

LAND SOUTH OF
BARTON ROAD
HAVANT

ARBORICULTURAL METHOD STATEMENT

for

Bellway



Ecology
Archaeology
Arboriculture
Landscape Architecture

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Date:	02/05/2018
Revision:	
Ref:	BELL21747ams

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1. Introduction

- 1.1. ACD Environmental was instructed by Bellway Homes, in April 2018, to prepare the following arboricultural method statement to ensure protection for all trees identified for retention on the development site at Land south of Barton Road, Havant. Implementation of the protection methods and other details within this report are integral to achieving this goal.
- 1.2. This Method Statement is to be made available to all operatives on site during the construction process, so that they understand the scope and importance of the measures set out for tree protection. A leaflet is appended for distribution to all site personnel during their site induction.
- 1.3. The above site was visited 25th April 2018, to review the third party tree survey data and to review the installed tree protection fencing.
- 1.4. For details of trees to be retained, and locations and types of special protection methods, reference should be made to the latest revision of Tree Protection Plan (ref: BELL21747-03), which should be displayed prominently on site for all staff to see.
- 1.5. To ensure accuracy and avoid future costly adjustments, the Tree Protection Fence and Ground Protection must be set out by a surveyor with all node points being marked clearly on site for the fencing contractor to work to. The Autocad version of the Tree Protection Plan is available on request.
- 1.6. The information contained within this Arboricultural Method Statement is in line with BS5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.
- 1.7. The controlling authority is Havant Borough Council, who can be contacted at:

Civic Centre, Civic Centre Road, Havant, Hampshire, PO9 2AX. 023 9247 4174
- 1.8. Any questions relating to the content of this report should be directed in the first instance to: ACD Environmental, Courtyard House, Mill Lane, Godalming, Surrey GU7 1EY, 01483 425 714/07796 832 490, quoting the site address and report reference number.
- 1.9. The following abbreviations have been used throughout this document:
 - Root Protection Area – RPA
 - Construction Exclusion Zone- CEZ
 - Tree Protection Plan – TPP
 - Tree Protection Fencing – TPF

2. Phasing of operations & site supervision

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

Phase		Operation	Present	Notes
Preliminary	1	Tree removals & surgery	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	Pre-start meeting	ACD, site manager, groundwork, foreman, demolition foreman	To 'sign-off' protection prior to any plant activity, demolition & groundworks on site
Construction phase	4	Removal of protection barriers and landscape work	ACD, landscape contractor, site manager	See section 9 of method statement

- 2.2. The above phasing must not be changed without approval from the project arboriculturist and agreement with the Council.
- 2.3. Arboricultural supervision is to be carried out at all crucial stages throughout the development construction phase to ensure detailed tasks are carried out as per the approved methodology.
- 2.4. 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.
- 2.5. Supervision is also required should any unplanned access and/or work be required in the construction exclusion zone.

3. Site storage, parking and welfare facilities

- 3.1. The site will require provision for; site storage, contractor parking, welfare facilities, temporary services/drainage, material drop off points, etc.
- 3.2. No details of these provisions are available at the time of writing of this report.
- 3.3. None of the above provisions will be sited within RPAs of retained trees without the input of the project arboriculturist and the consent of the local planning authority.

4. Tree surgery works and tree removals

- 4.1. Tree surgery works are not anticipated at time of report writing. However, should tree surgery works become necessary they should be submitted to and approved by Havant District Council before being implemented.
- 4.2. All work will be carried out in accordance with BS3998¹ industry best practice and in line with any works already agreed with the council.
- 4.3. 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.
- 4.4. The statutory protection Wildlife and Countryside Act (1981)² and Countryside and Rights of Way Act (2000)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
- 4.5. 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.
- 4.6. 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.

5. Tree protection areas

- 5.1. Based on tree survey data, tree protection areas have been determined for every retained tree. These areas are designed to protect at least a functional minimum of tree root mass in order to ensure that the trees survive the construction process.
- 5.2. It is the responsibility of everyone engaged in the consented construction process to respect the implemented tree protection measures and observe the necessary precautions within and adjacent to them.
- 5.3. Inside the exclusion area of the fencing, 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
- 5.4. 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.

6. Tree protection fencing

6.1. The Tree Protection Plan (see the latest revision of: BELL21747-03) shows the alignment of Tree Protection Fencing (TPF), which is to be installed prior to any of the following taking place:

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

6.2. Stages for installation of TPF:

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

6.3. Once erected, all TPF 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.

6.4. Barriers should be fit for purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around any trees identified for retention. Barriers should be maintained to ensure that they remain rigid and complete throughout the duration of the demolition/construction phase.

6.5. The typical TPF 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 scaffold uprights driven firmly into the ground. A detailed specification can be found on the TPP.

6.6. Should an alternative method of barrier construction be proposed, consultation with the project arboriculturist will be obtained to clarify the efficacy of the revised design prior to informing the local planning authority and obtaining their consent.

