



BS5837:2012

**Trees in relation to design, demolition and construction –
Recommendations**

Arboricultural Method Statement

56 Howitt Road,
Hampstead,
London,
NW3 4LT

1 April 2016

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If this report has been released electronically the appendices referred to herein can be found in the annexed zip folder/s as .pdf or .dwg files. If this report has been released in hard copy the appendices will be bound into the back of this report.

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Executive Summary

This report describes the extent and effect of the proposed development at 56 Howitt Road, Hampstead, London, NW3 4LT on individual trees and groups of trees within and adjacent to the site.

Trees within the site were surveyed; using a methodology guided by British Standard 5837:2012 ‘Trees in relation to design, demolition and construction – Recommendations’.

Subsequently, this report has been produced, balancing the layout of the proposed development against the competing needs of trees. This report comprises all of the requisite elements of an arboricultural implications assessment, method statement and supporting plans.

Checklist for Submission to Local Planning Authority

| | |
|----------------------------------|-------------------------------------|
| Tree survey | <input checked="" type="checkbox"/> |
| Tree constraints plan | <input checked="" type="checkbox"/> |
| Arboricultural impact assessment | <input checked="" type="checkbox"/> |
| Arboricultural method statement | <input checked="" type="checkbox"/> |
| Tree protection plan | <input checked="" type="checkbox"/> |

This report and its appendices follow precisely the strategy for arboricultural appraisal intended to provide local planning authorities with evidence that trees have been properly considered throughout the development process.

It is the conclusion of this report that the overall quality and longevity of the amenity contribution provided for by the trees and groups of trees within and adjacent to the site will not be adversely affected as a result of the local planning authority consenting to the proposed development. It is considered that any issues raised in this report, or beyond the scope of it can be dealt with by planning conditions.

General Information

Client: Mr A. Nooriala

Site: 56 Howitt Road, Hampstead, London, NW3 4LT.

Brief proposal description: Construction of basement to existing residential property.

Documents referred to:

| Document | Reference |
|----------------------------------|---|
| Topographical survey drawing | 456 / 13 / 1 |
| Proposed layout drawing | WD2000 |
| Landscape master plan drawing | N/A |
| LPA pre-app comments | N/A |
| British Standard 5837:2012 | Trees in relation to design, demolition and construction – Recommendations' |
| Arboricultural Impact Assessment | BS5837 – 56 Howitt Road - Arbtech AIA 01 |
| Tree Protection Plan | BS5837 – 56 Howitt Road - Arbtech TPP 01 |

Tree Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by David Garrick of Arbtech Consulting.

Limitations: The tree survey was made at ground level using visual observation only. Detailed examinations, such as climbing inspections and decay detection equipment were not employed, though may form part of the survey's management recommendations. Measurements were taken using specialist tapes, laser and GPS devices. Where this was not possible, measurements are estimated.

Scope: Pre-development tree surveys make arboricultural management recommendations based exclusively upon the individual tree or group of trees condition relative to their present context (*i.e. not in relation to the proposed development*).

* For more information on the surveyed trees please see Arbtech Consulting Ltd, Tree Survey Schedule, Tree Survey Report and Tree Constraints Plan.

Arboricultural Impact Assessment

There are a number of issues that may need to be addressed in an arboricultural impact assessment between the trees and the proposed development, these are as follows –

- The effect and extent of the proposed development within the root protection areas (RPAs) of retained trees;
- The potential conflicts of the proposed development with canopies of retained trees; and
- The likelihood of any future remedial works to retained trees beyond which would have been scheduled as a part of usual management.

These impacts can be seen on the Arboricultural Impact Assessment drawing no. BS5837 – 56 Howitt Road - Arbtech AIA 01.

Trees to be removed

The proposal does not require the removal of any trees.

| U | A | B | C |
|---|---|---|---|
| 0 | 0 | 0 | 0 |

Arboricultural Method Statement

Details of key site personnel, including site / project manager will be submitted to the Council's Tree Officer prior to the commencement of site works.

