

WATERLOO WHARF UXBRIDGE

ARBORICULTURAL METHOD STATEMENT

HOWARTH HOMES

ACD
ENVIRONMENTAL

Ecology
Archaeology
Arboriculture
Landscape Architecture

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1.0 Introduction

- 1.1. Howarth Homes instructed ACD Environmental in January 2017 to prepare the following method statement to ensure that the retained trees are successfully protected through the construction process.
- 1.2. This document is based on the supplied drawing, ref: 2017.01.19 - Ashby Site Base – VE, and preceding tree survey by Ruskins ref: 0716-2001 Rev 1 (schedule appended).
- 1.3. The controlling authority is London Borough of Hillingdon Council, who can be contacted at: Civic Centre, High Street, Uxbridge, Middlesex, UB8 1UW, Tel: 01895 250230.

2.0 Arboricultural Method Statement

**TO BE READ IN CONJUNCTION WITH THE APPENDED TREE
PROTECTION PLAN REF: HOW21040-03**

2.1. Phasing of operations & site supervision

- 2.1.1. The tree protection and other arboricultural works must be carried out in the following order:

	Operation	Present	Notes
1	Tree removals	Tree contractor	See Tree Protection Plan for trees to be removed
2	Protection barriers erected	Fencing contractor	See Tree Protection Plan for position and type of barriers
3	Removal of hard surfaces near trees	ACD, demolition staff, site manager	Supervised by project arboriculturist. See method statement
4	Removal of protection barriers and landscape work	ACD, landscape contractor, site manager	See method statement

2.1.2. Supervision is required should any unplanned access and/or work be required in the construction exclusion zone.

2.1.3. Supervision will require the arboriculturist to be present throughout the task, to ensure all the arboricultural objectives are met. If the task is to take a long period of time, provided the arboriculturist is satisfied, and after an initial 'tool-box talk', the supervision may be reduced to telephone contact between the site foreman/contractor and arboriculturist.

2.2. Construction exclusions zone

2.2.1. Barriers and/or ground protection must be used to protect all retained trees before any machinery or materials are brought onto the site, and before any demolition, development or stripping of soil commences.

2.2.2. Where all activity can be excluded from the RPA, vertical barriers must be erected to create the construction exclusion zone (CEZ). The default position of which is shown on the appended Tree Protection Plan.

2.2.3. Where, due to site constraints, construction activity cannot be fully or permanently excluded from all, or part of a tree's RPA, appropriate ground protection can be installed.

2.2.4. It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

2.2.5. Inside the exclusion zone, the following shall apply:

- No mechanical excavation whatsoever.
- No excavation by any other means without arboricultural site supervision.
- No hand digging without a written method statement having first been approved by the project arboriculturist.
- No lowering of levels for any purpose (except removal of grass sward using hand tools).

- No storage of plant or materials.
- No storage or handling of any chemical including cement washings.
- No vehicular access.
- No fire lighting.

2.2.6. In addition to the above, further precautions are necessary adjacent to trees:

- No substances injurious to tree health, including fuels, oil, bitumen, cement (including cement washings), builders sand, concrete mixing and other chemicals shall be stored or used within or directly adjacent to the protection area of retained trees.
- No fire shall be lit such that flames come within 5m of tree foliage.

2.3. Tree protection barriers

2.3.1. The construction exclusion zone will be protected as per the appended tree protection plan that shows the default alignment of the tree protection barriers, to be installed prior to any of the following taking place:

- Archaeology
- Demolition
- Plant and material delivery
- Soil stripping
- Utility installation
- Construction works
- Landscaping

2.3.2. Stages of installation of barriers:

- 1) Hand clearance of any vegetation to allow clear working access.
- 2) Setting out of node points
- 3) Barriers erected
- 4) Site meeting with project arboriculturist to 'sign-off' tree protection fencing.
- 5) Site accessible to demolition/construction traffic

2.3.3. Once erected, all barriers will be regarded as sacrosanct, and will not be removed or altered without prior recommendation by the project arboriculturist and approval of the local planning authority.

2.3.4. The default barrier construction is suitable for areas of high-intensity development and shall comprise of interlocking weld-mesh panels, well braced to resist impacts by attachment to a scaffold framework that is set firmly into the ground. A detailed specification can be found on the TPP.

