Arboricultural Development Report

Durfeldt Lodge,

Barnsley Road,

Darfield,

Barnsley.

29 October 2012

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Executive Summary

This report describes the extent and effect of the proposed development at Durfeldt Lodge, Barnsley Road, Darfield, Barnsley S73 9DJ ("site") 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' ("BS5837").

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	☒
Tree constraints plan	☒
Arboricultural impact assessment	☒
Arboricultural method statement	☒
Tree protection plan	☒

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: Cubic Architectural Services Limited

Site: Durfeldt Lodge, Barnsley Road, Darfield, Barnsley S73 9DJ.

Brief proposal description: Extension to existing dwelling.

Planning application reference: N/A

Documents referred to:

Document	Reference
Topographical survey drawing	OS Tile
Proposed layout drawing	0112 / 201 A
Landscape master plan drawing	N/A
LPA pre-app comments	N/A
British Standard 5837:2005	“BS5837”
Arboricultural Impact Assessment	Arbtech - AIA 01
Tree Protection Plan	Arbtech - TPP 01

Tree Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by Alan Thompson on 5th October 2012.

Limitations: The 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*).

Land use: The site is presently a residential dwelling and gardens.

* 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. Arbtech – AIA 01.

Trees to be removed

No individual trees but one group need to be removed as they are in direct conflict with the proposed development.

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 nos. Arbtech - TPP 01.

Protective measures should be in accordance with this method statement and the Tree Protection Plan; drawing nos. Arbtech - TPP 01 are to 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 Arbtech and their advice sought and agreed to by the council.

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 plan Arbtech - TPP 01 and this method statement
c) Undertaken 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 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
8	Common lime	Crown lift to provide a minimum of 2m clearance from roof of extension.	B_{12}
11	Common lime	Crown lift to provide a minimum of 2m clearance from roof of extension.	B_{12}
12	Common lime	Crown lift to provide a minimum of 2m clearance from roof of extension.	B_{12}
13	Common lime	Crown lift to provide a minimum of 2m clearance from roof of extension.	B_{12}
Group 4	Lawson Cypress	Fell to ground level; grind out stumps.	C_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.

Tree removal

A tree should be felled in one piece only when there is no significant risk of damage to people, property or protected species (see Annex A).

Where restrictions (e.g. lack of space, buildings, other features, land ownership or use, or other trees which are to be retained) cannot be overcome, trees should be dismantled in sections.

This also applies where a tall stump is being retained but where branches are to be removed/pruned.

Extensively decayed trees can be unpredictable when they are being felled, and special precautions should therefore be taken, such as the use of a winch to guide the direction of fall.

Stump removal – stump grinding

Stump grinding should be to a minimum of 300mm deep or to extend through the base of the stump leaving the major roots disconnected if the intention is to reduce the potential for the spread of Honey fungus.

The grinding residue should be treated as arising's and removed from site.

NOTE Mechanical destruction of a stump by stump grinding is less disruptive to the site than digging out.

The hole left by stump removal, should be filled with soil or other material. The filling should be appropriate for future site usage, and for any surface treatment that is to be installed.

Where future plant growth is desired, the backfill material should be firmed in 150 mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

After stump removal

The hole left by stump removal, whether by digging out or grinding, should be filled with soil or other material. The filling should be appropriate for future site usage and for any surface treatment that is to be installed.

Where future plant growth is desired, the back fill material should be firmed in 150mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

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.

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.

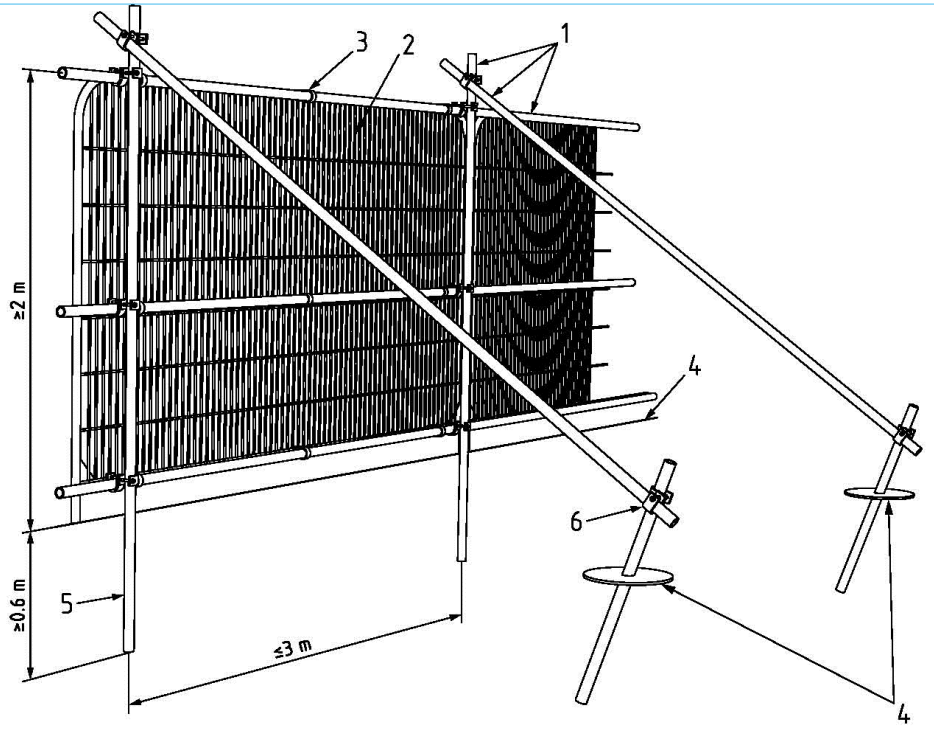
Protective Measures

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 plans Arbtech - TPP 01.