This method statement is to be approved and agreed to in writing by all key personnel prior to the commencement of site works.

No site personnel are to be present and no demolition, site clearance, building work or delivery of materials is to occur until the protective measures are in accordance with this method statement and the Tree Protection Plan drawing no. BS5837 – 56 Howitt Road - Arbtech TPP 01.

Protective measures should be in accordance with this method statement and the Tree Protection Plan; drawing no. BS5837 – 56 Howitt Road - Arbtech TPP 01. will remain unaltered and in situ, unless otherwise specified, for the entire duration of the construction.

Accidents and emergencies involving trees

Any accidents and emergencies involving trees shall be immediately reported to the project arboriculturalist who shall report the issue to the LPA and submit a solution to the LPA for agreement.

Phasing of tree protection measures

The tree protection measures shall be phased as follows.

- a) Undertake tree works
- b) Install the protective measures in accordance with the approved protection plans and this method statement
- c) Undertake demolition works
- d) Undertake and complete construction works
- e) Undertake external landscape works to areas outside of construction exclusion zones
- f) Remove protective measures
- g) Undertake external landscaping works within the construction exclusion zones
- h) Sign off from the company as no further involvement is required

Tree Works

For reasons of public safety, all tree works referred to herein must be carried out prior to any site personnel commencing works or any building materials being delivered.

Summary of Tree Works

| No. | Species | Works | Category |
|-----|-------------|--|----------------|
| 1 | Common lime | Re-pollard to previous pollard points. | C ₁ |
| 2 | Common lime | Re-pollard to previous pollard points. | B ₁ |
| 3 | Common lime | Re-pollard to previous pollard points. | B ₁ |
| 4 | Common lime | Re-pollard to previous pollard points. | B ₁ |

Notes

All tree work is to be undertaken in accordance with British Standard BS 3998:2010, Recommendations for tree work. All arising's are to be removed and the site is to be left as found. Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber Lorries, tractors, excavators or cranes shall be parked or driven beneath the crowns of any retained trees, to prevent subsequent compaction and root death.

Common Birds

All common wild birds are protected under The Wildlife and Countryside Act 1981.

This legislation makes it an offence to:

- Kill, injure or take wild birds.
- Take damage or destroy the nest of wild birds while it is in use or being built.
- Take or destroy the eggs of wild birds.

Certain rare breeding birds are listed on Schedule I of The Wildlife and Countryside Act 1981. Under this legislation they are afforded the same protection as common wild birds and are also protected against disturbance whilst building a nest or on or near a nest containing eggs and or unfledged young e.g. Barn Owl *Tyto alba*.

Bats

Bats species are afforded further protection by the Countryside and Rights of Way Act 2000; and the Natural Environment and Rural Communities Act 2006.

This legislation makes it an offence to:

- Intentionally or deliberately kill, injure or capture bats.
- Deliberately disturb bats, whether at roost or not.
- Damage, destroy or obstruct access to bat roosts.
- Possess or transport bats, unless acquired legally.
- Sell, barter or exchange bats.

A bat roost is defined by the Bat Conservation Trust publication *Bat Surveys—Good Practice Guidelines* as “the resting place of a bat” (BCT 2007). Generally however, the word roost is interpreted as “any structure or place, which any wild bat uses for shelter or protection.”

Bats tend to re-use the same roosts; therefore legal opinion is guided by recent case law precedents¹, that a roost is protected whether or not the bats are present at the time. This can include for summer roosts, used for breeding; or winter roosts, used for hibernating.