2.3.5. The images below are alternative barrier designs that have been successfully used on site and that ACD are happy to support if a variation from the default style is required. If such a variation is necessary, the approval of the project arboriculturist will be obtained prior to any implementation on site.

2.3.6. Once barriers and/or ground protection have protected the exclusion zone, construction work can commence.

2.3.7. All weather notices should be erected on the barriers (for example see figure below).



Tree protection sign (download from <http://www.acdenvironmental.co.uk>)



Weld-mesh panels on scaffold uprights



Weld-mesh panels on wooden posts



Chain-link on angle-iron uprights

2.4. Ground protection

2.4.1. If required (or as shown on the appended tree protection plan), ground protection is to be installed as follows. It must be capable of supporting the expected loads and avoiding rutting, compaction and damage to the soil: as advised in section 6.2.3 of the British Standard.

2.4.2. Stages of ground protection installation:

- 1) No plant machinery to be used in the area of ground protection for whatever reason
- 2) Dismantle primary TPF and re-erect in secondary location as shown on TPP (if required) OR erect fencing to protect any newly exposed CEZ not to be covered by ground protection.
- 3) Any shrubs, saplings or trees to be removed, are to be cut or ground out to just below ground level rather than grubbed or winched out, which can damage roots of retained trees.
- 4) Lay woven geotextile over existing ground surface by hand
- 5) Cover the area with compressible layer, woodchip, for example, using hand tools only
- 6) Cover compressible layer with side butting scaffold boards or plywood boards
- 7) Confirm surface is acceptable for use with project arboriculturist
- 8) Area ready for construction access

2.4.3. Any scaffolding required within the area will be erected with the uprights placed on spreader boards.

2.4.4. The boarding will be left in place until the construction works are finished.

2.4.5. A single thickness of boarding laid on the soil surface will provide sufficient protection for pedestrian loads. However, for wheeled or tracked construction traffic movements within the RPA, ground protection will involve the use of temporary cellular confinement systems, reinforced concrete slabs or track-board systems

details of which are to be specified by the project engineer and approved for use by the project arboriculturist and local authority before construction commences.

2.4.6. Track-boards can be sourced from Trakmats Europe Ltd, 0845 6435388, www.trakmatseurope.com, or groundguards.com

2.4.7. There is to be no excavation within ground protection area whatsoever. This includes installation of services and associated utilities.



Scaffold board pedestrian ground protection



Vehicular ground protection trackway

2.5. Site storage, parking, welfare facilities, etc.

2.5.1. The site will require provision for; site storage, contractor parking, welfare facilities, temporary services/drainage, material drop off points, etc.

2.5.2. It is acceptable to place site cabins and walkways within the CEZ provided they are installed sensitively:

- Cabins must be placed on sleepers (or similar) to spread the load, avoiding point loading and associated soil compaction.
- The delivery of cabins should ensure that any unloading via 'hi-ab' crane can be carried out without impact on the crowns of retained trees.
- Walkways, if required, should be installed as per the ground protection specification.
- Any utilities for site compounds must be run above ground. For example, WC foul pipes/drainage and temporary electrical connections.

2.5.3. It is imperative that if cabins and walkways are installed, that fencing is erected to limit access to the protected areas. If amendments are made, the project arboriculturist should sign off the proposals prior to their implementation.

2.5.4. Contractor parking and storage areas should be sited outside the CEZ.

2.6. Tree surgery and removal

2.6.1. If any surgery work is proposed, details will be submitted to, and approved by, the council, before being carried out.

2.6.2. All work will be carried out in accordance with BS3998¹ industry best practice and in line with any works already agreed with the council.

2.6.3. The tree surgeon shall ideally be chosen from The Arboricultural Association's Approved Contractor list. All work shall be undertaken at the appropriate time and with the consent and approval of the site agent.

2.6.4. The statutory protection^{2 3} will be adhered to. If further advice is required, particularly if bats are discovered during tree work, it will be obtained from Natural England or other competent persons and recommendations adhered to.

2.6.5. The stumps of any trees removed from within the Construction Exclusion Zone or the RPAs of retained trees will be either cut flush to ground level and left in situ or ground out using a stump grinder. They will not be winched out.

