



# LAND AT CARPENDERS PARK FARM

## ARBORICULTURAL IMPACT ASSESSMENT & METHOD STATEMENT

for

### BURLINGTON PROPERTY GROUP

<b>Written By:</b>	A Bigg
<b>Checked By:</b>	A Bigg
<b>Date:</b>	07/03/2025
<b>Revision:</b>	
<b>Ref:</b>	PRI24711aia_ams

## **TABLE OF CONTENTS**

<b>1.</b>	<b>Executive Summary</b>	<b>3</b>
<b>2.</b>	<b>Introduction</b>	<b>4</b>
<b>3.</b>	<b>Arboricultural Impact Assessment</b>	<b>5</b>
3.7.	Evaluation of impact of Proposed Tree Losses	5
3.8.	Trees to be Pruned	6
3.9.	Protection for Retained Trees	6
3.10.	Ground Protection for Retained Trees	6
3.11.	Permanent New Hard Surfaces within RPAs	6
3.12.	Construction within RPAs	7
3.13.	Shade and future pressure to prune	7
3.14.	Services	7
3.15.	Levels and Landscaping	7
3.16.	Boundaries	7
3.17.	Supervision & monitoring	7
<b>4.</b>	<b>Arboricultural Method Statement</b>	<b>8</b>
4.1.	Phasing of operations for tree protection	8
4.2.	Site supervision	8
4.3.	Restrictions within tree protection areas	9
4.4.	Avoiding damage to stems and branches	9
4.5.	Tree protection fencing	10
4.6.	Site storage, parking, welfare facilities	10
4.7.	Ground Protection Solution	11
4.8.	Tree Removals and Tree Surgery Works	12
4.9.	Soft landscaping within RPA	13
4.10.	Installation of underground services within RPAs	14
4.11.	Installation of 'No-dig' Surface Solution	15
4.12.	'No-dig' Footpath Construction	17
4.13.	Installation of boundary fencing within protected areas	17
	<b>Appendix 1: Tree Protection Plan</b>	<b>19</b>

## 1. Executive Summary

- 1.1. This Arboricultural Report is intended to evaluate the direct and indirect effects of the proposed design on the trees on site, and where necessary recommends mitigation. It contains both an Arboricultural Impact Assessment and Arboricultural Method Statement elements. For the Arboricultural Method Statement see section 4.
- 1.2. The proposed development is an Outline application for the erection of up to 257 homes (market, affordable and self/custom build housing), housing with care and a children's home, with vehicular access onto Oxhey Lane (Appearance, Layout, Landscaping and Scale as reserved matters).
- 1.3. The development proposals are drafted in accordance with BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. Adequate protection can be provided to ensure all retained trees are protected throughout development in the form of barriers and/or ground protection.
- 1.4. No individual trees are identified for removal to implement the design proposals. Removals are limited to the selective removal of the extensive network of Blackthorn clumps. The capacity to accurately record Blackthorn stems necessitates a Topographical boundary depicting the edge of the vegetation. The removal of Blackthorn will be calculated utilising coordinates of approved construction footprint. An estimate of retained Blackthorn clumps is shown on the Tree Protection Plan.
- 1.5. Two large dead standing wood/monoliths are to be removed, it is reasoned they are unsuitable for retention within an urban environment. Attempts to retain some standing monolith maybe appropriate if correctly incorporated into the design proposals whilst considering Health and Safety accountability.
- 1.6. A single section of proposed permanent new hard surfacing encroaches into the RPAs of trees highlighted for retention, a sensitive 'no-dig' surface solution will be utilised to ensure minimal impact to the underlying rooting environment.
- 1.7. The relationship between the buildings and retained trees is sustainable and does not result in any situations which may result in unreasonable pressure to prune requests from future occupants.
- 1.8. The Arboricultural Method Statement (AMS) has been compiled in conjunction with the Tree Protection Plan (TPP) for the purpose of feasibility and planning, as per Figure 1 of BS5837:2012. These detail any mitigation which will be necessary to ensure the protection of retained trees throughout the development.

