



# TREE SURVEY REPORT

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## PRE-DEVELOPMENT / POST-PLANNING

Robert C Yates  
February 2015

**SITE :** Handywater House, Sibford Gower, OX15 5AE.

**CLIENT :** Mr. Colquhoun

### **RGS – ARBORICULTURAL CONSULTANTS**

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A pre-development advisory document, broadly in accord with British Standard 5837 : 2012 'Trees in relation to Design, demolition & construction - **Recommendations**', designed to highlight the above and below ground arboricultural constraints and thereby to assess the impact of the proposed development and recommend appropriate mitigation measures by way of an Arboricultural Method Statement.

15/00077/Disc

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## 1.0 Terms of Reference

- 1.1 We are instructed by Mr. Colquhoun to undertake a pre-development tree survey and impact assessment on land surrounding Handywater House, Sibford Gower which is to be in line with B.S. 5837 : 2012 '**Trees in Relation to Design, Demolition & Construction - Recommendations**'. We are also required to produce an Arboricultural Method Statement and a proposed planting plan in order to discharge certain planning conditions attached to the formal approval notice.
- 1.2 All trees on or immediately adjacent the application site have been inspected from ground level only. Should further more detailed inspection be deemed appropriate, this will be covered under Recommendations. Trees are dynamic living organisms, whose health and condition can be subject to rapid change, depending on a number of external and internal factors. The conclusions and recommendations contained in this report relate to the trees at the time of inspection.
- 1.3 The site survey and tree assessment was undertaken by Robert Yates, who holds the formal qualification Tech.Cert.(Arbor.A), the LANTRA Certificate in Professional Tree Inspection and is a member of the Consulting Arborist Society and the Arboricultural Association.
- 1.4 This report, its appendices and any subsequent revisions or additional information, will form part of the formal discharge of planning conditions in respect of the approved development.

## 2.0 Survey Methodology

- 2.1 The trees have been assessed using the current recommendations, as detailed in British Standard 5837 : 2012 '**Trees in relation to Design, Demolition & Construction – Recommendations**', in order to arrive at a Retention Category for each individual tree or group of trees. A Root Protection Area (RPA) has been assigned to each tree, based on its stem diameter and in some cases crown spread, which has then been used to produce the Tree Protection Plan (attached as appendix 3). For full details of the relevant assessment criteria and retention categories see Table 1 of B.S. 5837 (attached as appendix 4).
- 2.2 All surveyed trees have been given a notional reference number i.e. T1 – T8 & H1. All collected survey data and work recommendations for the trees is presented in the survey schedule which forms appendix 2 to this report. For the location of the trees see appendix 3 (Tree Protection Plan).

### 3.0 Site Overview / Design Brief

- 3.1 The survey area comprises the land to the immediate north of Handywater House, Sibford Gower; currently used as informal gardens and orchard. The application site extends to approximately 0.2 hectares, although the tree survey area covers a lesser area.
- 3.2 The development proposal briefly comprises the erection of a garage building, and workshop; also included is the provision of a turning and parking area, along with an access off the existing gravel driveway.

### 4.0 Summary of Findings & Conclusions

- 4.1 A total of **8no.** individual trees and **1no.** hedgerow have been surveyed. A breakdown of the numbers of trees in each retention category can be seen in the table below:

Table 1

Retention Category	Individual Trees (T)	Groups of Trees (G)	Hedgerows (H)
<b>A</b> High Quality	2	n/a	0
<b>B</b> Moderate Quality	3	n/a	0
<b>C</b> Low Quality	3	n/a	1
<b>U</b> (Unsuitable for retention)	0	n/a	0
<b>Totals</b>	<b>8</b>	<b>0</b>	<b>1</b>

