

BOORLEY GARDENS
FIELDFARE ROAD
BOTLEY
HANTS
SO32 2BX

ARBORICULTURAL
IMPACT
ASSESSMENT &
METHOD
STATEMENT
(Including Tree
Survey Schedule)

for

HALEBOURNE
CARE GROUP
LTD



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1. Executive Summary

- 1.1. For the Arboricultural Method Statement see section 4.
- 1.2. The site is currently an empty land parcel within the surrounding approved development at Boorley Gardens. The proposed development is the construction of a new Care home building with parking and greenspace.
- 1.3. This impact assessment is intended to evaluate the direct and indirect effects of the proposed design on the trees on site, and where necessary recommends mitigation.
- 1.4. 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 development in the form of barriers and/or ground protection.
- 1.5. All of the trees onsite are to be retained as part of the development proposals.
- 1.6. Where proposed new hard surfaces encroach into the RPA of trees highlighted for retention, sensitive surface construction will be required.
- 1.7. Where construction footprints are shown within the RPA of retained trees a piled foundation design will be required.
- 1.8. Where boundary and rail fencing is proposed within retained RPAs a sensitive excavation methodology will be required.
- 1.9. 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.
- 1.10. 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 September 2023 to prepare the following Arboricultural Impact Assessment and Method Statement by Halebourne Care Group Ltd. A site visit was conducted on 5th October 2023 to collect up-to-date tree survey data.
- 2.2. This report was revised (rev E) in October 2024 to reflect an updated layout.
- 2.3. For tree locations, dimensions and ID numbers, reference should be made to the latest revision of the corresponding Tree Protection Plan (PRI24389-03E). A corresponding survey schedule with the recorded tree survey data can be found at Appendix 1 of this report.
- 2.4. 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.
- 2.5. 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: PRI24389-03E), which should be displayed prominently on site for all staff to see.
- 2.6. 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.
- 2.7. This report is based on the recommendations given in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- 2.8. The controlling authority is Eastleigh Borough Council who can be contacted at:
Address: Eastleigh Borough Council, Eastleigh Borough Council, Eastleigh House, Upper Market Street, Eastleigh, SO50 9YN
Email: Planning@eastleigh.gov.uk
Telephone: 02380688264
- 2.9. Following a search of the "Trees and Conservation Areas" mapping service provided on the Eastleigh Borough Council's website¹ on 27 October 2023, there are no Tree Preservation Orders (TPO's) in effect against any of the trees onsite, nor is the site within a Conservation Area (CA).
- 2.10. 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.
- 2.11. 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.
 - Local Planning Authority – LPA.

¹ <https://emaps.eastleigh.gov.uk/WebMaps/Map.aspx?MapName=Trees&initialDialog=layersDialog>

3. Arboricultural Impact Assessment

- 3.1. The site is currently an empty land parcel within the surrounding approved development at Boorley Gardens. The proposed development is the construction of a new Care home building with parking and greenspace.
- 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 schedule for the site is at Appendix 2 of this report.
- 3.6. This assessment is based upon the supplied layout drawing by ADG Architects, drawing reference: H2161- ADG- ZZ- XX- DR- A- 9002- Rev_AA.
- 3.7. **Evaluation of impact of proposed tree losses**
 - 3.7.1. No trees are proposed for removal as a result of the development proposals.
- 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. Should any become necessary, they should comply with BS3998:2010 Tree Work or more recently accepted arboricultural good practice and be approved by the LPA and project arboriculturist 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 before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences.'*
 - 3.9.2. Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone. BS5837:2012 figure 2 recommends a default specification for protective barrier. This is a weld mesh panel design, mounted upon a well braced scaffold framework.
 - 3.9.3. A specification for suitable protective fencing is shown 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. This is perfectly adequate for this site where there are to be areas of high intensity development.
 - 3.9.4. Should any alternative method of barrier construction be proposed the design should be approved by the local planning authority.
 - 3.9.5. Where new proposed boundary/rail fencing is proposed along the same alignment of the specified Tree Protection Fencing, the new fencing is to act as adequate tree protection fencing once installed.