## 2. Introduction

- 2.1. ACD Environmental was instructed in January 2025 to prepare the following Arboricultural Impact Assessment and Method Statement by Burlington Property Group. Reference should be made to the appended Tree Protection Plan (PRI24711-03).
- 2.2. 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. Implementation of the protection methods and other details within this report are integral to ensuring protection for the retained trees.
- 2.3. 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: PRI24711-03), which should be displayed prominently on site for all staff to see.
- 2.4. To ensure accuracy and avoid future costly adjustments, the Tree Protection Fence must be set out by a surveyor/engineer 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.
- 2.5. This report is based on the recommendations given in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- 2.6. An online search of Three Rivers District Council's Protected Tree Portal GIS mapping on 5th November 2024 recalled; there are no Tree Preservation Orders in force at the site and it is not within a Conservation Area
- 2.7. The controlling authority is Three Rivers District Council who can be contacted at:  
Three Rivers House, Northway, Rickmansworth, Hertfordshire, WD3 1RL, Tel: 01923 776611.
- 2.8. Any questions relating to the content of this report should be directed in the first instance to: ACD Environmental, Unit 7, Godalming Business Centre, Woolsack Way, Godalming, GU7 1XW, 01483 425714, quoting the site address and report reference number.
- 2.9. 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.

### **3. Arboricultural Impact Assessment**

- 3.1. The proposed development is an Outline application for the erection of up to 257 homes (market, affordable and self/custom build housing), housing with care and a children's home, with vehicular access onto Oxhey Lane (Appearance, Layout, Landscaping and Scale as reserved matters).
- 3.2. This impact assessment is intended to evaluate the direct and indirect impacts on the trees on the site in relation to the proposed development. Any potential tree impacts are identified as per BS5837:2012 section 5.4, and details are given of proposed mitigation.
- 3.3. Any potentially damaging activities proposed in the vicinity of retained trees are identified, such that mitigation to significantly reduce or avoid this impact can be detailed in the Arboricultural Method Statement and Tree Protection Plan as recommended in BS5837:2012 section 5.4.2.
- 3.4. The development proposals are in accordance with BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. Adequate protection can be provided to ensure all retained trees are protected throughout the development.
- 3.5. The tree survey for the site is at Appendix 2 of the Tree Report for the site ACD reference PRI24711ts.
- 3.6. This assessment is based upon the supplied Pegasus Group layout drawing reference P24-2204\_DE\_A\_003 Illustrative Masterplan, dated March 2025.
- 3.7. **Evaluation of impact of Proposed Tree Losses**
  - 3.7.1. No trees are to be removed to implement the design proposals. The only vegetation to be removed is limited to selective removal of Blackthorn clumps across the site. A section of boundary mixed prunus species hedgerow is to be removed where the existing public access footway is found opposite the junction of Carpenders Avenue and Oxhey Lane.
  - 3.7.2. **Blackthorn clumps** ~ the site has an extensive network of Blackthorn group clumps. These are recorded on the topographical site survey as canopy edge only. A indicative red dashed line has been shown for the various areas where removal will be required. A detailed representation will not be possible given the density of stems typical of Blackthorn groups. It is reasoned that the construction footprint of any approved built form can be marked out onsite by coordinates, with removals being limited to that needed to implement construction works.
  - 3.7.3. In terms of the effects of the tree loss required to implement the design, the vegetation to be removed are all located well within the interior of the site, and therefore will not have any significant adverse impact on the surrounding area. Any impact and loss of amenity which may be felt locally will only be short term.
  - 3.7.4. The section of boundary hedgerow to be removed is sited at the most suitable point on the western boundary given both the site topography and the limitations of the Highways Authority.

### **3.8. Trees to be Pruned**

- 3.8.1. No pruning works are required to implement the development, and tree surgery works are not anticipated (excluding tree removals). Should any become necessary it should comply with BS3998:2010 Tree Work or more recently accepted arboricultural good practice and be approved by Three Rivers District Council prior to any commencement.

### **3.9. Protection for Retained Trees**

- 3.9.1. BS5837:2012 section 6.2.1. states: 'All trees that are being retained on site should be protected by barriers and/or ground protection (see 5.5) 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 should be erected to create a construction exclusion zone.
- 3.9.2. A specification for protective fencing is given on the Tree Protection Plan. This consists of interlocking weld-mesh panels (e.g., Heras) well braced by attachment to scaffold pole uprights driven firmly into the ground. Should any alternative method of barrier construction be proposed the design should be approved by the local planning authority.'

### **3.10. Ground Protection for Retained Trees**

- 3.10.1. A 1.5m off-set has been allowed for scaffold installation/working room between the construction footprint of proposed built form and English oak trees nos. T23 to T27. To avoid potential impact to the underlying rooting environment a suspended boardwalk will be incorporated into the scaffold installation as specified on the Tree Protection Plan (BS5837:2012 section 6.2.3).

