations	Estimated remaining contribution (years)	Category grading	Root Protection Area Radius (m)
T2	London Plane	7.50	320	N: 1.40 E: 1.30 S: 1.70 W: 1.50	2.00	4.30	SM	• Local Planning Authority 'Street Tree'. • Adequate structural condition. • Adequate physiological condition. • Stem has 10º lean to east, not considered a significant concern. • Regularly pollarded to boles (recently undertaken). • Evidence of displacement of paving slabs in vicinity of tree. • Callus growth present on surface roots, resulting from previous mechanical damage, but not considered a significant concern. • Bark wound present at 0.50 metres above ground level. • Stem sounds solid when struck with a sounding mallet. • Evidence of poster tacks/pins on main stem.	▪ Remove all Poster pins/tacks from main stem. ▪ No further works currently required.	40+	B1	3.84

Tree numbers refer to site plan. Species – tree species giving English common name. Ht Height measured using a clinometer in metres (m); Branch spread is crown spread to the four cardinal compass points, measured in metres (m); DBH is stem diameter measured at 1.5 metres above ground level on the tree stem, recorded in millimetres (mm); Age is assessed as young (Yng) up to 1/5 of trees life-cycle, semi-mature (SM) up to 2/5 of trees life-cycle, early mature (EM) up to 3/5 of trees life-cycle, mature (MAT) up to 4/5 of trees life-cycle and over mature (OM) up to 5/5 or above of trees life cycle. Vig is average for species or poor or declining. Category U is remove ASAP; A is high quality specimen, B is moderate quality; C is low or adequate quality. Category grading refers to the Amenity Value of the tree or tree group in question, as per the guidance given in the BS 5837 2012 document (where possible).

3.13 IMPLICATIONS OF PROPOSED DEVELOPMENT ON CURRENT TREE POPULATIONS

Considerations of all trees in relation to proposed layout

An asterisk * will denote that the category grade as given will be dependent upon information gained from further inspection of the tree.

Tree no.	Species	Cat.	Removal due to		Mitigation required for		Details of how proposed build layout affects tree
			Build	Condition	Canopy	RPA	
T1	London Plane	B1	n/a	n/a	n/a	n/a	20% of the calculated Root Protection Area (RPA) falls within proposed build line, Approximately 10 metres^2.
T2	London Plane	B1	n/a	n/a	n/a	n/a	No Issues

Key; n/a = not applicable, X = action required.

4.0 DISCUSSION

IMPACT OF PROPOSALS ON THE LOCAL AMENITY

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

Significant trees T1 – London Plane and T2 – London Plane adjacent to the site can be retained.

T1 – London Plane is situated approximately 2.0 metres from the western site boundary wall, as such this tree is a significant feature in relation to the site. The tree is owned and managed by the Local Planning Authority (LPA) and is one of a number of similar trees at the southern extent of Courthope Road. These street trees are all of the same species, London Plane and are of similar age; semi mature. Their growth and development has been managed with the regular implementation of a cyclical pollarding regime, which has recently been undertaken back to the pollarding boles.

Due to the close proximity of the tree in relation to the application site, the calculated Root Protection Area (RPA) as dictated by BS: 5837 (2012) 'Trees in relation to design, demolition and construction', extends into the site by approximately 20% equating to approximately 10 metres .

The proposed dwelling will feature a basement area with the same dimensions as the footprint of the proposed dwelling. It is therefore anticipated that this scheme will cause unavoidable root severance, approximately 20% of the trees total RPA.

Though it is considered that this scheme fails to comply with the requirements contained within BS: 5837 (2012), in terms of RPA encroachment and severance, additional considerations should be given to the viability, feasibility and safe retention of T1 – London Plane.

T1 – London Plane is considered to be a semi mature specimen and as such has a higher degree of tolerance to tree works, both above and below ground level than a fully mature specimen. Due to its age and species tolerance, the tree has clearly adapted to the cyclical pollarding works well, the same would be expected to the proposed root pruning below ground level.

There are no significant areas of soft landscaping within the application site or within the immediate area of the tree. Cast concrete hard standing exists within the site which will have historically reduced moisture from rainwater entering soils for the use of roots. The conditions beneath the hard-standing within the site are considered to be inhospitable for root development. The sites western boundary wall will feature appropriate foundations, from experience estimated to be seated in the region of 0.50 metres below ground level, however the actual depth is not known. Nevertheless this wall will have acted as a partial barrier to roots from T1 and deflecting them along the wall and down.