Protective Barrier 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.

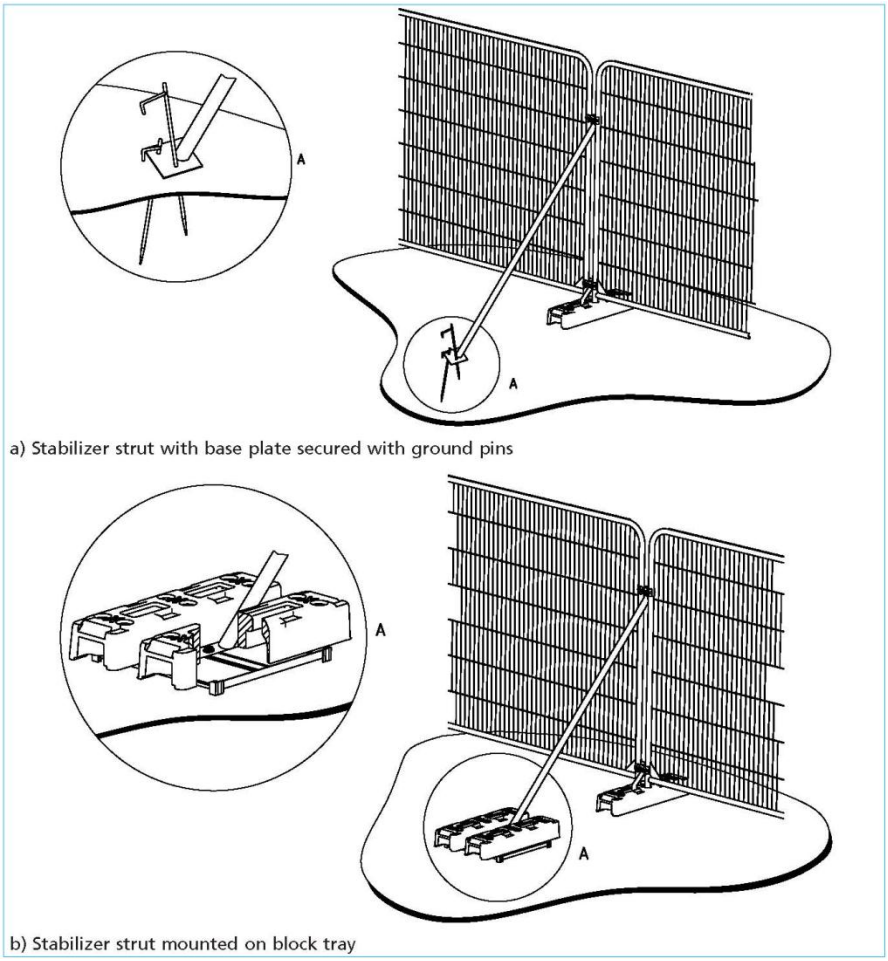
Default specification: To comprise either 2.4m wooden site hoarding; or a 2.3m high scaffold framework, well braced to resist impacts, with uprights to be spaced at a maximum of 3.0m intervals and driven into the ground by a minimum of 600mm. On to this, standard anti-climb welded mesh panels are to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



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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.



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

Signage denoting the words "*tree protection area*" at 5.0m intervals should be fixed to the protective barrier fencing (See Appendix 1).

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

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 The ground protection might comprise of one of the following:

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.

Demolition

Prior to the demolition of the existing site features, the Demolition Method statement shall be submitted to the arboricultural consultant 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.

Garage

Where required the demolition for the existing garage within the RPAs and beneath the canopies of tree nos.T7, T8 and T11 is to be undertaken carefully under arboricultural supervision.

The garage is to be taken down so that all debris / materials are to fall within the existing footprint or to the North of the garage outside of the RPAs and canopies.

Foundations of the garage situated with RPAs of tree nos.T7, T8 and T11 are to be left in situ where ever possible. Where this is not possible demolition of the existing foundations are to be undertaken from within the footprint of the existing structure to the minimum depth required to allow for the construction of the extension.

The removal of the existing foundations within the RPAs of tree no nos.T7, T8 and T11 are to be undertaken using a hand held pneumatic breaker, hand tools and wheel barrows to break up and remove the debris out of the RPA. In some situations and only 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 permitted for an excavator to undertake the demolition and removal of the garage floor and foundations it must be situated outside of the RPA, on top of the hard surfacing working away from the RPAs or from suitable ground boarding capable of handling the expected loading.