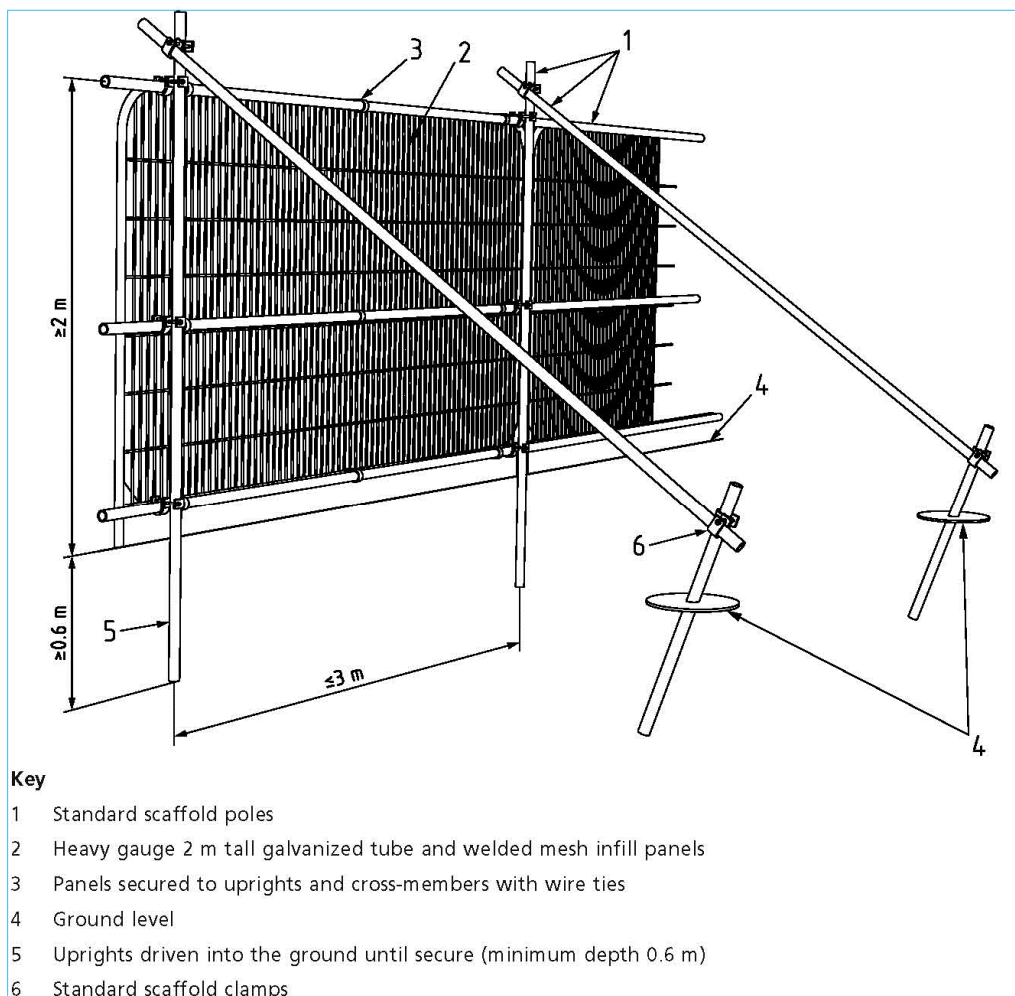
Protective Measures

Protective measures are to be installed immediately following the completion of the tree works, and are to be sited and aligned in accordance with the tree protection plan (Arbtech – 56 Howitt Road - TPP 01).