That said some roots are likely to be found present within the site. An inspection trench excavated tight to the boundary wall was carried out to ascertain the root morphology of T1 – London Plane. The trench was carried out without Arboricultural supervision but with guidance. The trench was excavated with the use of hand tools and has been extended to a depth of 600 millimetres below ground level. The excavated trench has confirmed the presence of roots from T1 – London Plane, the majority measuring a diameter of 5 to 10 millimetres. The most significant root encountered was found present at the base of the trench, and measured 20 millimetres in diameter, which was sadly unavoidably damaged during the excavation process. Please refer to Picture 6 and 7, (minor scuff damage to bark).

It is therefore considered that no significant roots (those in excess of 25mm diameter) were encountered during this exercise, all of the roots would be classed as feeding roots rather than structural. The severance of such roots would not likely cause an adverse impact upon the health and longevity of T1 – London Plane nor will it cause instability in the tree. Providing the root pruning is implemented in full accordance with BS: 3998 (2010) Tree Work – Recommendations, new adapted root growth will be anticipated.

IMPACT OF PROPOSALS ON THE LOCAL AMENITY (Continued...)

There are however limitations to these findings, the root morphology of T1 – London Plane below 600 millimetres remains unknown. Though the majority of the rooting system of this tree is anticipated 300 – 600 millimetres below ground level, which has been investigated, roots may be encountered below this depth. Any significant roots encountered will require Arboricultural supervision prior to severance, as such site monitoring during this element of the scheme shall be necessary to ensure damage is minimised and root pruning is implemented correctly, by pruning back to suitable growth points.

T1 – London Plane by virtue of its location and size will cause a shading constraint upon the proposed dwelling. However the design has incorporated three skylights and an open courtyard area which will provide sufficient natural light to enter the dwelling. A separate sunlight and daylight report has been composed for this site. It is not anticipated that the crown of the tree will encroach upon the dwelling providing the implementation of the cyclical pollarding works continue.

Due to the nature of the build and expected construction activity, there is a potential that these movements could adversely affect the retained tree if appropriate protective measures are not taken. However, if adequate precautions to protect the retained tree 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 trees to the local amenity and its character.

Due to the location of T1 – London Plane in relation to the application site, public footpath and public highway, the erection of a tree protection barrier in line with the calculated RPA will not be considered feasible in this instance. Therefore the protective barrier will have to be significantly smaller to permit access to all vehicles, personnel and members of the public.

The most effective type of protective barrier in this instance would be the construction of a wooden enclosure around the main stem of T1 – London Plane. This wooden box will have to be securely fixed on site without the use of attachment to the tree. It would be considered appropriate to construct a wooden box with the same dimensions as the area of soft landscaping immediately around the base of the tree, 1200 x 2300 millimetres. The frame should be clad in suitable plywood and span the height of 4.5 metres above ground level.

Though the tree protective barrier as described above would not conform to requirements as detailed within BS: 5837 (2012) it will still be regarded fit for purpose. There is sufficient hard standing in the vicinity to limit the possibility of ground compaction, whilst the main stem of the tree will be afforded a robust physical tree protective barrier which shall remain for the duration of the construction activity on site.

Due to the limited size of the application site, designated material storage areas will be minimal and the use of delivery vehicles on a 'just in time' manner will be essential. The loading and unloading of goods and materials will have to be undertaken with great care and attention to avoid causing damage to T1 – London Plane, particularly materials being delivery with the use of a grab or similar. In these instances, the use of a banksman will be required to ensure direct damage is not incurred to any part of the tree, particularly the scaffold network which will not be afforded any form of physical protection.

The sites western brick boundary wall will require careful demolition, this must be implemented with a 'top down, pull back' approach to minimise the potential damage to T1 – London Plane, all arising's must be retained on site and disposed of appropriately. The foundations serving this boundary wall will also require careful extraction. It is anticipated that some of the shallower roots emanating from T1 – London Plane will abut the foundations, these roots should be retained and protected upon exposure. The roots shall be packed around with coarse sharp sand upon back filling of the trench. Exposed root ends on the 'tree side' of the trench shall be protected by damp sacking until coverage with trench infill.