2.6.6. All operations shall be carefully carried out to avoid damage to the trees being treated or neighbouring trees. No trees to be retained shall be used for anchorage or winching purposes.

¹ BS3998:2010- *Recommendations for Tree Work*. London: British Standards Institute

² *Wildlife and Countryside Act*. (1981) London: HMSO.

³ *Countryside and Rights of Way Act*. (2000) London: HMSO.

2.7. Soft landscaping

2.7.1. All landscaping and associated ground preparation within exclusion zones will be carried out sensitively to ensure root damage is minimised as much as is practicable.

2.7.2. At no time is any heavy plant to be used within any protected area.

2.7.3. Removal of existing vegetation (including turf) will be carried out with hand tools only.

2.7.4. Should the soil be compacted or have a poor structure that may hinder the development of any new planting, soil decompaction techniques may be used upon consultation with the project arboriculturist.

2.7.5. Tree protection barriers may be removed to allow access and then replaced as required/per approved documents (in liaison with the arboricultural clerk of works)

2.7.6. Levels (high spots) will not be reduced or excavated in any way. Use good quality topsoil to level any low-lying areas and hollows, and provide a fine tilth to lay turf on. This imported soil must not result in a level increase of more than 100mm in any area.

2.7.7. Import materials by hand in wheelbarrow or using a digger sited outside the sensitive area.

2.7.8. Any excavation for planting pits must be dug using hand tools only.

2.7.9. No works will be carried out within any protected areas if the soil moisture is at a level likely to allow compaction to occur.

2.8. Installation of underground services

2.8.1. Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the routeing and methods of installation of all underground apparatus.

Wherever possible, apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA.

2.8.2. Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routeing should be drawn up in conjunction with the project arboriculturist. In such cases, trenchless insertion methods should be used: Microtunnelling, Surface-launched directional drilling, Pipe ramming or Impact moling (see BS5837:2012 Table 3), with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected, excavation using hand-held tools might be acceptable for shallow service runs. If this is case, the following methodology must be followed:

2.8.3. Stages for installing services by hand within tree protection areas:

No plant machinery to be used in the area for whatever reason

- 1) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work.
- 2) Remove just enough tree protection fencing to allow access to area and facilitate trenching.
- 3) Remove any surface vegetation or existing hard surfaces using hand tools.
- 4) Using an air-pick excavate the trench, keeping to minimum dimensions required.
- 5) Roots occurring in clumps of 25 mm diameter and over are encountered they will be retained and kept damp by covering with hessian (re-wetted as required). If required, these should be severed only following consultation with an arboriculturist; as such roots might be essential to the tree's health and stability.
- 6) Feed in services.
- 7) Backfill trench with 200-300mm depth of excavated soil, or a mixture of excavated and imported topsoil to BS3882 (BSI, 2007), firming down with heels.
- 8) Repeat step 7 until trench is filled.

- 9) Re-erect tree protection fencing as per approved plan.

2.8.4. The method of excavation above, for trenching within RPAs, is using air excavation. This tool utilises compressed air to remove soil from around tree roots causing minimal damage and can be run off a typical site compressor. ACD can provide details of contractors supplying air excavation services if required.

2.8.5. Alternatively, trenchless technology, such as thrust boring can be used in some instances and is particularly effective as it can pass directly under the tree, at a depth which is likely to avoid almost all impact on roots of the subject tree. As no access/thrust pits will be located within the RPAs of the subject trees, the need for arboricultural supervision is limited.

2.8.6. Reference can be made to NJUG Vol 4⁴ for guidance, but any approach must be approved by the project arboriculturist and brought to the attention of the local authority tree officer.

2.9. Hard surface removal

2.9.1. No hard surface removal within RPAs will occur without arboricultural supervision.

2.9.2. Stages for hard surface removal within tree protection areas:

- 1) No plant machinery to be sited on any exposed rooting area
- 2) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work
- 3) Dismantle fencing as required to access area
- 4) Plant machinery to run only on existing hard surfaces with consent from arboriculturist
- 5) Plant may be used to carefully peel up existing tarmac and concrete
- 6) Other surfaces are to be removed by hand (paving etc.)

⁴ National Joint Utilities Group. (2010). *Volume 4: NJUG Guidelines For The Planning, Installation And Maintenance Of Utility Apparatus In Proximity To Trees (Issue 2) – Operatives Handbook*. NJUG.