- 4.2 All U Category trees should generally be removed for reasons of sound arboricultural practice or health & safety, irrespective of any development proposals, unless they offer particular conservation value to the site, in which case this will be highlighted in the survey schedule along with appropriate recommendations.  
\* **Note. There are no U category trees on this site.**
- 4.3 As regards the C category trees; it may not always be possible or even desirable to retain low quality trees within the context of a proposed development, unless in such a location that they do not represent a significant constraint on the design brief. Young trees, and those with a stem diameter of less than 150mm, will normally be placed in the C category, unless it is considered that they are of especially good form or are of a species that is particularly rare, in which case they may be upgraded. In certain cases it may be appropriate to consider re-location of young C category trees within the site.
- 4.4 All A & B Category trees (high & moderate quality) will under normal circumstances be retained on development sites, and should ideally influence and inform the conceptual design, site layout, and in some cases the specific construction methods to be used – The root protection area and/or crown spread of these trees will generally form a construction exclusion zone, although under certain circumstances it may be possible to build or operate within these areas providing that appropriate measures and specifications have been formally agreed between the local planning authority, the consulting arboriculturist and the developer/client.

## 5.0 Arboricultural Impact Assessment

- 5.1 Based on the proposed site layout as included at Appendix 3 the following impacts and implications have been identified and assessed.
- 5.1.1 The proposed driveway linking the existing drive to the new garage building will compromise the root protection area of tree T1 (Silver Birch), largely due to the difference between existing and proposed levels, thus requiring a degree of excavation that would irreparably damage the roots. For this reason we have recommended that this B category tree be removed, and replaced with a semi-mature tree of the same species immediately following completion of the development.
- 5.1.2 Tree T2 (another B category Silver Birch) will also be compromised by the location of the driveway, albeit to a lesser extent, since the level changes **within this tree's root protection area will be minimal. This premise** assumes that a No-Dig method of construction will be adopted for the proposed driveway – The method statement at Appendix 5 provides details of how this can be achieved.

- 5.1.3 Also in regard to tree T2 a proposed stone wall to the west and south side of the tree does marginally conflict with the root protection area; it is not however considered that the required excavations for a foundation would significantly impact on the health and vigour of the tree.
  - 5.1.4 In addition to the removal of T1, T5 (Hawthorn) and H1 (Hawthorn) will need to be removed since they directly conflict with the proposed foot print of the workshop building; additional new planting will mitigate for the loss of this low quality tree and hedgerow.
  - 5.1.5 One further potential impact will be to tree T6 (Ash); although the root protection area conflicts with the foot print of both the garage and workshop buildings this does not represent a significant impact on the tree (the total loss of root protection area amounts to only 6.0%). There remains however a risk of damage to the exposed ground within the root protection area as a result of the construction activities; this could further result in excessive ground compaction and damage to the soil structure, which could in turn be of detriment to the tree. Temporary ground protection during the construction phase will adequately mitigate for this type of risk.
- 5.2 The primary mitigation measures shall comprise a specialised construction method and materials for the driveway link to the new garage, robust temporary fencing/barriers to limit the extent of construction activities and temporary ground protection where construction access to root protection areas will be required.

## 6.0 Recommendations

- 6.1 All trees that have been selected for retention should receive such remedial works as recommended in Appendix 2 to this report, and furthermore should be suitably protected with appropriate temporary fencing and ground protection for the duration of the construction phase of the development (a proposed location for such fencing is shown on the drawing at Appendix 3). Further information on tree protection measures is included in the accompanying method statement.
- 6.2 Trees that cannot be practicably retained should be removed prior to commencement of any enabling works on site. Any young or newly planted trees i.e. 6no. fruit trees (not included in this survey due to their small size), should be re-located to the garden area to the west of the proposed garage.
- 6.3 All tree works must only be carried out by suitably qualified and experienced contractors, and should conform to guidelines set out in British Standard 3998 : 2010 'Tree work – Recommendations'.
- 6.4 On completion of all construction works the proposed new tree and hedgerow planting should be carried out during the first available planting season. Re-instatement of turf areas should also be undertaken during the Autumn/winter period. The location of proposed planting is included on the Tree Protection Plan, whilst details of the number and size of plants is given below.