IMPACT OF PROPOSALS ON THE LOCAL AMENITY (Continued...)

The highway features of Courthope Road in the vicinity of the application site provide the opportunity for small vehicles to turn around 180°, using dropped kerbs and other vehicular entrances. This is anticipated due to the nature of the ingress and egress of Courthope Road with Mansfield Road. It will therefore be considered appropriate to erect similar tree protective barriers as described above to afford similar protection to T2 – London Plane located on the opposite side of the Courthope Road. This shall mitigate against any potential damage caused by reversing vehicles etc associated with the proposed development. The dimensions in this instance will be; 800 x 2300 millimetres and should span a height of 2.0 metres above ground level.

Information regarding utility services; such as water, sewerage, electricity and telecommunications etc are unknown at this stage. It is therefore anticipated that any new service run will come from Courthope Road, in doing so will encroach upon the RPA of T1 – London Plane. Any necessary excavations associated with the utility services must in this instance be implemented with the use of an Air Spade to minimise against additional root damage. For guidance, please refer to the National Joint Utilities Group (2007) Publication Volume 4: Issue 2 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees

Picture 6 showing the inspection trench located parallel to the boundary wall, showing the roots from T1 – London Plane

Picture 7 showing a close up of the roots encountered from T1 – London Plane, all below a diameter of 25mm

TREE PROTECTION PLAN

5.0 TREE PROTECTION PLAN

TREE PROTECTION WITH FENCING BARRIERS.

Guidance for fencing design based on BS 5837:2012 recommendations is included in our Appendices.
The location of the temporary tree protection 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 must be agreed with the council before any construction or demolition starts.

Precautions when working in root protection areas
Any works in root protection areas must be carried out with great care as described in method statement 3. On this site, special precautions must be taken near trees T1 – London Plane.

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 discharged without on-site supervision by an Arboricultural Consultant. Any supervisory action must 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 must be involved in the following phases of the project management: -

5.0 TREE PROTECTION PLAN (Continued...)

5.1 ARBORICULTURAL PREPARATIONS BEFORE WORKS START ON SITE:

It is not unusual for development proposals to vary from original expectations before Local Planning Authority consent as the detail of implementation reaches completion. Early instruction of an Arboricultural Consultant should ensure that tree issues are considered as part of site management and can help to ease pressures where site demands and tree protection conflict. Pre-commencement meetings between the Arboricultural Consultant and the proposer's site managers are an effective means of managing tree issues to maximise site efficiency.

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 must inform the council in writing of the details of meetings. All tree protection measures detailed in this document must be discussed so that they are fully understood by all the parties. Clarification or modifications to the consented details must 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.

5.2 RECOMMENDATIONS FOR SITE SUPERVISION:

Once this site is active, the Arboricultural Consultant must 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.

5.3 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. Laminated 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.

5.4 INFRASTRUCTURE REQUIREMENTS:

Full details of the infrastructure requirements for the site remain to be finalised. These, no doubt will be required and so the following considerations will need to be made if trenching, digging or any type of disruption to the root system may occur as a consequence of installation within the RPA of trees to be retained. Areas should be cleared with the use of an air spade to reveal existing roots. Areas less densely populated with roots should be appropriated for use of trenching. Where possible, thrust boring techniques should be used to install underground services rather than digging. Where boring is not possible trenches must be hand excavated taking care not to cut, sever or damage large groups of roots (regardless of the stem diameter), or any roots exceeding 25 millimetres in diameter. Trenches dug must not leave roots exposed and it is recommended that they be wrapped with a hydro-gel and geo-textile membrane. Where Root Protection Areas fall within existing hard surfaces requiring removal or installation of infrastructure it is considered that a tree root raider should be employed to map root density before carrying out excavation works.

6.0 SUMMARY AND RECOMMENDATIONS

6.1 Construction - of bespoke tree protective barriers for T1 and T2 – London Plane trees.

6.2 Removal - of concrete hard standing within the application site.

6.3 Demolition - of existing brick boundary wall adjacent to Courthope Road and extraction of associated foundations to be implemented in a 'top down, pull back' fashion. Foundations to be extracted with hand tools only. Any roots encountered should be retained and protected by damp sacking until coverage with trench infill.