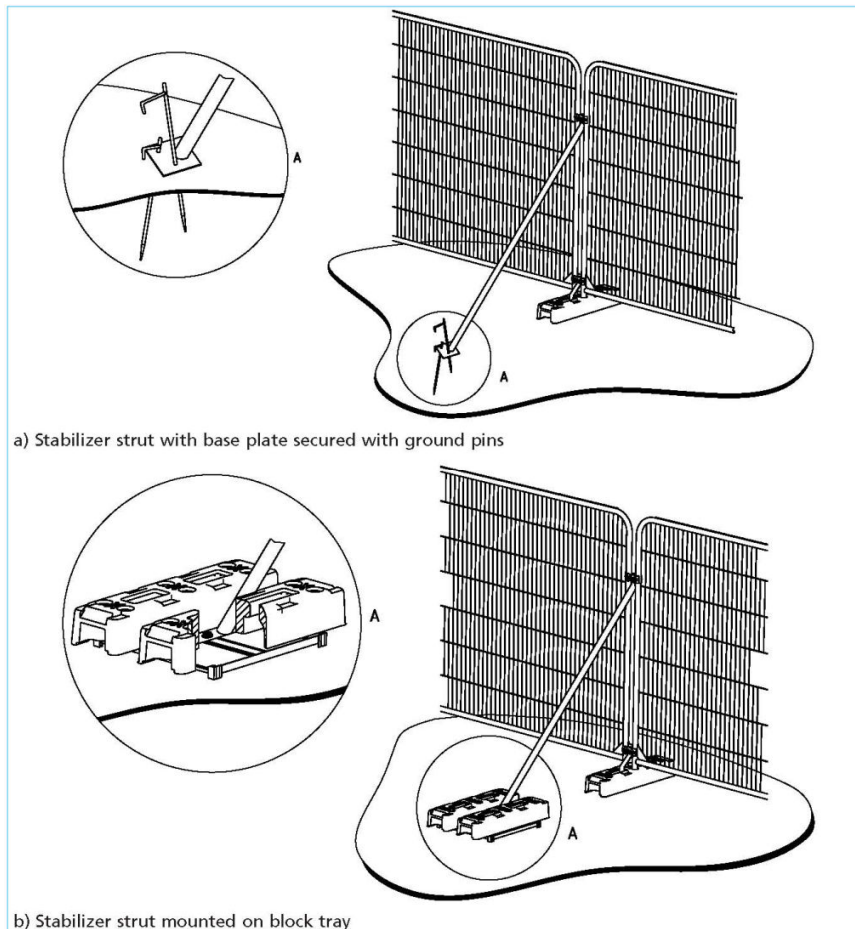
Protective Barrier Fencing – See BS5837 – 56 Howitt Road – Arbtech TPP 01 for location of protective fencing

Protective barrier fencing should be appropriate for the intensity and proximity of the development to protect trees where development activity is in close proximity.

Default specification: To comprise either 2.4m wooden site hoarding; or a 2.3m high scaffold framework, well braced to resist impacts, with uprights to be spaced at a maximum of 3.0m intervals and driven into the ground by a minimum of 600mm. On o this, standard anti-climb welded mesh panels are to be securely fixed to each other with at least two scaffold clamps and to the scaffold frame work with wire.



Secondary specification: To comprise of 2m tall welded mesh panels on rubber or concrete feet. Panels are to be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabiliser struts, which should be attached to a base plate and secured with ground pins.



Signage denoting the words “*tree protection area*” at 5.0m intervals should be fixed to the protective barrier fencing (See Appended file).

Protective fencing is to be removed **ONLY** with the written permission of the arboricultural consultant and approval of the local planning authority (LPA).

Ground boarding protection for trees – See BS5837 – 56 Howitt Road – TPP 01 for location of protective ground boarding

New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

Note. All ground boarding is to be designed / approved by the project engineer to make sure they provide adequate protection from the expected loading/protection including:

- a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;
- b) for pedestrian-operated plant up to a gross weight of 2t, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;
- c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary system or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

Where machinery will be stored or used from the ground boarding within the RPAs of retained trees an impervious barrier and or bunding to prevent oils, fuel or chemical leaching into the soil within or adjacent to the RPAs.

Site management

The site manager will be responsible for briefing / inducting all personnel who will be working on any stage of this development and especially those who will be working within or adjacent to canopies or RPAs of retained trees; and will make them aware of, and provide a copy of this method statement and tree protection plan drawing nos. Arbtech TPP 01; this is to include but not exclusively of the movement / operation of plant, excavations, unloading deliveries, mixing / pouring cement and concrete.