### Proposed Tree & Hedgerow planting :

1. 1no. semi-mature *Betula pendula* (Silver Birch) 14-16cm girth – secured with two opposing treated timber stakes and ties
2. 2no. *Amelanchier lamarckii* (Snowy Mespilus) 2-2.5m multi-stem form – secured with two opposing treated timber stakes and cross bar/ties
3. 50no. *Prunus lusitanica* (Portugal laurel) 7.5L at 600mm centres

## 7.0 Statutory Obligations

- Works to trees which are covered by Tree Preservation Orders [TPOs] or are within a Conservation Area [CA] require permission or consent from your Local Planning Authority [LPA]. It is necessary to gain confirmation from the LPA of any TPOs or CAs on the site, and to follow the necessary application procedure if tree surgery or indeed felling, is required in respect of protected trees. Full planning consent will however override the need for a separate application, providing that details of all tree works were included in the submission and subsequently approved by the local authority.
- It is a criminal offence under normal circumstances to disturb or destroy - whether intentional or unintentional - the nesting sites of wild birds or the roost sites of bats, under the 'Wildlife & Countryside Act 1981 and the 'Countryside and Rights of Way Act 2000'. Therefore, avoid carrying out significant tree works during the bird nesting season [mid-March to end of July] and ensure that trees are professionally surveyed for signs of bat roosts and/or bat activity before starting any significant tree work, such as felling or heavy crown reduction. Further advice on how to proceed should bat occupation be suspected can be obtained from your local office of Natural England.

## APPENDIX 1 :

### KEY TO SURVEY CRITERIA & HEADINGS:

Tree No.	Notional ID given to each tree or group of trees (unless tagged)
Species	Botanical name with common name in brackets
Age Class	Young, semi-mature, early mature, mature or over-mature
Height	Estimated in metres
Crown Spread	Crown spread (North / East / South / West) measured from centre of trunk, in metres
Crown clearance	Approximate height between lowest part of canopy and ground level (metres)
Stem dia.	Trunk diameter (mm) measured at 1.5m above ground level, or other height as specified
Vigour	<b>Objective assessment of a tree's vigour e.g. shoot extension</b> growth (normal, reduced or low)
Amenity	<b>Subjective assessment of a tree's contribution to the amenity</b> value of the immediate area: High to Low
Condition	Good, Fair or Poor, based on the general health and structural condition of the tree
Recommendations	Remedial works in order to facilitate retention, or recommendation to remove
Ret.Cat.	Based on B.S.5837 Retention categories:  A = Those of High Quality & Value  B = Those of Moderate Quality & Value (Sub-categories 1, 2, 3 for A & B categories in brackets)  C = Those of Low Quality & Value  U = Unsuitable for retention
RPA	Root Protection Area, measured in metres (radius) from centre of tree, or may be expressed in m <sup>2</sup>



APPENDIX 2 : SURVEY SCHEDULE (page 1 of 1)