- 3.9.6. Where proposed surfacing is to be installed within the RPA of retained trees, these areas must be protected at all times prior to the installation of the surfacing through use of either temporary Ground Protection or temporary Tree Protection Fencing.
- 3.9.7. As per the above, protection for all retained trees has been shown on the Tree Protection Plan.
- 3.9.8. All Tree Protection Fencing and Ground Protection should be erected before any works start on site whatsoever, including the access of all demolition or construction traffic.

3.10. Tree Protection Fencing

- 3.10.1. Tree protection alignment is shown on the corresponding Tree Protection Plan. This has been offset by at least 0.5m from all proposed surfaces and 1.5m from all proposed construction to allow for adequate working room required to implement the development.
- 3.10.2. Once erected, Tree Protection Fencing should be considered sacrosanct and not moved or altered without input from the project arboriculturist and written agreement from the Local Planning Authority.
- 3.10.3. Where tree protection offsets result in exposed areas of soft ground within retained RPAs, these area should be either covered with adequate Ground Protection or additional space provided within the fencing alignment as necessary.

3.11. Ground protection

- 3.11.1. In certain areas, space required to construct buildings and/or surfacing will require encroachment of the fencing alignment into retained RPAs. Potential damage cause by foot traffic and associated works can be mitigated by the use of adequate Ground Protection as specified in BS5837:2012 section 6.2.3. To ensure the ongoing survival of the retained trees, these specifications are detailed in the Arboricultural Method Statement and indicated on the Tree Protection Plan where required.
- 3.11.2. Where new hard surfacing is to be installed within the RPA of retained trees, this may be considered adequate ground protection following its installation (subject to approved technical design). Prior to the final wearing surface being installed all areas of proposed surfacing should be protected through use of adequate Ground Protection laid over the existing ground levels.
- 3.11.3. A specification for adequate ground protection is detailed in the Method Statement below and shown on the corresponding Tree Protection Plan.

3.12. Demolition & Groundworks

- 3.12.1. To ensure damage does not occur to trees highlighted for retention, tree protection fencing must be erected prior to ANY plant machinery entering site whatsoever. No special demolition procedures need be observed on this site, other than respecting the tree protection fencing.

3.13. New Hard Surfaces within RPAs

- 3.13.1. The construction of the proposed vehicular surfacing for parking bays and turning heads onsite encroach within the retained RPA of G14.1. It is confirmed that these sections of surfacing combined constitute <9.8% of the total projected RPA and as such does not exceed the 20% recommended threshold of currently unsurfaced area within the RPA in accordance with the recommendations specified in BS5837:2012.
- 3.13.2. To mitigate any impacts to potential underlying root systems, these surfaces should be constructed over existing ground levels using a Cellular Confinement System (CCS) of between 100mm-200mm depth within the make up of the surfacing profile, which is an adequate depth for vehicular surfaces. All designs should be drawn-up by a suitably qualified engineer.
- 3.13.3. The use of a three-dimensional Cellular Confinement System, such as 'Cellweb' is an acceptable approach. This system maintains the passage of oxygen and water to root systems; avoids root loss through severance or asphyxiation and minimises the potential for soil compaction. It is achieved by laying a Geotextile membrane directly onto unchanged soil levels, with a three-dimensional cellular confinement system ('Cellweb') laid on top filled with no fines granular fill, with a porous finishing surface. See specification on Tree Protection Plan (PRI24389-03E).
- 3.13.4. Areas of soft ground within retained RPAs must be protected during all stages of the development (including demolition) by use of use of temporary Ground Protection or Tree Protection fencing alignment prior to the installation of the final wearing surface. The final wearing surface is to be considered adequate Ground Protection moving forward following installation.
- 3.13.5. 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.
- 3.13.6. The proposed pedestrian surfacing footprints shown on the Tree Protection Plan encroach into the perimeter of trees G14.1 and T19 by <1.16% and <0.37% of the total projected RPAs, respectively. Given these minor encroachments and their locations on the peripheries of the RPAs, it is considered that the ongoing viability of the trees is wholly feasible and as such technical mitigation in the form of no-dig surfacing has not been specified. It is considered that a sensitive excavation methodology would be perfectly acceptable to mitigate these encroachments, however additional space has been provided within the fencing alignments which equate to a larger area than that of the area lost to encroachment.