6.4 Excavations - within the calculated Root Protection Area shall be implemented with an 'Air Spade' or by hand tools only. All roots encountered within the site to be appropriately pruned within sharp tools with the advice and guidance of an Arboricultural Consultant.

6.5 Commencement - of excavations in relation to the basement.

6.6 Commencement - of detached dwelling.

6.7 On completion - of final construction works and after all hard landscaping ground works, remove tree protective barriers. At this stage but before final planting works, it would be beneficial to provide the trees remaining with the best possible conditions for future healthy growth, as the construction works, no matter how sympathetically undertaken will have changed the tree rooting environment considerably. To ensure continued vigour and benign soil conditions, each tree should have the root area within the protection fencing de-compacted, using air blast techniques 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.

7.0 ARBORICULTURAL METHOD STATEMENT ATTACHMENTS

1.	Barriers – Root Protection Areas	Yes
2.	Tree Protection during special works within RPA (pile installation)	Yes
3.	Installation of Service Ducts within Root Protection Areas of Retained Trees	Yes

METHOD STATEMENT 1 – TREE PROTECTION

BARRIERS – TREE ROOT PROTECTION AREAS

Date: 10th January 2014

Site: Infill House, rear of 62 Mansfield Road, Hampstead, London, NW3 2HU

The fencing to tree protection areas should be constructed of a timber framework, clad in plywood sheeting sited along the protection zone perimeters as per attached site Tree Protection Plan.

The barriers must be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree. 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.

Additionally:

Where site huts or sales offices need to be brought onto the site, they can be located over any tree root protection areas. Providing they are of the above ground 'jack leg' type and are serviced entirely by above ground utility supply pipe-work.

METHOD STATEMENT 3

TREE PROTECTION DURING SPECIAL WORKS WITHIN ROOT PROTECTION ZONES
(Pile installation)

Date: 10th January 2014

Site: Infill House, rear of 62 Mansfield Road, Hampstead, London, NW3 2HU

INITIAL STAGES

1. Undertake any tree works as specified to allow sufficient clearance under tree canopies.

2. Erect a timber clad protection box as far out from each tree base as possible as per the Tree Protection Plan (TPP), so as to totally exclude all building activities from the vicinity of T1 – London Plane.

3. Undertake surface stripping of concrete surface using either hand dig excavation or ideally air spade tools to expose and identify tree root pattern, mark root pattern using wooden landscape pegs and or cane markers, partially back fill exposed surface with pea shingle to cover main root zones, lay load bearing boarding over roots and partial backfill, (please see attached information leaflet for supplier).

INTERMEDIATE STAGE

Undertake micro piling with use of mini-tracked piling rig (best access to be agreed and mapped) working backwards from the furthest end of site, installing piles and above any ground foundation beams, across site back to original access point. Remove piling rig works materials and temporary boarding.

On completion of this stage top off pea shingle layer to final level and install bridge floor.

Complete construction of bridge ensuring, adequate ventilation of 'gravelled' area beneath floor.

FINAL STAGE

Undertake landscaping avoiding damage to tree root zones, changes in surface level or permeability.

Note Re: Underground Utility Services

It is important that all utility supply ducts, water and sewerage pipe-work is directed away from the critical root areas of trees. For guidance, please refer to the National Joint Utilities Group (2007) Publication Volume 4: Issue 2 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.

The tree works department of Bartlett is equipped to undertake air blast removal of soil overlying tree root zones and also to provide soil injection of fertilisers should the need for these services arise following works.

(NB This method statement complies with British Standard 5837: 2012 'Trees in Relation to design, demolition and construction - Recommendations').

METHOD STATEMENT 7

INSTALLATION OF SERVICE DUCTS WITHIN ROOT PROTECTION AREAS OF RETAINED TREES

Date: 10th January 2014

Site: Infill House, rear of 62 Mansfield Road, Hampstead, London, NW3 2HU

There will be the necessity to provide utility services to the site, it is currently unclear where the proposed service ducts are to be located. It is possible that it will be located within the trees root protection area. To provide connection to the proposed house new drainage and utilities, a pipe and trench work needs to be installed between house frontage and an existing chamber.

To undertake this work in a manner not damaging to the tree, it is possible to install a trench and pipe-work that crosses the tree root protection area and infringes it. In such cases trenchless insertion methods should be used, with entry and retrieval pits being sited outside the Root Protection Area.