### **3.11. Permanent New Hard Surfaces within RPAs**

- 3.11.1. The construction footprint for a section of internal roadway infrastructure is sited within the RPAs of English Oak trees nos. T25 and T26. The encroachments are marginal being less than 1% of both RPAs. To minimise the potential impact to the underlying rooting environment a sensitive 'no-dig' surface solution is proposed.
- 3.11.2. The roadway has been designed to be equidistant between both RPAs to ensure minimal impact. It is reasoned that using a 'no-dig' surface solution for the installation of the new permanent hard surface is unlikely to be to the detriment of the adjacent trees.
- 3.11.3. As per the recommendation of BS5837:2012 section 7.4.2.3, the new permanent hard surfacing does not exceed 20% of existing unsurfaced ground within the RPA.
- 3.11.4. The adjacent English oak trees must first be protected during all stages of the development including demolition, by the erection of fencing as specified on the Tree Protection Plan (TPP). Installing the surface will require the re-positioning of the tree protection fencing to a secondary location in line with the new hard surface edge.
- 3.11.5. A perimeter pedestrian footpath is shown on the Tree Protection Plan. This is considered indicative and will be realigned during detailed design work to avoid the RPAs of trees identified for retention. Where this is not viable it will be constructed using a 'no-dig' surface solution.

3.11.6. The Arboricultural Method Statement describes installation of a typical no-dig surface. This follows the recommendations set out in Section 7.4 of British Standard 5837:2012. The author of this report is not an engineer and therefore detailed engineering design, and analysis must be carried out by a suitably qualified engineer. However, any design must be approved for use by the project arboriculturist.

### 3.12. **Construction Footprint within RPAs**

3.12.1. The construction footprint of all proposed built form has been sited outside the constraints afforded to trees identified for retention.

### 3.13. **Shade and future pressure to prune**

3.13.1. The site layout has been assessed in terms of shading and future pressure to prune. Given the orientation of the site, and the relationship between the proposed buildings and the retained trees, the juxtaposition is viable for long-term tree retention, and it is considered that shading by trees is unlikely to be a concern to future residents. As a result, it is considered unlikely that there would be any undue pressure to remove trees, or excessively prune from any future occupants.

### 3.14. **Services**

3.14.1. It is fundamental to tree protection that infrastructure design is sensitively approached, as trenching close to trees may damage roots and affect tree health and stability. Details of services have not been provided at the time of writing. The Tree Protection Plan, showing the constraints posed by retained trees will be passed to the infrastructure engineers to inform their design, ensuring that all services avoid areas of potential conflict.

3.14.2. As per BS5837:2012 Figure 1, once further details become available as part of the detailed/technical design for the site, the TPP and AMS will be revised to incorporate these details for services for inclusion in the Tender documentation.

### 3.15. **Levels and Landscaping**

3.15.1. Full details of any changes in ground levels on site remain to be finalised. Any alterations to levels close to trees may damage roots and affect tree health and stability. Unless no-dig methodology is proposed for installation of surfaces within RPAs the original levels in these areas must be noted, retained, and integrated into the engineering design of the site. Landscaping operations within the RPAs of retained trees must be carried out in a sensitive manner and be subject to a detailed method statement and arboricultural supervision.

### 3.16. **Boundaries**

3.16.1. All plot boundaries will need to be designed, positioned and installed to avoid damage to retained trees. When within RPAs, this will include hand excavation of all post holes, and the lining of any post holes with a non-porous membrane to stop leachates from the concrete damaging tree roots.

### 3.17. **Supervision & monitoring**

3.17.1. The development process should be subject to arboricultural supervision and monitoring, especially areas where incursion into the RPA of retained trees requires the use of bespoke protective measures; 'no-dig' surface solution and 'ground protection system'.

#### 4. Arboricultural Method Statement

##### **TO BE READ IN CONJUNCTION WITH THE APPENDED TREE PROTECTION PLAN REFERENCE: PRI24711-03**

#### 4.1. Phasing of operations for tree protection

4.1.1. Implementation of tree protection measures on the site must be carried out in the following order:

- 1) Tree removals and tree surgery.
- 2) Line of tree protection fence to be set out to node points by surveyor.
- 3) Accurate erection of tree protection fence and ground protection.
- 4) **Pre-commencement site meeting with project arboriculturist, Local Authority Tree Officer, site manager and groundworkers.**
- 5) Site accessible to construction traffic for site clearance.
- 6) Construction phase.
- 7) Removal of tree protection fencing.
- 8) Remedial tree surgery (if required).