3.14. Construction within RPAs

3.14.1. BS5837:2012 states at section 5.3.1: *'The default position should be that structures (see 3.10) are located outside the RPAs of trees to be retained. However, where there is an overriding justification for construction within the RPA, technical solutions might be available that prevent damage to the tree(s) (see Clause 7). If operations within the RPA are proposed, the project arboriculturist should:*

a) demonstrate that the tree(s) can remain viable, and that the area lost to encroachment can be compensated for elsewhere, contiguous with its RPA:

b) propose a series of mitigation measures to improve the soil environment that is used by the tree for growth.'

3.14.2. A new bin store is shown within the extent of the retained RPA of tree G14.1. to limit impacts to any underlying roots this structure should be built upon a foundation slab supported off existing ground levels by corner piles. Any foundation approach must be designed by a suitably qualified engineer and approved for use by the project arboriculturist.

3.14.3. Several approaches can be used to achieve the desired results. For small structures such as these, a cast slab base situated on hand dug pads or sheathed mini (or screw) piles will suffice. The remaining structure can then be built above. Allowing for minimal disturbance to the soil beneath and therefore minimal impact on the roots of the adjacent tree (as advised in BS5837:2012 section 7.5).

3.14.4. Alternatively, a timber structure with hand dug support posts and a no-dig surface, such as a cellular confinement system can also achieve the desired results.

3.14.5. The adopted design must be approved for use by the project arboriculturist, detailed in the arboricultural method statement, and installed under their supervision.

3.15. Shade and future pressure to prune

3.15.1. 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.

3.16. Services

3.16.1. 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.

3.16.2. 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. 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.

3.17. Levels and Landscaping

- 3.17.1. 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.
- 3.17.2. 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.

3.18. Boundaries

- 3.18.1. 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.
- 3.18.2. Where perimeter rail fencing is to be built within the RPA of retained trees, a sensitive methodology must be used for their installation as per the Method Statement below. This includes ensuring that the rail sections are situated above existing ground levels and using hand-tools for excavation of the post holes, lining any concrete pouring with a non-permeable membrane to ensure cement does not adversely affect the soil or rooting structures.

3.19. Supervision & monitoring

- 3.19.1. The development process should be subject to arboricultural supervision and monitoring, where incursion into the RPA of retained trees is required. Therefore, a pre-commencement site meeting is advised to ensure tree protection has been installed correctly, and supervision visits made for works within retained RPAs.
- 3.19.2. It is the responsibility of Halebourne Care Group Ltd. to ensure that all works requiring supervision are organised appropriately with an adequately trained arboriculturist to ensure all works are carried out as per the approved sensitive methodologies.

4. Arboricultural Method Statement

**TO BE READ IN CONJUNCTION WITH THE LATEST REVISION OF THE
CORRESPONDING TREE PROTECTION PLAN REFERENCE: PRI24389-03E**

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/demolition traffic.
- 6) Demolition/site clearance.
- 7) Construction.
- 8) Removal of tree protection fencing.
- 9) 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). Therefore, input and supervision from the project arboriculturist will be required at the following stages:

- 1) Site meeting with project arboriculturist, Local Authority Tree Officer, site manager and groundworkers to ensure accurate erection and installation of tree protection measures prior to commencement and identify areas of special detail.
- 2) Surface installation within retained RPAs.
- 3) Excavation within retained RPAs.
- 4) Bespoke foundation installation within RPAs.

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 with the prior conduct and attitude of all involved, after an additional 'tool-box talk' the supervision may be reduced to telephone contact between the site foreman/contractor and arboriculturist with photos provided as requested.

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. Site storage, parking, welfare facilities

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

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

4.5.3. None of the above provisions will be sited within RPAs of retained trees without the input or the project arboriculturist and the consent of the Local Authority.

4.6. **Tree protection fencing**

- 4.6.1. The Tree Protection Plan (see the latest revision of: PRI24389-03E) 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.
- 4.6.2. 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 accessible to demolition/construction traffic.
- 4.6.3. 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.
- 4.6.4. 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.
- 4.6.5. 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 a scaffold framework that is set firmly into the ground. A detailed specification can be found on the TPP.
- 4.6.6. 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.
- 4.6.7. Once the exclusion zone has been protected by barriers and/or ground protection, construction work can commence.
- 4.6.8. All weather notices should be erected on the barriers (for example see figure below).