Tree/ Hedge No.	Species (common name)	Age class	Height (m)	Crown Spread (m) :				Crown Clearance	Stem dia. (mm)	Vigour	Amenity Value	Condition	Comments	Recommendations	Ret. Cat. (sub cat.)	RPA (m)
				N	E	S	W									
T1	<i>Betula pendula</i> (Silver Birch)	Mature	15	4	4.5	4	2	2	310	Normal	Low / Mod	Good/fair	Location is at odds with intended level changes	Remove & replant	B (1)	3.7
T2	<i>Betula pendula</i> (Silver Birch)	Mature	13	4	4.5	4.5	4	1.5	370	Normal	Low / Mod	Good	No comments	Crown lift to 2.2m	B (1)	4.5
T3	<i>Fraxinus excelsior</i> (Common Ash)	Early mature	11	5	5	3	4	1	240 230	Normal	Low / Mod	Good/fair	Part of roadside group, co- dominant stems from ground level	No works required	B (2)	4
T4	<i>Fraxinus excelsior</i> (Common Ash)	Semi- mature	10	3	1	1	3.5	2.5	200	Normal	Low	Good/fair	Part of roadside group	No works required	C	2.4
T5	<i>Crataegus monogyna</i> (Hawthorn)	Mature	4.5	3	3	3	3	0	170 100	Normal	Low	Good/fair	Heavily ivy clad, two stems from ground level, part of hedgerow H1	Remove to facilitate development & new boundary planting	C	2.4
T6	<i>Fraxinus excelsior</i> (Common Ash)	Mature	24	9.5	10	9	7.5	0	970	Low	Mod/high	Fair / poor	Past branch failures, potential stem decay at 9m, stem cavities at 3m on north and west, major deadwood present in crown	Lift crown up to 4m from ground level S & W sides, reduce crown by approximately 40% by volume for H&S reasons	C	11.7
T7	<i>Tilia cordata</i> (Large leaved lime)	Mature	26	8.5	12	7	10	1	910	Normal	high	Good	Co-dominant stems from 3.5m, major deadwood present	No works required	A (1)	10.9
T8	<i>Fagus sylvatica</i> (Beech)	Mature	15	8	8	8	8	1.5	680	Normal	Mod	Good	Multiple stems from 1.5m, fastigate (upright) form	No works required	A (1)	8.2
H1	<i>Crataegus monogyna</i> (Hawthorn)	Mature	< 6	N.A				0	n/a	Normal	Low	Fair/poor	Sparse hedgerow	Remove to facilitate development & new boundary planting	C	n/a



# APPENDIX 4

Table 1 : Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan			
<b>Trees unsuitable for retention (see Note)</b>					
<b>Category U</b> Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none"> <li>• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li>• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>• Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality</li> </ul>	Dark Red			
<i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>					
<table> <tr> <th>1 Mainly arboricultural qualities</th><th>2 Mainly landscape qualities</th><th>3 Mainly cultural values, including conservation</th></tr> </table>			1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation			
<b>Trees to be considered for retention</b>					
<b>Category A</b> Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features			
		Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)			
		Light green			
<b>Category B</b> Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality			
		Trees with material conservation or other cultural value			
		Mid blue			
<b>Category C</b> Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits			
		Trees with no material conservation or other cultural value			
		Grey			



# ARBORICULTURAL METHOD STATEMENT

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APPENDIX 5 to Tree Survey Report  
Re: Approved Development at Handywater House,  
Sibford Gower, Oxon.

Robert C Yates  
February 2015

Planning Reference: 14/01761/F

## **SITE SPECIFIC ARBORICULTURAL METHOD STATEMENT**

**This statement is made subject to the provisions of the Construction (Design and Management) Regulations 2007 (CDM 2007)**

**To be familiar to all site operatives and placed in a visible position for reference for the duration of the project**

**Any plans referred to in this statement shall be available to all site operatives – The Tree Protection Plan forms appendix 1 to this statement**