6.7. Once the exclusion zone has been protected by barriers and/or ground protection, construction work can commence.

6.8. All weather notices should be erected on the barriers.

7. Installation of underground services

- 7.1. Mechanical trenching for the installation of underground apparatus and drainage sewers 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 routing 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.
- 7.2. Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routing 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 the case, the following methodology must be followed.

- 7.3. Stages for installing services 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) If roots over 10mm diameter are encountered they will be retained, and kept damp by covering with hessian (re-wetted as required)
 - 6) Feed in services
 - 7) Back fill trench with 200-300mm depth of excavated soil, or a mixture of excavated and imported top-soil (to BS3882:1984), firming down with heels
 - 8) Repeat step 7 until trench is filled.
 - 9) Re-erect tree protection fencing as per approved plan
- 7.4. The method of excavation above, for trenching within RPA's, is using an 'air-pick' or similar. 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-pick services if required.
- 7.5. Alternatively trenchless technology, such as thrust boring can be used in some instances and is particularly effective as it can pass directly beneath the tree, at a depth which is likely to avoid impact to 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.
- 7.6. Reference can be made to National Joint Utilities Group publication Volume 4 (NJUG Vol4) for guidance, but any approach must be approved by the project arboriculturist and brought to the attention of the local authority tree officer.

8. 'No-dig' footpath construction

8.1. To ensure that tree roots, within the ground under this proposed surface, continue to survive during and after construction a cellular system such a CellWeb (Geosynthetics Ltd, 01455 617139, www.geosyn.co.uk) of 200mm depth is to be used⁴.

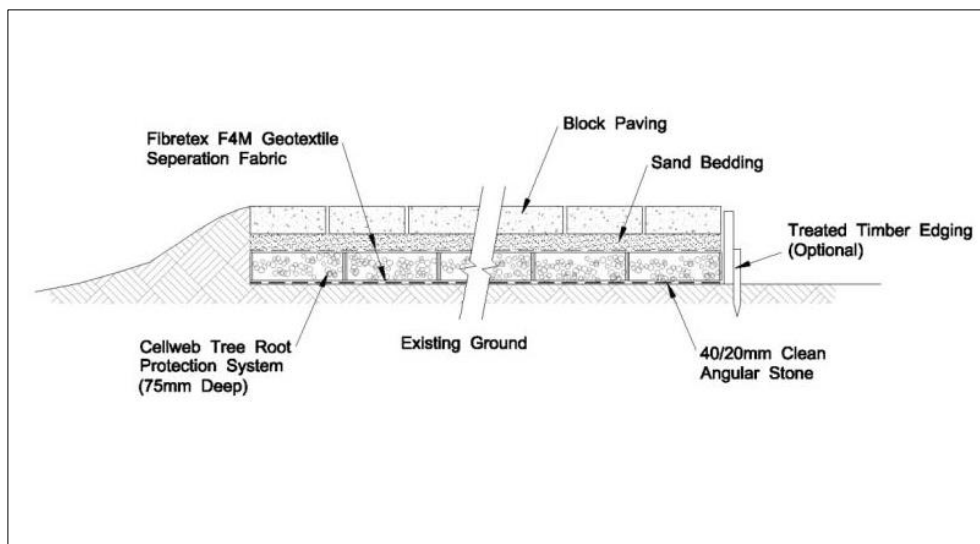


Figure 1 Indicative section of 'no-dig' footpath construction

8.2. Stages for Installation of the cellular confinement surface:

- 1) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work
- 2) Dismantle TPF and re-erect in secondary location.
- 3) Remove existing vegetation by using a specific herbicide (as advised by a specialist) or manual removal with hand tools only. Agreed removal of shrubs, saplings or trees, within the protected areas of retained trees 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) Retain all original ground levels after vegetation removal. No excavation whatsoever.
- 5) Install a non-woven Geotextile (such as Fibretex F4M) directly over soil grade level (levelled where necessary, by non-compacted washed sand) and fix in place.
- 6) Lay the cellular system over the Geotextile, which is secured open under tension during the infill process with steel staples or wooden pegs.
- 7) Install kerbs and edgings directly on top of existing soil grade level. For light structures, a treated peg and board may be acceptable. For more substantial structures, railway sleepers, haunched concrete with road pins, drilled kerbstones, gabions or cast in situ kerbs will be appropriate.
- 8) Fill the cellular system ensuring any plant machinery stands only on already filled areas. Typical infill consists of no fines angular granular material 20-40mm, which will remain un-compacted.
- 9) Install porous wearing surface.

⁴This approach describes installation of a typical no-dig surface. The author of this report is not an engineer and therefore detailed engineering design and analysis must be carried out before installation.