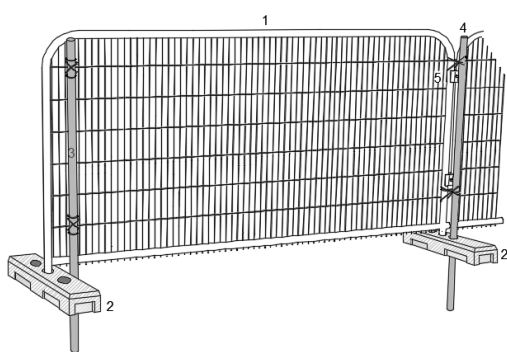


Figure 1: Tree protection sign (download from) <http://www.acdenvironmental.co.uk>

TREE PROTECTION FENCING & EXCLUSION ZONE

All Tree Protection Fence (TPF) shall be installed prior to any plant activity on site whatsoever, including demolition, utility installation, groundworks, and soil stripping. 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.

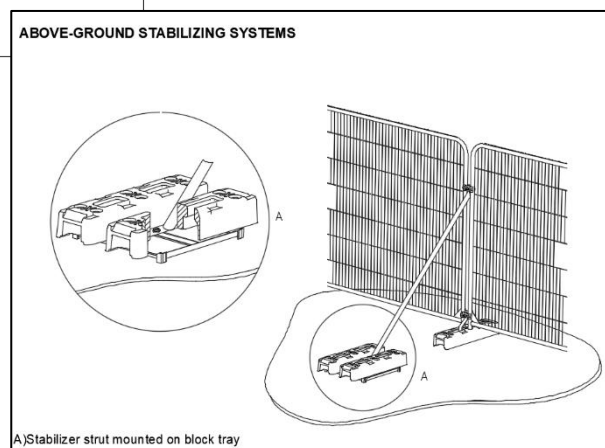
Tree Protection Fence shall comprise of Heras type panels on 'boots', well braced by attachment to scaffold pole uprights driven firmly into the ground. Once the exclusion zone has been protected by barriers and/or ground protection, construction work can commence. All weather notices may be erected on the barriers.



- 1 Weldmesh (e.g Heras) Panels
- 2 Concrete or rubber blocks
- 3 Scaffold pole uprights driven firmly into ground, then secured to panels with wire ties, or;
- 4 Uprights driven firmly into ground through hole in block, then secured to panels with wire ties.
- 5 Panels to be interlinked using clamps

Figure 2: Adequate Tree Protection Fencing specification

Figure 3: Above ground stabilisation method for TPF where bracing cannot be secured into the ground (such as hard surfacing)



4.7. Ground protection

4.7.1. Appropriate ground protection specifications are listed below. Any alternative specification to be installed must be capable of supporting the expected loads and avoiding rutting, compaction and damage to the soil.

4.7.2. As advised in BS5837:2012 section 6.2.3: New or 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. Stages for ground protection installation²:

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

- 1) Discuss procedure with project arboriculturist.
- 2) Dismantle primary TPF and re-erect in secondary location as shown on TPP.
- 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.

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.

²For protection from foot traffic only

4.8. Tree surgery and removal

- 4.8.1. No tree removals or pruning are currently required to implement the development. If any tree surgery works are required in the future during the course of ongoing development, a proposed specification will be submitted to, and approved by the Local Planning Authority before any works are carried out.
- 4.8.2. All tree surgery works 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.
- 4.8.3. 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.
- 4.8.4. 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.
- 4.8.5. 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.

4.10. Turfing

- 4.10.1. Stages for turfing gardens and open spaces:

No plant machinery³ 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.

³ Including rotovators

4.11. **Planting**

4.11.1. 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.

4.11.2. 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.

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

4.12. **Installation of underground services within RPAs**

4.12.1. 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.

4.12.2. 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.

4.12.3. 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.

4.12.4. 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.

4.12.5. 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.