**NO SIGNS, CABLES, FIXTURES OR FITTINGS OF ANY OTHER DESCRIPTION SHALL BE ATTACHED TO ANY PART OF A RETAINED TREE**

**IF IN DOUBT – ASK THE ARBORICULTURIST OR SITE MANAGER**

<b>Site address &amp; Project description</b>	<b>Handywater House, Pound Lane, Sibford Gower, OX15 5AE</b> Erection of garage & workshop
<b>Planning application No. Decision notice Ref.</b>	14/01761/F 22 <sup>nd</sup> Dec 2014
<b>Local Planning Authority (LPA)</b>	Cherwell District Council
<b>Main contractor: Name &amp; contact number</b>	tbc
<b>LPA tree/landscape officer: Name &amp; contact number</b>	Tim Screen 01295 252535
<b>LPA planning case officer: Name &amp; contact number</b>	Bob Neville 01295 252535
<b>Planning Consultant: Name &amp; contact number</b>	n/a
<b>Project Arboriculturist</b>	Robert C Yates 01604 581044 or 07801 183677
<b>Site manager: Name &amp; contact number</b>	tbc
<b>Tree protection measures monitoring &amp; supervision</b>	<ol style="list-style-type: none"><li>1. The site manager to make a daily inspection of tree protective measures to ensure continuing compliance.</li><li>2. Work force to be monitored during works to ensure method statement is complied with.</li></ol>



<b>Tree protection measures monitoring &amp; supervision cont'd</b>	3. Erection of temporary protective fencing & installation of temporary & permanent ground protection to be checked for conformity by project arboriculturist prior to commencement
<b>Pre-development tree surgery &amp; felling</b>  <i>All tree works are to be undertaken by suitably experienced and qualified contractors &amp; in accordance with current industry best practice</i>	<ul style="list-style-type: none"> <li>With the approval of the local planning authority and in consultation with the site manager carry out the following works to the following trees :</li> <li>Fell to ground level &amp; grind out stumps :  <b>Tree No.T1 (Birch), T5 (Hawthorn) &amp; H1 (Hawthorn hedgerow)</b> </li> <li>Crown lifting works:  <b>Tree No.6 (Ash) crown lift to 4.0m south &amp; west sides only</b> </li> </ul>
<b>Tree works during build</b>	This should not be necessary, but if so, must be in accordance with guidance from the local planning authority and in consultation with the project arboriculturist.
<b>Site access</b>	Via existing access drive off pound lane
<b>Contractors parking</b>	<b>For demolition phase :</b> Not applicable
	<b>For construction phase :</b> On existing driveway only by agreement with owner
<b>Materials storage</b>	On existing driveway only by agreement with owner
<b>Mortar mixing / washing</b>	Materials which may contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, must not be discharged within 10 metres of ANY tree stem.
<b>Fires</b>	Not permitted
<b>Site huts / toilets</b>	To be located on existing driveway only by agreement with owner
<b>Demolition</b>	Not applicable