4.1.2. The above phasing must not be changed without approval from the project arboriculturist and agreement with the Council.

#### 4.2. Site supervision

4.2.1. The development process will be subject to arboricultural supervision where construction work inside the construction exclusion zone is required, and for the installation of any special detail (e.g., 'no-dig' surface solution and ground protection). Therefore, input and supervision from the project arboriculturist will be required at the following stages:

- 1) Tree removals and access facilitation pruning.
- 2) Accurate erection of tree protection measures.
- 3) Site meeting with project arboriculturist, Local Authority Tree Officer, site manager and groundworkers.
- 4) Site accessible to construction traffic.

4.2.2. Arboricultural supervision is to be carried out at all crucial stages throughout the development process to ensure detailed tasks are carried out as per the approved methodology, and during any other, unplanned incursions into protection areas, for whatever reason.

4.2.3. This supervision will require the arboriculturist to be present throughout the task, to ensure all the arboricultural objectives are met.

4.2.4. 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.

#### 4.3. **Restrictions within tree protection areas**

4.3.1. 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.

4.3.2. 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.

#### 4.4. **Avoiding damage to stems and branches**

4.4.1. Care shall be taken when planning site operations in proximity of retained trees to ensure that wide or tall loads, or plant with booms, jibs and counterweights, can operate without coming into contact with retained trees. Such contact can result in serious injury to them and might make their safe retention impossible.

4.4.2. Consequently, any transit or traverse of plant in proximity of trees shall be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is at all times maintained. In some circumstances, it may be impossible to achieve this without pruning works known as 'access facilitation pruning'.

4.4.3. Access facilitation pruning shall be kept to the barest minimum necessary to facilitate development and shall be carried out in strict accordance with the guidance below (Tree Surgery). Under no circumstances shall construction personnel undertake any tree pruning operations.

#### 4.5. **Tree protection fencing**

4.5.1. The Tree Protection Plan (see the latest revision of: PRI24711-03) shows the alignment of Tree Protection Fencing (TPF), which is to be installed prior to any of the following taking place:

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

4.5.2. 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 accessible to demolition/construction traffic.

4.5.3. To ensure accuracy and avoid future costly adjustments, the Tree Protection Fence must be set out by a surveyor with all node points being marked clearly on site for the fencing contractor to work to.

4.5.4. 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.

4.5.5. 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 a scaffold framework that is set firmly into the ground. A detailed specification can be found on the TPP.

4.5.6. Should any 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.

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

#### 4.6. **Site storage, parking, welfare facilities**

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

4.6.2. No details of these provisions are available at the time of writing of this report.

4.6.3. The above provisions will not be sited within RPAs of retained trees without the input of the project arboriculturist and the consent of Three Rivers District Council.

#### 4.7. Ground Protection Solution

4.7.1. The specification for Ground Protection is shown on the Tree Protection Plan. It requires a suspended boardwalk be incorporated into the scaffold installation. Any alternative specification to be installed must be capable of supporting the expected loads and avoiding impact to the underlying rooting environment.

4.7.2. As advised in BS5837:2012 section 6.2.3:

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. The ground protection might comprise one of the following:

a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g., 100 mm depth of woodchip), laid onto a geotextile membrane:

b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g., 150 mm 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 systems 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.

4.7.3. Alternative methodology if not incorporated within scaffold installation<sup>1</sup>:

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

- 1) Discuss procedure with project arboriculturist.
- 2) 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.
- 3) Lay woven geotextile over existing ground surface by hand.
- 4) Cover the area with compressible layer, woodchip for example, using hand tools only.
- 5) Cover compressible layer with side butting scaffold boards or plywood boards.
- 6) Confirm surface is acceptable for use with project arboriculturist.
- 7) Area ready for construction access.

4.7.4. To ensure accuracy and avoid future costly adjustments, the 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.

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

---

<sup>1</sup>For protection from foot traffic only

#### **4.8. Tree Removals and Tree Surgery Works**

- 4.8.1. The Blackthorn vegetation to be removed is shown on the TPP with a red dashed canopy edge.
- 4.8.2. Tree surgery works are not anticipated at the time of report writing. Should works be required moving forward with the project, a BS3998 compliant schedule of surgery works will be submitted to and approved by Three Rivers District Council before being implemented.
- 4.8.3. All work will be carried out in accordance with BS 3998:2010 Recommendations for Tree Work, industry best practice and in line with any works already agreed with the Council.
- 4.8.4. The tree surgery contractor is responsible for carrying out any relevant health and safety risk assessment, and insurance, prior to any work being carried out.
- 4.8.5. The statutory protection afforded by the Wildlife and Countryside Act and Countryside and Rights of Way Act 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.
- 4.8.6. 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.
- 4.8.7. 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.