4.13. Sensitive Excavation within RPAs

4.13.1. All areas of required sensitive excavation (including an allowance for working room) are indicated on the corresponding Tree Protection Plan

4.13.2. Stages of 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 to be excavated and mark out with spray or pegs
- 4) Where realistically feasible excavated using hand-tools only with additional use of an air-spade as required.
- 5) For more significant excavations or dense soils, use of a digger with a no-tines bucket may be used under close supervision from the project arboriculturist.
- 6) If roots 25mm $\varnothing$ or over are found during excavation, clear by hand around them, ensuring they are not damaged, and cover with damp material (e.g. hessian) and keep moist until backfilled.
- 7) Roots under 25mm $\varnothing$ may be severed as required to implement the required excavation.
- 8) Significant roots may only be severed following assessment and approval by the project arboriculturist - including a photographic record made of roots prior to pruning to be used for reference if required at a later date.
- 9) Roots severance should proceed as below:
 - i. Cleanly sever roots with bypass secateurs, loppers or pull cut saw at right angles to root.
 - ii. Avoid tearing or ripping the root.
 - iii. Backfill as soon as possible to cover cut root ends.

4.13.3. If for whatever reason, the project arboriculturist feels that a tree's stability has been compromised during the excavation 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.

4.14. No-dig construction

4.14.1. Structure to be installed as per engineers approved specification.

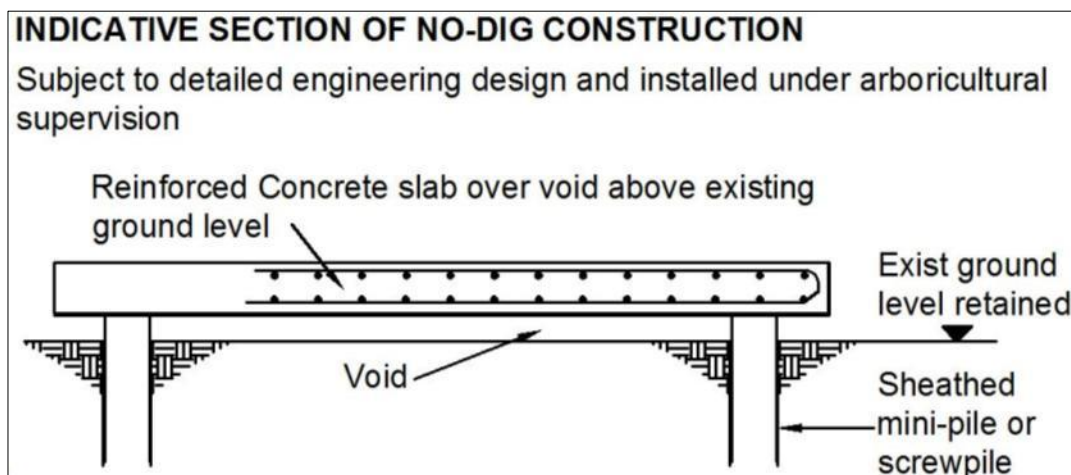


Figure 1: Indicative section of no-dig construction

4.14.2. Stages for construction:

- 1) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work.
- 2) Grass sward to be removed as necessary using hand tools or low ground-pressure plant (e.g., Bobcat or similar)..
- 3) Piles installed using adequate rig with very low ground pressure sited outside of retained RPAs: rig must be approved for use by project arboriculturist.
- 4) Void form material installed.
- 5) Slab base cast onto void form material.
- 6) Void form material removed to create void under slab.
- 7) Remaining construction built on slab with no further excavation.
- 8) TPF to be re-erected in secondary position.

4.14.3. This specification must be designed to meet the following performance criteria:

- Construction will be above current ground (removal of grass sward/leaf litter by hand only).
- It will provide adequate resistance to applied loads, avoiding compaction of the soil.
- Provision will also be made for resistance to or tolerance of deformation by tree roots.
- Allowance will be made for oxygen diffusion according to seasonal demand.
- Water throughput to meet seasonal demand will also be possible (can be achieved by redirection of captured rainwater into hand dug land drains).

4.14.4. Any supports (such as a pile and beam construction may require) will be sited around any significant root masses. Sensitive air excavation prior to design will identify ideal locations.