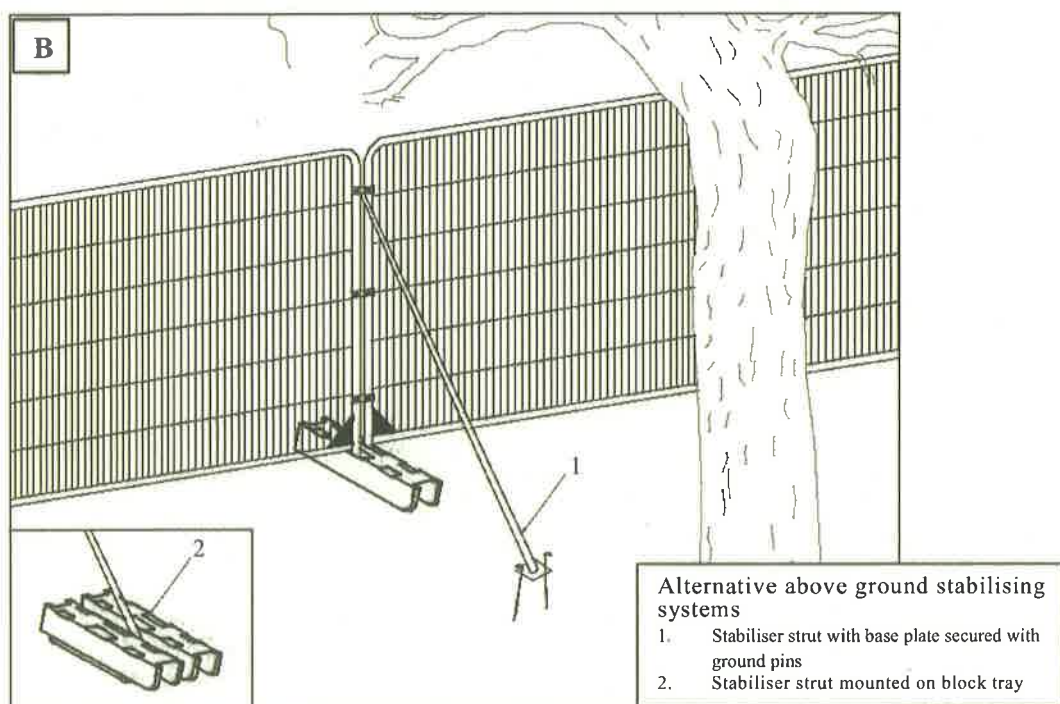
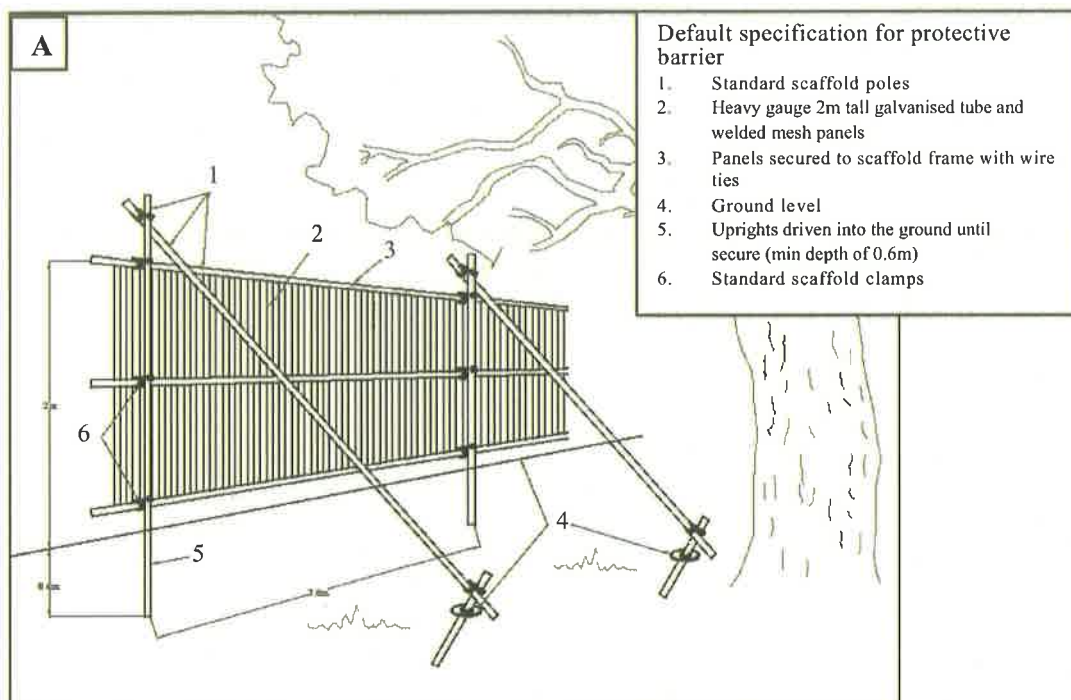
<b>Works within Root Protection Area (RPA) of retained trees</b> [see tree protection plan]	Construction of linking access driveway and stone walls re: T2 Construction access re: T6
<b>Underground service runs, external lighting, surface water, foul drainage, gas &amp; electricity etc.</b>	In accordance with National Joint Utilities Group (NJUG) volume 4 issue 2 – Two copies of this have been provided for site operatives  <u>Wherever possible underground services will be located to avoid tree root protection areas</u>
<b>Levels changes</b>	<ul style="list-style-type: none"> <li>• Increase of up to 100mm for installation of linking access driveway</li> </ul>
<b>Space for cranes</b>	Not applicable
<b>Build sequence</b> (need for arboricultural supervision)	<b>Build sequence</b> Items 1 - 10
Arboriculturist to check	<ol style="list-style-type: none"> <li>1. Complete all pre-development tree works as detailed above</li> <li>2. Install temporary tree protection fencing and ground guards (see specification P.7) in locations marked on Tree Protection Plan</li> <li>3. Commence &amp; complete construction of access drive adjacent T2 – see separate method statement for Cellweb® installation P.9-10</li> <li>4. Commence main construction works</li> <li>5. Complete all external works including paving to front of garage and stone walls <b>N.B.</b> Whilst constructing the wall, access will be required to root protection area of T2; tree protection fencing will need to be temporarily re-located and exposed ground covered with ground guards – See P.8</li> <li>6. Removal of all equipment, machinery and surplus materials</li> </ol>
Arboriculturist to supervise Cellweb® installation	