- 7) Where any sub base is not likely to contain roots and only on approval from project arboriculturist, it may also be carefully removed.
- 8) Underlying ground levels to be retained. No excavation to occur
- 9) Any exposed roots and surrounding newly exposed areas to be covered with up to 100mm of topsoil, from elsewhere on site, or imported topsoil to BS3882⁵ Soil may be placed in area by plant but must be spread by hand.
- 10) Tree protection fencing to be erected in final position as shown on plan

2.9.3. If the area around the retained trees is to be left following the removal of the existing hard surface, before a new hard surface is laid or soft landscaping implemented, then the line of protective fencing MUST be correctly re-established immediately the hard surface removal work has been completed.

2.9.4. If for whatever reason there is a delay before the area is left exposed prior to awaiting a new surface, then a temporary surface must be implemented or the area fenced off.

2.10. Installation of boundary fencing within protected areas

2.10.1. Stages for installing wooden fence posts:

No plant machinery to be used in the area for whatever reason

- 1) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work.
- 2) Remove TPF to allow access to area.
- 3) Dig postholes using hand tools, avoiding damage to the protective bark covering larger roots. Roots smaller than 25mm diameter may be pruned back using either secateurs or a hand saw, leaving a clean cut.

⁵ BS3882:2007- *Specification for topsoil and requirements for use*. London: British Standards Institute.

- 4) Damage or severance of roots above 25mm diameter must be avoided. If roots of this size are discovered, the hole should be relocated. If there are a large number of such roots it may be necessary to relocate the hole by half a fence panels length and adjust the fence panels accordingly.
- 5) Line hole with non-porous lining, for example, durable polyethene bag.
- 6) Insert post and fill post-hole with concrete to just below ground level.
- 7) Trim polyethene to ground level and fill with clean topsoil.

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3 February 2017

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Appendix 1: Tree Categories Explained

BS5837:2012 Table 1 -Cascade chart for tree quality assessment			
Category and definition		Criteria (including subcategories where appropriate)	
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years		*Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) *Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline *Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>	
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
Trees to be considered for retention			
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix 2: Tree Survey Schedule

From Ruskins report 2016 ref: 0716-2001 Rev 1

Arboricultural Statement and Tree Condition Survey for Proposed Development at 3-5 Waterloo Road, Uxbridge, Middlesex, UB8 2QX.

Table 1

Tree No.	Tree Species	Hgt (m)	Stem Dia (mm)	No. of Stems	CS N (m)	CS E (m)	CS S (m)	CS W (m)	Age Class	Form	Con	ER CY	Comments	Recommendations	BS Cat
T1	Ash	5	140	1	2	2	2	2	SM	A	A	40+	A small semi-mature 3rd party owned tree growing in close proximity to an electric sub-station to the east of the site. This tree is remote from the site and will be unaffected by the proposed works. This tree has the potential for significant further growth but is in an unsustainable location.	No works	C1
T2	Ornamental Apple	7	320	1	3	3	2	2	M	A	A	20-39	A mature 3rd party owned tree which is remote from the site and will be unaffected by the proposed works.	No works	C1
T3	Elder	4	250	m/s	2	1	1	1	M	A	A	0-9	A dead 3rd party owned shrub which is growing within the rear garden of the residential properties beyond the eastern boundary of the site.	No works 3 rd party owned dead	U
T4	Cherry	11	450	1	5	6	5	6	M	A	A	10-19	A mature 3rd party owned ivy covered tree which is growing within the rear garden of the residential properties beyond the eastern boundary of the site. This tree is protected by the brick-built boundary wall, with extensive concrete hardstanding inside the site currently used for car parking which extends up to the site boundary. This tree has a limited potential for further growth and has a relatively short remaining life-expectancy.	No works	C1
G1	Ash	8	250	m/s	2	2	2	2	SM	A	A	40+	An informal row of semi-mature self-seeded 3rd party owned trees growing to the southern boundary of the site. These trees have the potential for significant further growth but with regard to their proximity to the neighbouring property are considered to be growing in an unsustainable location, where they cannot reach maturity. Concrete hardstanding extends to the southern boundary of the site.	No works	C1