4.14.5. Such techniques, for example: pile and beam foundations, must be designed to cause minimal impact to the tree's root system. This will include building above the current soil grade and using floating or cantilevered floors within the structure.

4.14.6. No plant machinery can be sited within the RPA. The use of back-acters or diggers to deposit construction materials within the area is acceptable, provided this can be achieved without causing damage to the trees canopy, and only under arboricultural supervision. The exception to this rule is when the use of piling rigs is required. In most cases it will not be possible to site a normal sized rig under the trees canopy and a 'mini rig' will be required. To facilitate use of such a rig within the RPA without causing soil compaction, ground protection must be used. This can be in the form of large metal plates or trackway placed on a substantial compressible layer (for example: woodchips).

4.14.7. Arboricultural supervision will be employed during all work within the RPA.

4.14.8. Contamination of the soil by fuel and lubricant leaks must be avoided at all cost. If such a situation arises the project arboriculturist must be notified to assess the situation and prescribe remedial measures.

4.15. Installation of no-dig road surface

4.15.1. 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 150mm depth is to be used⁴.

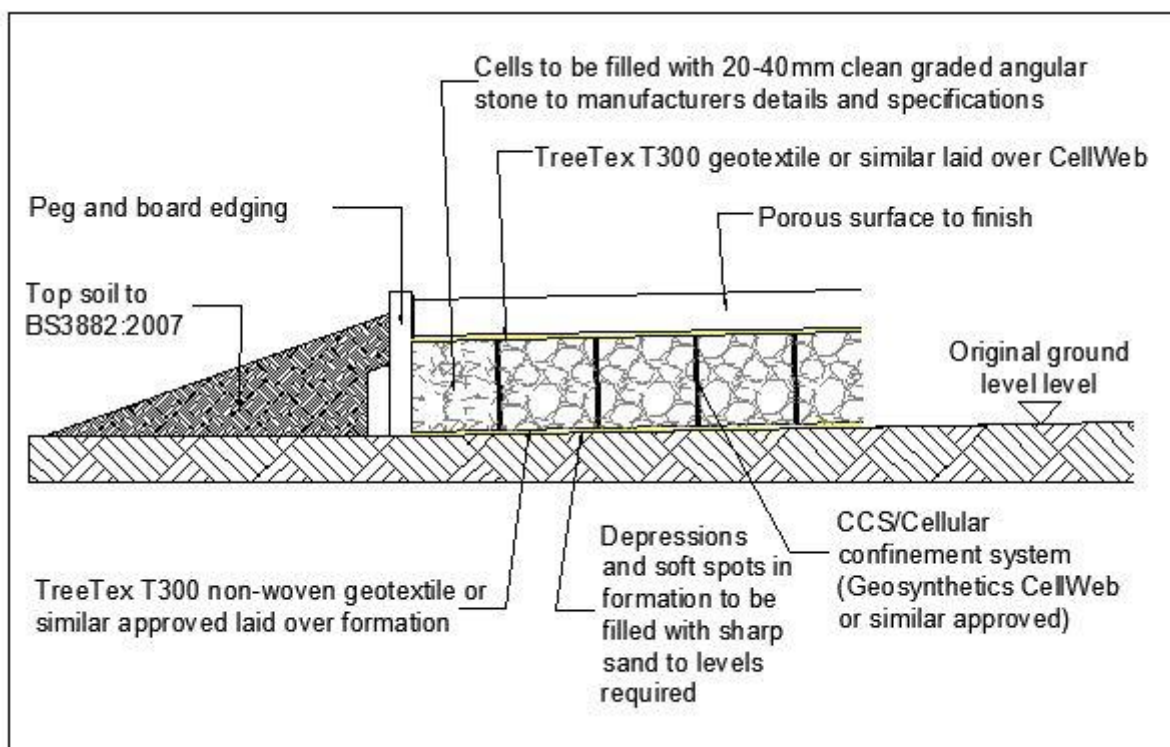


Figure 2: Cellular system profile

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.