- Small Block Paving
 - Lay a second layer of Geotextile separation fabric over the infill.
 - Lay a sharp sand-bedding layer to recommended depth.
 - Place block paviors as per manufacturer's instructions.
- Washed Gravel
 - Place second layer of Geotextile separation fabric over the filled cellular confinement system.
 - Place pea shingle/ gravel to required depth.
- Porous Asphalt

8.3. Any variation to the above specification must meet the following design criteria for low-invasive surfaces to provide the conditions for continued tree survival and growth:

- Maintain oxygen diffusion through new surface to rooting area (5-12% by volume⁵)
- Maintain sufficient passage of water to the rooting area (12-40% by volume⁶)
- Maintain existing ground levels to avoid root damage (severance and/or asphyxiation)
- Avoid compaction by maintaining a soil structure sufficient to sustain root growth (soil bulk density below 1.4g/cc⁷)

8.4. Site analysis of the soil type and its structural characteristics will be required prior to determining the specific depth of products to be adopted, for example: footpaths normally require a depth of 100mm and, 150mm to 200mm depths are used for residential driveways, while greater depths may be required for the passage of heavier traffic such as for construction access and delivery vehicles.

8.5. If ground levels are to be raised more than 150mm this should be achieved by the use of a granular material, which does not inhibit vertical gaseous diffusion. For example: no-fines gravel, washed aggregate, structural soil (min. 20% sand content) or cobbles.

8.6. Ideally, the surface should be installed between May and October when the ground is driest and least prone to compaction. The approved wearing course is to be laid over the cellular confinement system. Where it is in excess of 20% of the RPA or is wider than 3m within the RPA, the new surface should be constructed in a manner to permit infiltration of moisture and gaseous diffusion (pervious). Where the wearing course is in excess of 20% of the RPA or wider than 3m, a specially engineered surface will need to be designed to meet the above criteria.

⁵ Tree Roots in the Built Environment 2006, Roberts Jackson Smith HSO

⁶ Tree Root Growth Requirements, Dr Kim. D. Coder, University of Georgia. July 2000

⁷ Arboriculture, Tree Management of Shade Trees and Vines 2004, Harris, Clarke, Matheny

9. Soft landscaping

- 9.1. All landscaping and associated ground preparation within exclusion zones will be carried out sensitively to ensure root damage is mitigated as much as is practicable. At no time is any heavy plant to be used within any protected area. Removal of existing vegetation will be carried out by hand, turf may be removed using a mechanical turf stripper or by hand.

Turfing

- 9.2. Stages for turfing gardens and open spaces:

No plant machinery⁸ to be used in the area for whatever reason

- 1) Remove TPF to allow access to area.
- 2) Do not reduce any high spots or excavate in any way.
- 3) Existing poor quality turf may be removed with a turf stripper.
- 4) Use good quality top-soil 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.
- 5) Import turves by hand in wheelbarrow
- 6) Lay turf sections

Planting

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

- 9.4. Stages for planting within tree protection areas:

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

- 1) Remove TPF to allow access to area.
- 2) Remove existing vegetation by hand, turf may be removed using a mechanical turf stripper.
- 3) Do not reduce any high spots or excavate in any way.
- 4) Import good quality top-soil by hand (with wheelbarrow) into area.
- 5) Level to a depth of no more than 100mm with hand tools
- 6) Dig individual planting pits for each plant by hand (including hedging which must not be trench planted)
- 7) Any mulch should also be imported and spread by hand.

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

⁸ Including rotovators

10. Remediation for planting areas

- 10.1. Given the historic land use the ground is suitable for planting. Dependant on the work schedule if areas identified for planting are subject to construction plant traffic/storage, the following methodology should be carried out to ensure suitable planting areas.
- 10.2. Planting areas to be clearly defined prior to remedial works.
- 10.3. Area to be assessed for compaction and other damage.
- 10.4. Trial pit to be excavated to assess current soil quality.
- 10.5. If current soil quality is acceptable but compacted, then decompaction methods are to be employed. For example rotovate to a depth equal to planting depth or tilling of soil with air excavation tool.
- 10.6. With poor quality soil in planting area, whole scale replacement of planting area soil is to be implemented. Provide as necessary to make up any removed topsoil and to complete the work. Soil grade should be Premium as advised by BS3882 and compacted under foot.

11. Excavation within RPAs

11.1. Stages for excavation within RPAs:

- 1) Contact project arboriculturist to hold pre-start site meeting, 'toolbox' talk and supervise the operation.
- 2) Remove TPF to allow access to area (if required).
- 3) Identify sensitive area for excavation.
- 4) Remove hard surface if necessary (see relevant section of this report).
- 5) Excavate with no-tines bucket, or by hand, under close supervision.
- 6) If roots are found, manually clear around them.
- 7) If roots are greater than 25mm diameter then cover with damp hessian and keep moist until backfilled. If excavation requires all roots to be severed then proceed as below.
- 8) Cleanly sever roots with bypass secateurs, loppers or pull cut saw at right angles to root. Avoid tearing or ripping the root.
- 9) Backfill as soon as possible to cover cut root ends.

- 11.2. If, for whatever reason, the project arboriculturist feels that a tree's stability has been compromised during the operation, then the LPA shall be contacted and the arboricultural officer (or appropriate landscape officer) notified. A decision can then be made as to the best way forward.

12. Installation of boundary fencing within protected areas

12.1. 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 post holes 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.
- 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 polythene bag.
- 6) Insert post and fill post hole with concrete to ground level.
- 7) Trim polythene to ground level

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02 May 2018

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