Arboriculturist to check	<p>7. Removal of all temporary tree protection measures i.e. temporary fencing &amp; ground guards</p> <p>8. Final tree inspection by project arboriculturist and/or LPA tree officer</p> <p>9. Any necessary remedial tree works in accordance with local planning authority guidance and requirements.</p> <p>10. Complete new planting / reinstatement of turf areas etc.</p>
<b>Temporary Barriers/Fencing</b>	See attached specification P.7 for temporary protective fencing for trees – Type B, using ground pins, will be suitable for this site
<b>WARNING! notices</b>	<ul style="list-style-type: none"> <li>One weather proof sign of at least 600 x 600mm at site entrance, stating <b>“Tree Protection Measures in force on this work site – obtain further details from site manager on arrival”</b></li> <li>Weather proof signs of at least 200 x 300mm fixed to tree protection fencing at 7m intervals, stating <b>“Tree Protection Area – No Admittance”</b></li> </ul>
<b>Ground protection [temporary]</b>	Heavy duty ground guards placed over an impermeable geotextile – See attached specification P.8
<b>Ground Protection [permanent]</b>	Cellweb® Tree Root Protection System: 75mm deep c/w gravel surcharge – See separate method statement P.9/10
<b>Additional precautions</b>	<ul style="list-style-type: none"> <li>The use of high lift mobile equipment e.g. ‘Tele-handlers’, cranes etc. will be undertaken with extreme care operators of such equipment will be briefed by the site manager or arboriculturist, regarding the risk of damage to retained trees and a banksman will be deployed to oversee the lifting/moving of large or particularly awkward loads</li> </ul>
<b>Hard surfaces</b>	As per approved drawings – these areas are located outside tree root protection areas except where Cellweb® is to be installed



<b>Soft surfaces &amp; landscaping</b>	During any soft landscaping works preparatory cultivations within tree root protection areas will be restricted to a depth of 100mm, or 50mm if within 2m of the base of the tree stem
<b>Removal of protection</b>	Only at the stages specified in build sequence above.
<b>Aftercare</b>	<ul style="list-style-type: none"> <li>• Tree inspection and work recommended where necessary</li> <li>• Watering of newly planted shrubs, trees and turfed areas for at least the first growing season</li> </ul>