4.15.2. 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 as shown on TPP.
- 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) Remove any existing hard surfaces (paving, tarmac etc.) Hand tools should be used if possible. If machinery is required for this operation, it must be used only on existing surfaces or outside the protection areas and tree canopies (approval from project arboriculturist must be sought before using machinery). The sub-base of existing surfaces or foundations should be left in situ where possible to avoid unnecessary root disturbance and provide a base for the new surface.
- 6) 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.
- 7) Lay the cellular system over the Geotextile, which is secured open under tension during the infill process with steel staples or wooden pegs.
- 8) 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.
- 9) 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.
- 10) 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.

4.15.3. 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).

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

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

- Avoid compaction by maintaining a soil structure sufficient to sustain root growth (soil bulk density below 1.4g/cc⁷).

- 4.15.4. 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.
- 4.15.5. 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.
- 4.15.6. 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.

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

4.16. No-dig footpath construction

- 4.16.1. 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) of 75mm depth is to be used⁸.

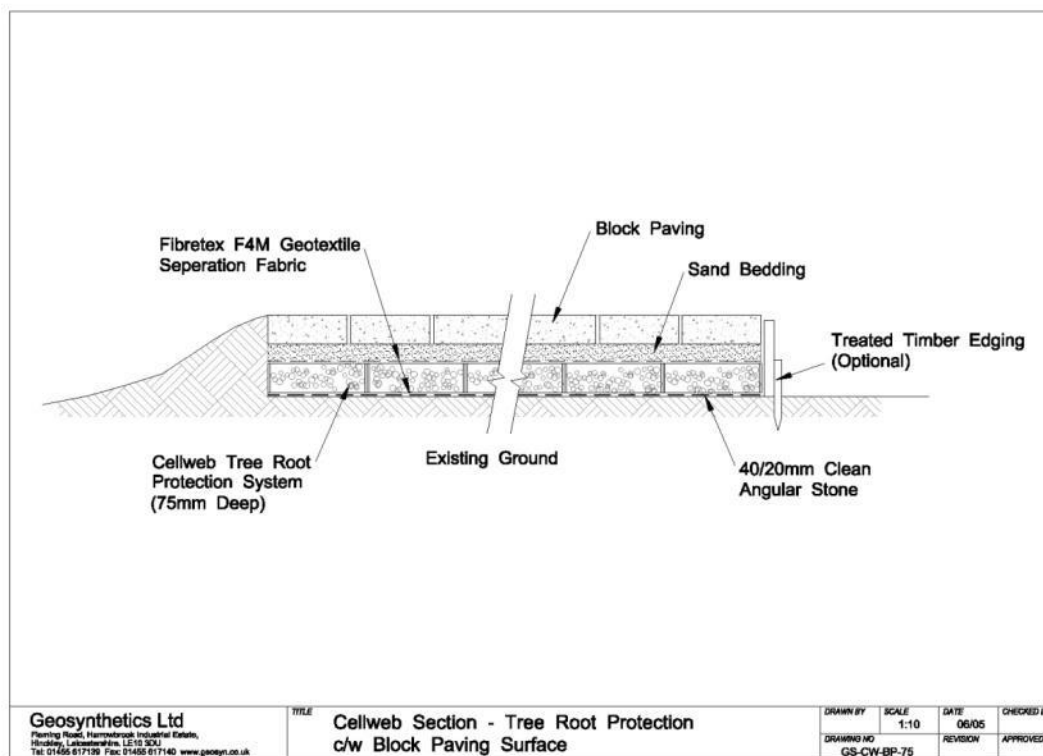


Figure 3 Cellular system profile

4.16.2. 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 to allow access to work area.
- 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.

⁸This 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 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.

4.17. Installation of paving within RPA

- 4.17.1. The proposed paving is partly within the root protection area (RPA) for the trees located offsite adjacent to the northern boundary. Where within RPAs of these trees the following methodology will be adhered to:
- 4.17.2. All contractor personnel to be working within the area are to be made aware of the extent and nature of the tree protection areas as per the latest revision of the Tree Protection Plan, drawing reference: PRI24389-03E.
- 4.17.3. Stages for installation of proposed paving within tree protection areas:

No plant machinery to be sited on any exposed rooting area

- 1) Remove Tree Protection Fence to allow access to area.
- 2) All works to be undertaken using hand tools only, with no plant or machinery to be used within RPAs.
- 3) Remove existing vegetation using hand tools only.
- 4) Level soil using landscaping rake, retaining original ground levels after vegetation removal, with no further excavation.
- 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 100mm well graded grit sand (sharp sand).
- 7) Gently compact using manual roller, or edge of a 75mm section of e.g., scaffold board.
- 8) Lay stone slabs 2 – 5mm apart.
- 9) Fill joints with kiln dried fine sand.