Excavation of the trench shall be by hand only within the root protection area, the exact details of these runs are presently unknown, however once their precise location has been established an annotated plan will be supplied to the Local Planning Authority (LPA) for their reference and approval prior to any works being undertaken. Any roots encountered shall be cut clearly using a sharp handsaw. The root ends shall be packed around with coarse sharp sand upon back filling of the trench. Exposed root ends on the 'tree side' of the trench shall be protected by damp sacking until coverage with trench infill.

All subterranean services should be installed within this trench route.

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 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'
REPORT STATUS:	Complete
REPORT COMPLETED BY:	Mr James Percy-Lancaster Cert Arb (RFS) *Arboricultural Consultant*
REPORT REVIEWED BY:	Mr Jason Mills TechArborA *Arboricultural Consultant*

SIGNATURE: James Percy-Lancaster, Consultant _____ Date: 16/01/14

REVIEWED BY: Jason Mills, Consultant _____ Date: 20/01/14

APPENDIX 1

Shenley Lodge Farm, Ridge Hill, Radlett, Herts, WD7 9BG. Tel: 01707-649018 Fax: 01707-649652 *consultancy@bartlettuk.com*	
Client	Mr Timothy Allan, c/o Barbara Weiss
Site	Infill House, rear of 62 Mansfield Road, Hampstead, London. NW3 2HU
Drawing Title	Site Constraints Plan - with ref to BS 5837:2012
Reference	JPL/R2080/R/dlm
Date of survey	05/12/13
Scale	1:50 (at A3)
Drawn	JPL
Tree Amenity Category A C B U (Remove)	The copyright of this plan is vested in the FA Bartlett Tree Expert Company Ltd. Not to be reproduced without their written authority.
Extent of Calculated Root Zone	Tree Shadow - Assured cast in summer from NW E x Ht of tree. Property Boundary

APPENDIX 2

Shenley Lodge Farm, Ridge Hill, Radlett, Herts, WD7 9BG. Tel: 01707-649018 Fax: 01707-649652 *consultancy@bartlettuk.com*	
Client	Mr Timothy Allen c/o Barbara Weiss
Site	Infill House, rear of 62 Mansfield Road, Hampstead, London. NW3 2HU
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Date	05/12/13
Scale	1:50 (at A3)
Drawn	JPL
Tree Amenity Category A B C U (Remove)	
	Property Boundary

APPENDIX 3

Shenley Lodge Farm, Ridge Hill, Radlett, Herts, WD7 9BG. Tel: 01707-649018 Fax: 01707-649652 *consultancy@bartlettuk.com*	
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Site	Infill House, Rear of 62 Mansfield Road, Hampstead, London. NW3 2HU
Drawing Title	Tree Protection Plan - with ref to BS 5837:2012
Reference	JPL/R2080/R/dlm
Date	05/12/13
Scale	1: 50 (at A3)
Drawn	JPL
Root Protection Area (RPA)/ Fencing	The copyright of this plan is vested in the FA Bartlett Tree Expert Company Ltd. Not to be reproduced without their written authority.
Ground Protection	Property Boundary

APPENDIX 1 – DEFINITIONS

1 **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.

3 **Boundary**
This can be described as the physical and/or legal demarcation of a defined area.

4 **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 barrier**
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.

14 **Crown**
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.

24 **NHBC**
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

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 3 – STANDARD TERMS AND 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.

The information provided in our reports and recommendations remains valid only in the format provided to the client. We cannot be held liable for subsequent amendments to the information by our client or third parties

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 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. Unless otherwise specified, the client should allow 15 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, this is often a 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 may be necessary to ascertain the scope 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. (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.

1.8 Insurance

The company and our associates are covered by £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 is able to provide a wide range of arboricultural services.

1.11 Investigation and Planning Constraints

The 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 metric. 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 report 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 an additional cost.

1.14 Cancellations

Bartlett Tree Experts Ltd reserves the right to charge 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 3998:2010 (British Standard Recommendations for Tree Work): BS 5837: 2012 (Trees in Relation to Design, Demolition and 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 2009), 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, an additional 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 4 – TREE SURGERY NOTES & QUESTIONS

Local Planning Authority

If the trees are covered by a Tree Preservation Order or are in a Conservation Area, permission from the Local Planning Authority will be required under the Town and Country Planning Act 1990 before tree works can be undertaken. Please note that the Local Planning Authority have up to **eight weeks** to respond to an application.