The site manager will be responsible for the day to day running and protection of all retained trees and for leasing with the project arborist about any tree related matters and prior to any works that may or will affect the RPAs or canopies of retained trees; this is to include but not exclusively of the movement / operation of plant, excavations, unloading deliveries, mixing, pouring and storage of all caustic materials that may cause harm to retained trees.

Any incidents of damage to retained trees or of tree protection measures will be documented by the site manager who will then report these incidents to the project arborist immediately and make sure that works within this area cease until the project arborist has had an opportunity to inspect the damage and where appropriate, agree a mitigation plan with the local planning authority tree officer.

The site manager may designate another person to take charge of briefing / inducting new site personnel or visitors in his absence.

If the site manager is replaced or is absent from site for more than five working days the project arborist will be informed and a pre start meeting will be held with the new / acting site manager.

It is the responsibility of the site manager to ensure that the planning conditions attached to the planning consent are adhered to at all times and that a monitoring regime and supervision of any works within or adjacent to the RPAs are adopted.

If at any time pruning works are required other than those previously approved, permission must be sought from the LPA tree officer and once permission is granted they are to be carried out by a suitably qualified person in accordance with BS3998:2010 Tree work – Recommendations.

Prohibition

- Mechanical digging or scraping is not permitted within a defined root protection area or within areas cordoned off by protective barrier fencing.
- No access will be permitted within the protected areas;
- No materials, equipment or debris will be stored within any of the fenced areas, or against the fencing;
- Fires are not permitted within 5.0m of any vegetation.
- Leaning objects against or attaching of objects to a tree is not permitted.
- Machinery, plant and vehicles are not permitted to be washed down within 10.0m of vegetation.
- Chemicals and materials are not to be transported, stored, used or mixed within a root protection area or within areas cordoned off by protective barrier fencing.
- Cement silos, mixing site to be situated within a bunded area to prevent pillage/leaking of chemicals harmful to trees. These areas are to be sited well clear of protected trees.
- Refuelling of plant or machinery is prohibited within 10m of the construction exclusion zones.
- It is essential that allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees.
- Where machinery is to be used within 5m of retained tree canopies a banks man will be required at all times whilst setting up, moving or operating within this distance of retained trees canopies.

Demolition

Prior to the demolition of the existing site features, all tree works are to have been completed, tree protection measures are to be in place as per Arbtech Consulting Ltd. tree protection plan document no. Arbtech TPP 01 and have been signed off and a copy of the demolition method statement has been submitted and approved by the project arboriculturist and LPA tree officer, to ensure that there is no conflict with this method statement.

All demolition work within or immediately adjacent to RPAs or canopies of retained trees is to be undertaken under the direct on-site supervision of an arboriculturist.

Hard Surfacing within RPAs

Where it is required for hard surfacing is to be removed and or re-surfaced within the RPAs of retained trees it is to be undertaken under direct on-site arboricultural supervision, during the landscaping phase of the development.

The wearing course will be broken up using a hand held pneumatic breaker, hand tools and wheel barrows to break up and remove the surfacing. Where is necessary to remove the sub base this is to be undertaken using a fork to loosen the material and moved using shovels and wheel barrows.

In some situations and at the discretion of the arborist it may be possibly to use an excavator using a hydraulic breaker and a suitably sized toothless grading bucket. If an excavator is to be used it must be situated outside of the RPAs, on top of the hard surfacing working away from the RPAs or from ground boarding.

Whichever system is used there is to be **NO** disturbance of the soil beneath. If roots are found they are to be covered over with damp hessian and a layer of either sharp sand, wood chip or top soil will be applied as soon as practicably possible to prevent desiccation.

Existing Underground Services

Existing services within the site should be retained where ever possible. Where existing services within RPAs require upgrading, the upmost care must be taken to minimise disturbance, and where feasible trenchless techniques are to be employed, and only where necessary should open excavations be considered.

Construction

Prior to construction, a copy of the construction method statement should have been submitted and approved by the project arboriculturist and LPA tree officer, to ensure that there is no conflict with this method statement.