Appendix 3: Tree Protection Plan

HOW21040-03

WHY TREE PROTECTION IS NEEDED

- 1) **Soil compaction kills roots**-caused by plant movement and storage of materials within protected areas.
- 2) **Trenching severs roots**- many small roots grow within the top 600mm of soil. Even the removal of the top 200mm can cause damage.
- 3) **Soil pollution kills roots**- Dripping fuel storage or cement washings can contaminate the soil resulting in root death.
- 4) **Raising & lowering levels kills roots**-the soil used to increase levels can compact the underlying soil (see point 1). Lowering levels will remove roots causing damage to the tree.
- 5) **Bark and branch damage**- bark removal and branch damage can allow disease and fungi into the tree.
- The impact of any of the above can take years to show**-trees can have huge reserves of food and water.



CONSTRUCTION EXCLUSION ZONE

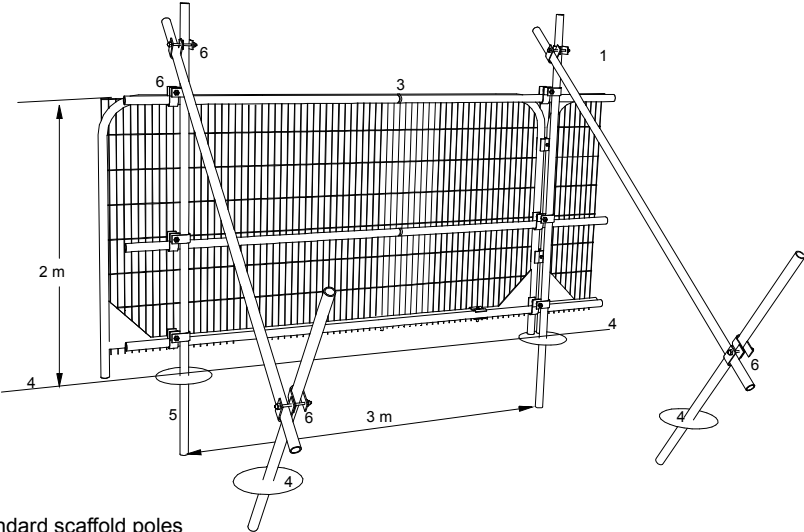
Root protection areas (RPA) of retained trees within which all construction activity is restricted.

All trees that are being retained on site must be protected by barriers and/or ground protection before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers must be erected to create a construction exclusion zone. Where, due to site constraints, construction activity cannot be fully or permanently excluded in this manner from all or part of a tree's RPA, appropriate ground protection can be installed.



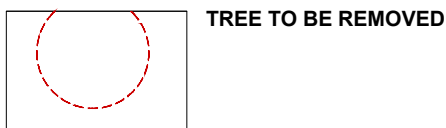
DEFAULT POSITION FOR THE TREE PROTECTION BARRIERS.

BS5837:2012 Figure 2- barrier specification

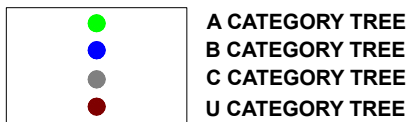


- 1 Standard scaffold poles
2 Heavy gauge 2m tall galvanized tube and weld mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6m)
6 Standard scaffold clamps

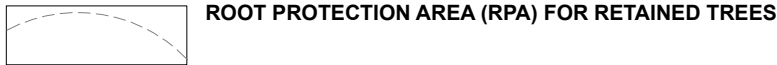
Examples of alternative barrier designs can be found in the method statement. Should an alternative design be more viable and appropriate, it must be agreed with the project arboriculturist before its implementation.



TREE TO BE REMOVED



A CATEGORY TREE
B CATEGORY TREE
C CATEGORY TREE
U CATEGORY TREE



ROOT PROTECTION AREA (RPA) FOR RETAINED TREES



Tree categories	
	A category tree- high quality
	B category tree- moderate quality
	C category tree- low quality
	U category tree- less than 10 years useful life

The original of this drawing was produced in colour- a monochrome copy should not be relied upon.

Rev	Date	Details	Drawn
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ENVIRONMENTAL

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scheme: Waterloo Wharf
Uxbridge
client: Howarth Homes
drawing: Tree Protection Plan
date: January 2017
scale: 1:250@A2
dwg no: HOW21040-03
drawn: MW checked: TRG



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