If it is likely that there will be any soil collapse or the trench begins to collapse within the RPAs of retained trees which will lead to the loss of rooting environment, excavations are to be stopped immediately and the trench is to be shored up to prevent further soil collapse.

Where the removal of foundations occurs within the RPAs of retained trees these voids are to be back filled with clean top soil.

Hard Surfacing

Hard surfacing at the entrance to the site within the RPAs of tree nos.T2, T3, T7, T8 and T11 is to remain in place until the completion of the superstructure and is only to be removed and replaced as a part of the landscaping works at the end of the development.

Where hard surfacing is to be re-surfaced within the RPAs of retained trees it is to be undertaken under direct on-site arboricultural supervision.

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.

Construction

Exploratory investigation are to be undertaken to provide accurate information as the to type and location of foundation system required.

All excavations within or immediately adjacent to RPAs of retained trees are to be undertaken using hand tools or compressed air displacement (Air-Spade or similar) under arboricultural supervision (See Manual excavation).

Foundation design

The use of strip foundations within RPAs of retained trees can cause extensive root loss and as such are to be avoided.

Design of foundations for the extension within the RPAs of trees nos.T8, T11, T12 and T13 are to be designed to minimise the adverse impact upon trees and should pay particular attention to the existing ground levels and proposed finished floor level. Foundation design should be undertaken using site specific information in conjunction with the project arboriculturist and engineer.

Root damage can be minimised using:

- Piles, with a site investigation it is possible to determine their optimal location whilst avoiding damage to roots important for the stability of the tree. Investigative excavations are to be undertaken with the use of hand tools or compressed air displacement to a minimum depth of 600mm;
- Beams laid at or above ground level and or cantilevered as necessary to avoid tree roots identified by the site investigation.

Dwellings

Slabs for larger structures such as the dwellings should be designed and constructed with a ventilated air space between the underside of the slab and the existing soil surface. A specialist irrigation system is to be installed underneath the slab e.g. rain water runoff from the roof.

Garages

Slabs for smaller structures (less than 20% of the total area of the un-surfaced RPA) such as garages and shed may be formed / constructed directly onto the existing soil surface. It may be possible to use a multi-dimensional confinement system such as CellWeb ^{TM} or similar as the foundation for these structures (specialist advice should be sought from the manufacturer).

Dwelling foundations

The foundations of the dwelling are to be designed in conjunction with the arboriculturist and should consist of a pile and above ground beam type foundation to provide a void beneath the beams and floor slab to gaseous exchange from the roots of the adjacent trees.

Excavations for the piles are to be undertaken through the ground boarding and the initial 600mm minimum is to be undertaken manually under arboricultural supervision (see Manual Excavation).

'No Dig' Hard Surfacing

Foundations for the new hard surfacing situated within the RPAs of tree nos.T8, T11, T12 and T13 are to be constructed either on a similar foundation type as the extension using piles and above ground beams or using a multi-dimensional confinement system such as CellWeb^{TM} or similar.

If a multidimensional confinement system is chosen for the hard surfacing it is to be designed in conjunction with arboricultural advice to accommodate any likely loading. The design should not require excavation however the removal of the turf layer or other surface vegetation may be acceptable if necessary, but ideally the construction will be situated entirely above the existing ground level.

Prior to the installation of the hard surfacing within the RPAs vegetation may be removed using hand tools or sprayed with an approved non residual herbicide such as 'Glyphosate'.

Concrete foundations

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.

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

The ratio of trees removed to trees replanted should not necessarily be 1:1. Instead, the ratio 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

Detailed drawings of proposed underground services are not available at this time; hence it is not possible to identify any specific potential impacts associated with the scheme at this stage.

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.

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.

Final positions of any proposed services should be verified and approved by the arboricultural consultant and local authority tree officer before implementation.

Monitoring and Supervision

The development's tree protection is to be monitored by Arbtech Consulting Ltd, 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 2).

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.

There after visits at regular intervals, to ensure that tree protection measures are in place and are functioning as designed or whenever necessary to undertake works to be carried out under arboricultural supervision. The frequencies of the arboricultural monitoring visits are to be decided with the LPA tree officer at the pre-start meeting. A record of these visits will be kept and any faults will be logged, this will then be copied to the site agent, developer and local planning authority.

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.

Appendix 1 – Tree Protection Notice

Tree Protection Area

KEEP OUT

Do **not** move this fence

(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECT OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

ARBTECH
Consulting Limited

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Also in London, Surrey, Sussex and Bedfordshire
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Appendix 2 - Contact Details

Name	Position	Company	Contact
	Tree Officer		
Matthew Middle	Arboricultural Consultant	ARBTECH Consulting Ltd.	0845 176950 mm@arbtech.co.uk email@arbtech.co.uk
	Site Manager		

Document Production Record

Issue #	Editor	Signature	Position	Date
1	Matthew Middle		Senior Surveyor	29/10/2012

Limitations

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