Questions you should ask an Arborist, when obtaining a quotation for works.

1. Are you insured?
If yes, please show evidence of insurance – Employers liability & Public Liability (recommended minimum £5 million)

2. Do you work to a British Standard?
If yes, which one? Should be BS3998.

3. What qualifications do you and your staff hold?
Compulsory: Must have NPTC* certificates for chainsaw use.
Recommended: Certificates for other skills and machines. Arboricultural knowledge e.g. National Certificates and Diplomas.

4. Will you provide a written quotation?
If no, reject this contractor.

5. Are you a member of a professional organisation?
Membership does not guarantee work standards but does show a degree of commitment.

6. Can you provide me with the phone number of a referee who can show me some of your work?
If yes, follow up the lead.

THE TREE SURGERY DIVISION OF BARTLETTS WOULD BE HAPPY TO PROVIDE A QUOTATION FOR ANY WORKS FELT DESIRABLE.

BARTLETT CONSULTING

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.

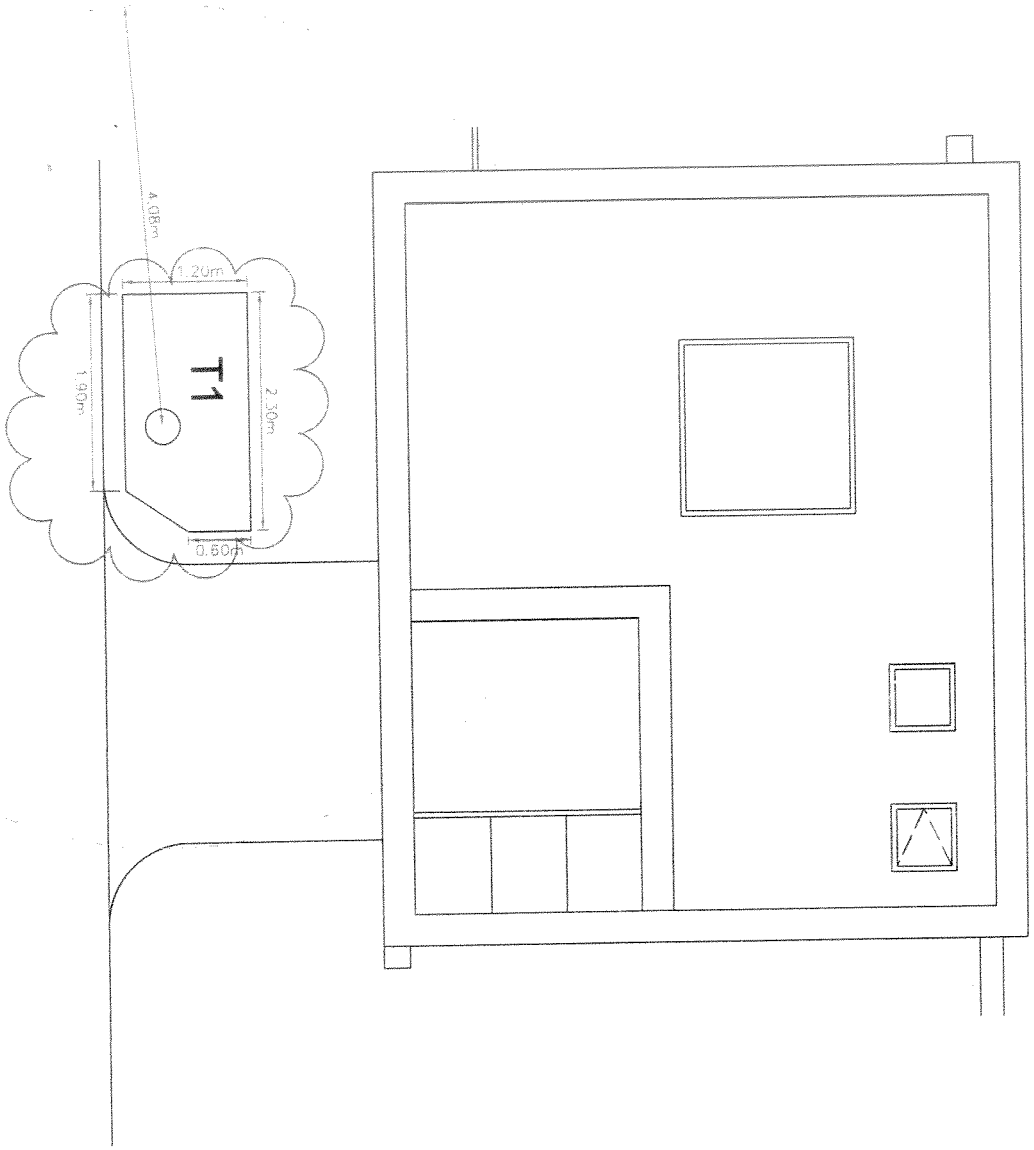
For several years we have been assessing a simple test that is able to measure tree vitality - (it's internal health and life expectancy) – that has proved extremely accurate. We are now able to offer this assessment service as an addition to our range of Tree Surveys that enables us to show clearly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