All excavations and construction work within or immediately adjacent to RPAs or canopies of retained trees is to be undertaken under the direct on-site supervision of an arboriculturist.

Concrete foundations

Prior to any concrete being poured within or immediately adjacent to the RPAs of retained trees the excavation is to be lined and sealed to prevent any leaching of the concrete into the soil and causing desiccation of retained roots by concrete run off.

Subterranean construction with RPAs of tree nos. 1, 2, 3, 4 & 5

Where it is proposed to form subterranean structures, within the RPA, the following factors should be taken into account, in light of site specific and specialist arboricultural, engineering and geotechnical advice:

- Future growth potential of the tree;
- The potential for vibration-induced granular flow within the retained soil, caused by the excavation process, to destabilize the tree through reduced root adhesion;
- Potential for ponding (i.e. perched water table) and the need for a drainage/runoff control system;
- Potential for adverse effects on local soil hydrology, and the possible impact of these on the health of the tree.

Prior to the excavation/installation of the basement sheet piling should be installed along the line of the basement to retain the rooting environment of all retained trees and to remove the need for any over dig, as per Tree Protection Plan drawing no. Arbtech TPP 01.

Where piling is to be installed near to trees, the smallest practical piling rig should be used, as this reduces the possibility of striking and damaging the retained trees. If a piling mat is required, this should conform to the specification for ground boarding.

All and any excavations that may be required for foundations within the RPAs of retained trees will initially be undertaken manually under arboricultural supervision (see Manual excavation).

Prior to concrete being poured to form the foundations within or immediately adjacent to the RPAs of retained trees the excavation is to be lined and sealed to prevent any leaching of the concrete into the soil and causing desiccation of retained roots by concrete run off.

Root Pruning

The line of the proposed root pruning is to be situated along the outside of the edge of the basement as highlighted by Turquoise line in Arbtech TPP 01. Excavations for root pruning within RPAs of trees numbers 1 to 5 and will be undertaken using an Air-spade to a minimum of 600mm deep. The total depth of the excavation will be determined by the arboriculturist whilst on site.

The soil is to be loosened with the aid of a fork or pick axe and then cleared with the aid of an Air-spade, Air-vac and or shovel. Any roots found will be cleanly severed by the arboricultural consultant or the specialist arboricultural contractor with either a hand saw or secateurs leaving a clean cut.

Once all roots have been severed the edge of the excavation closest to the trees will be covered and retained prevent drying out, soil collapse or contamination.

Manual excavation

Excavation within RPAs will be undertaken by hand under direct on-site arboricultural supervision of the required depth of the foundation; Or to a minimum of 600mm deep of any excavation, whether for proposed foundations, hard surfacing or underground services. The total depth of the manual excavation will be determined by the arboriculturist whilst on site.

The soil is to be loosened with the aid of a fork or pick axe and then cleared with the aid of an Air-spade, Air-vac and or shovel. Any roots found will be cleanly severed by the arboricultural consultant with either a hand saw or secateurs.

Any roots found with a diameter of less than 25mm shall be cleanly severed by the arboricultural consultant. Any roots of 25mm and above shall be excavated around without damaging them; the arboricultural consultant shall decide if it's feasible or necessary to retain the root, if not it shall be severed.

The edge of the excavation closest to the trees will be covered with damp hessian to prevent soil collapse or contamination by concrete.

Soil beneath the depth may be sheet piled, regular piled or excavated deeper. Machinery may be used for this providing that it is situated outside of the RPA or has appropriate ground protection in place to move around on and work upon.

Landscaping

Any tree planting should take into consideration the available space for tree growth and development in order to ensure the trees are physically suited to the site at maturity. A specification for, and notation relating to the precise alignment of replacement trees will be contained in the landscape proposals.

Landscaping around retained trees may only be carried out once all tree protection measures have been removed (planting, turfing, fencing etc.).