#### 4.9. Soft landscaping within RPA

- 4.9.1. 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**

- 4.9.2. Stages for turfing gardens and open spaces:

No plant machinery<sup>2</sup> 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 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.
- 5) Import turves by hand in wheelbarrow.
- 6) Lay turves.

##### **Planting**

- 4.9.3. 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.
- 4.9.4. 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 topsoil 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.
- 4.9.5. No works will be carried out within any protected areas if the soil moisture is of a level likely to allow compaction to occur.

---

<sup>2</sup> Including rotovators

#### 4.10. Installation of underground services within RPAs

4.10.1. If for whatever reason installation within RPAs is required, the project arboriculturist and local authority must be notified prior to any tree protection barrier removal and the following details adhered to.

4.10.2. 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) Excavate the trench using hand tools only, keeping to minimum dimensions required.
- 5) Roots below 25mm should preferably be retained, however if required can be cut cleanly using secateurs or hand saw.
- 6) Roots over 25mm diameter will be retained and kept damp by covering with hessian (re-wetted as required).
- 7) Feed in services.
- 8) Back fill trench with 200-300mm depth of excavated soil, or a mixture of excavated and imported top-soil (to BS3882:2015), firming down with heels.
- 9) Repeat step 7 until trench is filled.
- 10) Re-erect tree protection fencing as per approved plan.

4.10.3. An alternative to the method of excavation above, for trenching within RPA's, is by using an 'air-spade' 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-spade services if required.

4.10.4. 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.

4.10.5. Reference can be made to National Joint Utilities Group Publication Volume 4 (NJUG Vol 4) for guidance, but any approach must be approved by the project arboriculturist.

#### 4.11. Installation of 'No-dig' Surface Solution

4.11.1. To ensure that tree roots, within the ground under this proposed surface, continue to survive during and after construction a cellular system such as CellWeb (Geosynthetics Ltd, 01455 617139, [www.geosyn.co.uk](http://www.geosyn.co.uk)) of 150mm depth is to be used<sup>3</sup>.

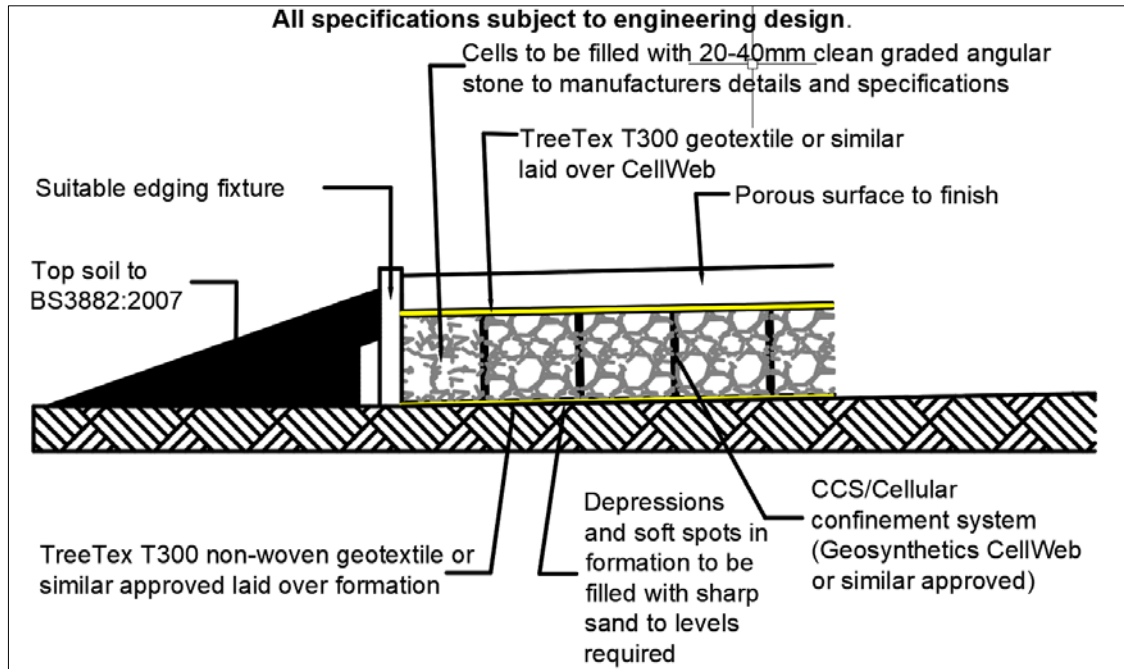


Figure 1: Cellular system profile

4.11.2. 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 aligned to new hard surface edge.
- 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.