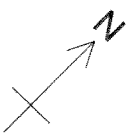
The process is simple and uses either a portable field test of tree leaves or a laboratory test for larger quantities of leaf samples, utilising a small test computer known as a Fluorimeter to a) measure the green chlorophyll concentration in tree leaves and b) the tree chemical's ability to react to 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.





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Drawn	JPL
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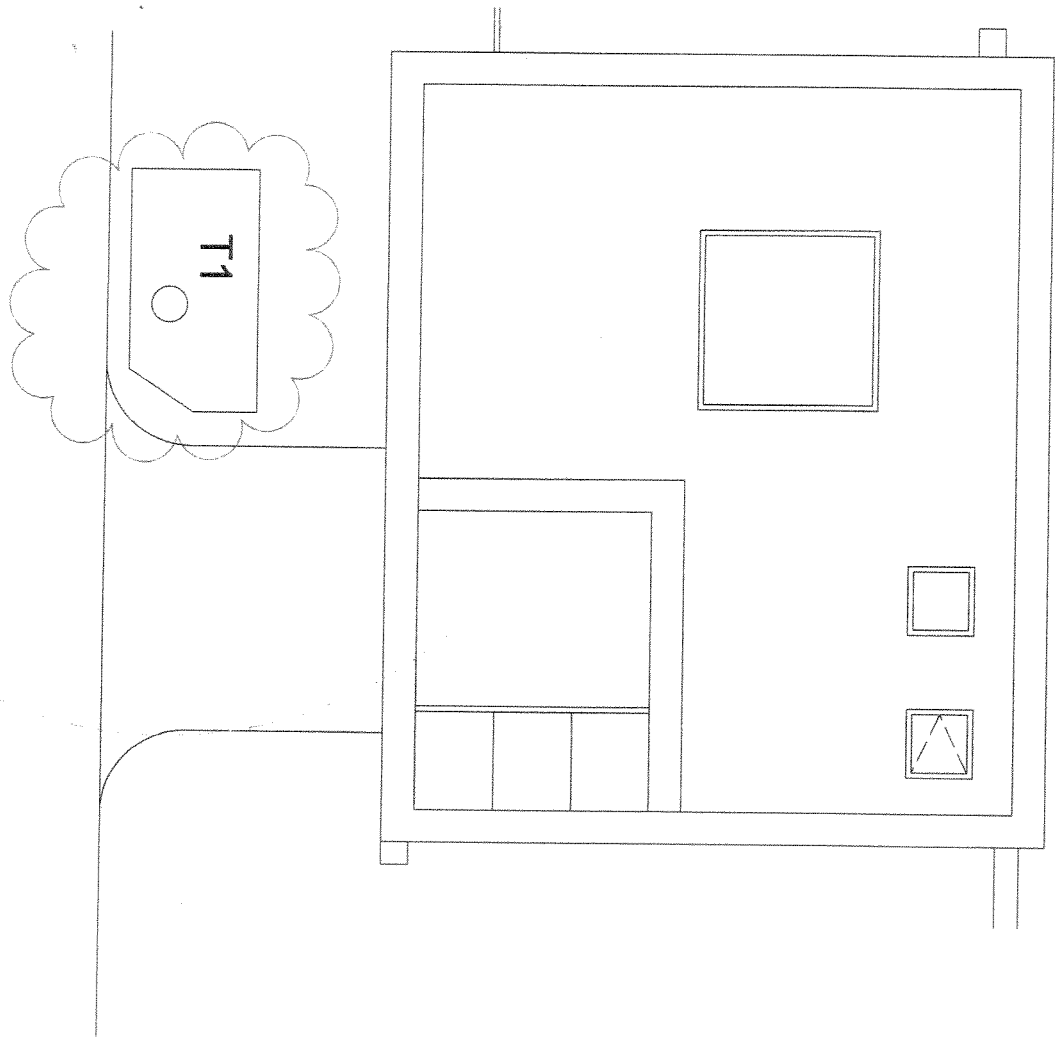