All excavations within the Root Protection Areas shall be undertaken by hand and without reducing current ground levels unless it is agreed in writing with the LPA. At no time is the use of a rotavator permitted within the RPAs of retained tree.

Any tree roots discovered will be left in-situ and shall not be cut or otherwise damaged. Where possible, the soil structure within the Root Protection area shall be preserved.

No works will be carried out within the RPAs of any trees if the soil moisture is of such a level that soil compaction may be likely. Should the soil become compacted or has poor structure which would hinder the development of the existing trees and plants or any new plantings the arboriculturist should be consulted about soil decompaction techniques.

Services

Where new services are to be introduced into the site they should be located outside of RPAs, where they will not interfere with tree roots. If any excavations are required within the RPAs all trenches are to be excavated by hand and radially to the tree trunks under direct on-site arboricultural supervision and are to be carried out under NJUG guidelines.

New Underground services

Trenching for installation of underground services and drainage routes could sever any roots that may be present and as such adversely affects the health of the tree. For this reason particular care should be taken in routing and methods of installation of all underground services. All underground services and drainage routes should be located so that no excavations are required within RPAs.

Where it has been impossible to keep underground services from passing through RPAs or within close proximity to trees, these sections are to be installed in one of three ways in accordance with the guidance set out in National Joint Utilities Group guidelines (NJUG 4), under on site arboricultural supervision.

Trenchless Techniques

There are three main types of trenchless techniques, these include, guided and unguided boring and pipe replacement by lining or bursting. These allow for the installation, maintenance or renewal of underground services, without the disturbance of soil in which roots are likely to be growing. Starting and receiving pits for the boring machinery are to be located outside of the RPAs of any retained trees, with the bore depth being maintained at a minimum depth of 600mm below the existing ground level. Techniques involving external lubrication of the equipment shall use no material other than water as other lubricants could contaminate the soil (e.g. oil, bentonite, etc.).

Monitoring and Supervision

The development's tree protection is to be monitored by the project arboriculturalist who should be retained to record and report observations to the council at appropriate intervals.

Prior to the commencement of any works on site a pre-start meeting is to be held to discuss the protection methodology, arboricultural method statement and swap contact details (See Appendix 1).

As a suggested minimum, the arboricultural consultant should visit once to check that the tree protective measures are in the correct location and if so to sign off their installation.

Regular contact will be maintained with the site manager to determine any forthcoming operations that may make an impact upon the tree protection measures and when/if any arboricultural supervision is required.

The arboricultural consultant will be advised a minimum of 72 hours prior to the commencement of any works that require his attendance, i.e. installation of underground services, removal/construction of hard surfacing, any excavations within or adjacent to the RPAs.

Once all construction works have been completed all materials and machinery has been removed from site the arboricultural consultant shall visit the site and to sign the development off and recommend that protective measures can be removed.


Supervision

The arboricultural consultant will be required to attend site to directly supervise any demolition and construction works that are to be undertaken within or adjacent to the RPAs of all retained trees and will be advised a minimum of 72 hours prior to the commencement of any works that require his attendance.

Appendix 1 - Contact Details

| Name | Position | Company | Contact |
|------------------|---------------------------|-------------------------|---|
| Mr A. Nooriala | Client | | |
| | Tree Officer | | |
| Mr Alan Thompson | Arboricultural Consultant | ARBTECH Consulting Ltd. | 07703 676 216 at@arbtech.co.uk www.arbtech.co.uk |
| | Site Manager | | |
| | Main Contractor | | |

Document Production Record

| Document number | Editor | Signature | Position | Issue number | Date |
|-----------------|---------------|---|---------------------------|--------------|------------|
| Arbtech AMS 01 | Alan Thompson |  | Arboricultural Consultant | 1 | 01/04/2016 |

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If you require clarification of information contained herein, please do not hesitate to contact us via 01244 660558.

Yours Sincerely,



Alan Thompson FdSc (Arb.), M.Arbor.A

Arboricultural Consultant