4.18. **Installation of boundary fencing within protected areas (including rail fencing)**

4.18.1. Stages for installing fence posts within RPAs:

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 as required to allow access to working area.
- 3) Dig post-holes using hand tools and/or with use of an air-spade, 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 and adjust the fence sections accordingly.
- 5) Line hole with non-porous lining, for example durable polythene bag.
- 6) Insert posts and fill post hole with concrete to ground level.
- 7) Trim polythene to ground level.
- 8) Install/attach fencing sections to installed posts.
- 9) Secure TPF to installed fencing to re-create area of Construction Exclusion zone within RPAs.
- 10) Install any additional Tree Protection Fencing or Ground Protection as required to ensure soft ground within the RPA located outside of the new boundary treatment is adequately protected.

Henry Pinn *Arb L4 (ABC)*
Senior Arboricultural Consultant

27 October 2023

Revision A: 22/11/2023 – Henry Pinn

Revision B: 25/03/2024 – Henry Pinn

Revision C: 07/10/2024 – Henry Pinn

Revision D: 09/10/2024 – Henry Pinn

Revision E: 09/10/2024 – Henry Pinn

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SITE: Boorley Gardens, Fieldfare Road, Botley, Hants, SO32 2BX
CLIENT: Halebourne Care Group Ltd
DATE: 05/10/2023

SURVEYOR: Henry Pinn

TAGGED? No

Appendix 1: Tree Survey Schedule

No.	Name	Ht (crown)	Dia (stems)	Canopy spread N E S W				Life stage	ERC	Comments	BS Cat
G14.1	Quercus robur (Common Oak)	18(3.5)	1300(1)	14	12.7	9.6	11.6	M	40+	Deadwood over 25mmØ throughout crown.	B2
G14.2	Quercus robur (Common Oak)	15(2)	650(1)	8	7.2	6.5	2.5	M	40+	Understory specimen suppressed by adjacent competition. Stem inaccessible due to erected Tree Protection fencing - diameter estimated	B2
G14.3	Quercus robur (Common Oak)	12(2)	520(1)	8	7.2	6.5	2.5	M	40+	Understory specimen suppressed by adjacent competition. Stem inaccessible due to erected Tree Protection fencing - diameter estimated	B2
T19	Quercus robur (Common Oak)	17.5(3.5)	1140(1)	11	11.3	8.2	9.3	M	40+	Dead section in mid-western crown aspect visible. Deadwood over 25mmØ visible throughout. Wire fencing occluded into stem. Historical minor buttress cambium damage visible.	A2

Notes: **Dia (stems):** trunk diameter in mm at 1.5m above ground level (number of stems) | **HT (crown):** Tree height (crown clearance) | **Life stage:** **Y:** Young (obviously planted within the last three years (unless as a heavy or extra-heavy standard)). **SM:** Semi mature (recently planted and yet to attain mature stature; up to 25% of attainable age.). **EM:** Early mature (almost full height, crown still developing and seed bearing; up to 50% of attainable age.). **M:** Mature (full height, crown spread, seed bearing; over 50% of attainable age.). **OM:** Over mature (full size, die-back, small leaf size, poor growth extension.) | **FSB:** First significant branch (& compass bearing) | **ERC:** Expected remaining contribution in years- <10, 10+, 20+, 40+ (assuming that there will be no physical changes to its immediate environment. | **BS Category:** Refer to appendix 1 of this report or BS5837:2012 Table 1 for detailed descriptions.



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ECOLOGICAL SURVEYS * PROTECTED SPECIES LICENSING * MITIGATION * IMPACT
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LANDSCAPE & VISUAL IMPACT ASSESSMENT * LANDSCAPE AUDIT * PROJECT MANAGEMENT
EXPERT WITNESS * LANDSCAPE DESIGN & PLANNING LANDSCAPE MANAGEMENT