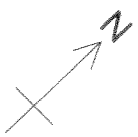

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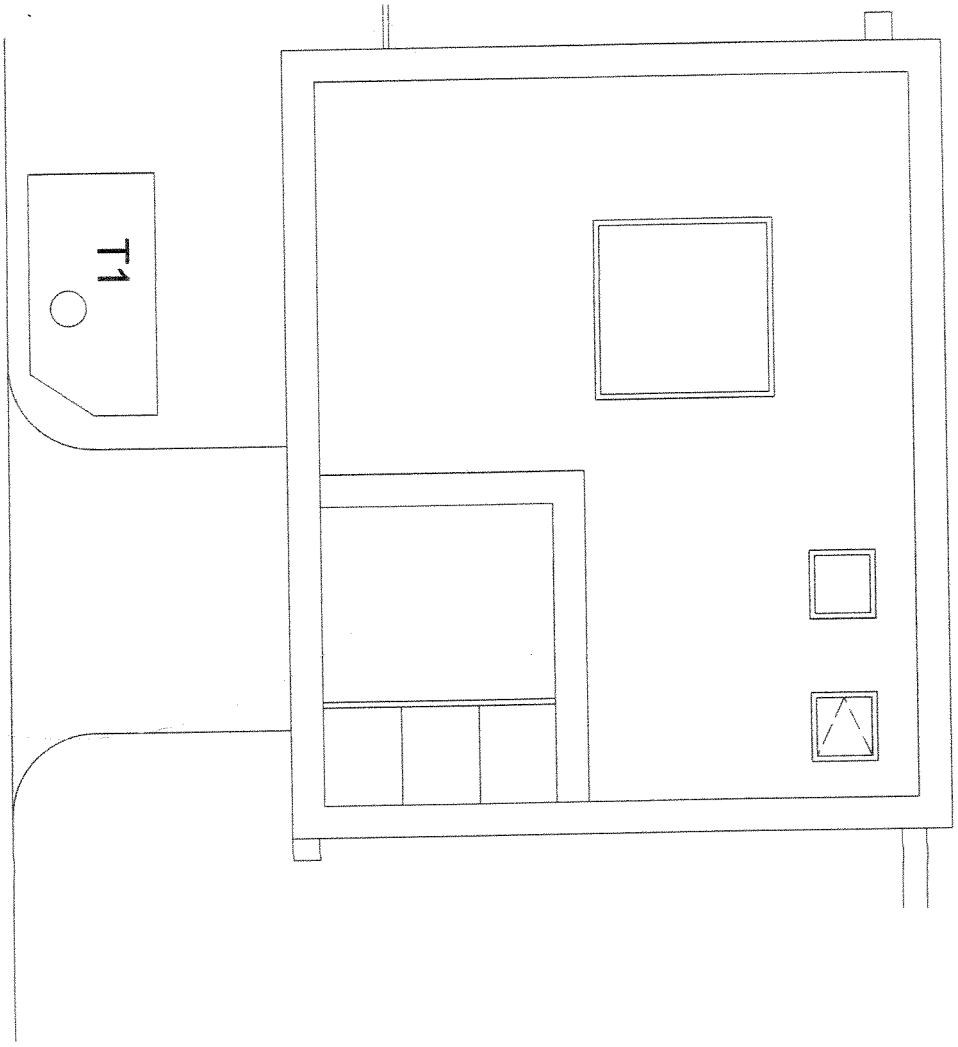
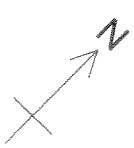
	Tree Shadow - Assured cast in summer from NW E x Ht of tree
Extent of Calculated Root Zone	Property Boundary





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Ground Protection	Property Boundary