<sup>3</sup>This 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.

- 8) Fill the cellular system ensuring any machinery works 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.
  - 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.

4.11.3. 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 volume<sup>4</sup>).
- Maintain sufficient passage of water to the rooting area (12-40% by volume<sup>5</sup>).
- 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/cc<sup>6</sup>).

4.11.4. 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.

4.11.5. 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.

4.11.6. 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 System. Where it covers 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.

---

<sup>4</sup> Tree Roots in the Built Environment 2006, Roberts Jackson Smith HSO

<sup>5</sup> Tree Root Growth Requirements, Dr Kim. D. Coder, University of Georgia. July 2000

<sup>6</sup> Arboriculture, Tree Management of Shade Trees and Vines 2004, Harris, Clarke, Matheny

#### 4.12. 'No-dig' Footpath Construction

4.12.1. The perimeter pedestrian footpath follows an indicative route. Detailed design work will realign to outside the RPAs of trees identified for retention. Where realignment is not viable a 'no-dig' surface solution will be utilised.

4.12.2. To ensure that tree roots, within the ground under this proposed surface, continue to survive during and after construction a cellular system such as CellWeb (Geosynthetics Ltd, 01455 617139, [www.geosyn.co.uk](http://www.geosyn.co.uk)) of 75mm depth is to be used<sup>7</sup>.

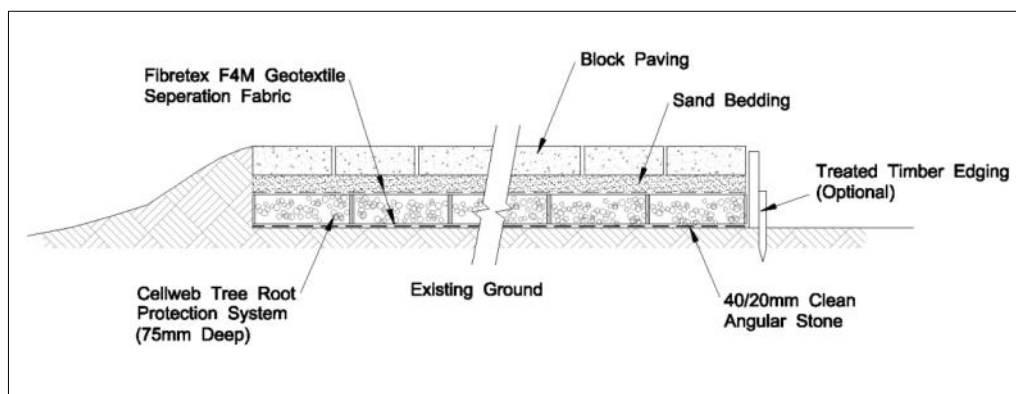


Figure 2 Cellular system profile

4.12.3. 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) 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.
- 3) Retain all original ground levels after vegetation removal. No excavation whatsoever.
- 4) 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.
- 5) Lay the cellular system over the Geotextile, which is secured open under tension during the infill process with steel staples or wooden pegs.
- 6) 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.
- 7) 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.
- 8) Install porous wearing surface.

#### 4.13. Installation of boundary fencing within protected areas

4.13.1. Stages for installing wooden fence posts:

<sup>7</sup>This 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.

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.

Andrew Bigg *CertArb (RFS)*

Head of Arboriculture

07 March 2025

**LIMITATIONS OF USE AND COPYRIGHT**

This assessment has been prepared for Burlington Property Group. All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature, without our written permission. Its content and format are for the exclusive use of the addressee in dealing with Carpenders Park Farm. Until all invoices rendered by the Consultant to the Client have been paid in full, the copyright of any documents, forms, statements, maps, plans and other such material will remain vested in ACD Environmental, and no unauthorised use of such material may be made by the Client or any person purporting to be acting on his/her behalf. It may not be sold, lent, hired out or divulged to any third party not directly involved in this site without the written consent of ACD Environmental ©.

**Appendix 1: Tree Protection Plan**  
(PRI24711-03)

[www.acdenvironmental.co.uk](http://www.acdenvironmental.co.uk)