## TEMPORARY TREE PROTECTION FENCING – SPECIFICATION

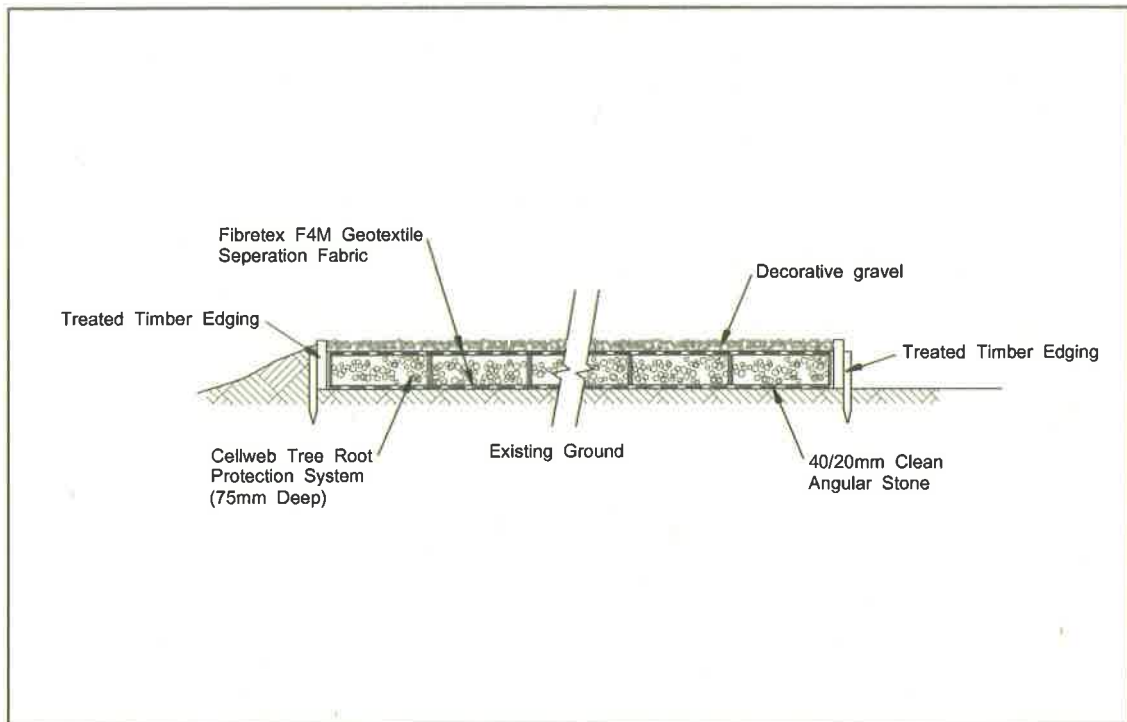


## TEMPORARY GROUND PROTECTION SPECIFICATION - GROUND GUARDS



- The above images depict various sizes and methods of fixing adjoining guards although various manufacturers are available.
- The most common and versatile size is 2.4x1.2m x 12.7mm – these will adequately support the weight of most mobile plant and equipment.
- In all cases the guards must be laid over an impermeable geotextile which will prevent leakage of any toxic materials into the soil beneath.

## Cellweb® Tree Root Protection System (Permanent Ground Protection) Cross-sectional diagrams



Above: 75mm deep c/w gravel surcharge wearing course

### SITE SPECIFIC INSTRUCTIONS FOR CELLWEB INSTALLATION

- Skim off turf layer – this can be undertaken using a specialist pedestrian operated turf cutting machine – MINI-EXCAVATORS ARE NOT TO BE USED
- Skim off any locally raised areas using hand tools only
- Install timber edge restraints i.e. 100mm deep gravel boards fixed to timber pegs at 900mm centres
- Lay geotextile over ground surface, overlapping joins by at least 300mm
- Place 75mm deep Cellweb® Tree Root Protection System over entire area, fix to timber edging and staple adjoining panels together to maintain open cells
- Place stone infill (40/20mm clean angular stone), starting from side nearest existing driveway surface, until all cells are level filled (NO MECHANICAL CONSOLIDATION IS NECESSARY) – at this point vehicles and machinery can safely access the remainder of the work site without risk of damage to the product or the ground beneath

- It is recommended that the second geotextile and final decorative surcharge of 10-20mm gravel is deferred until all construction materials and equipment can be cleared from the site (An alternative wearing course can be **Resin Bound** gravel, although it must be confirmed with the supplier that the surface is guaranteed porous).

Further advice on Cellweb® installation, including ordering of materials, can be obtained from Geosynthetics Ltd [www.geosyn.co.uk](http://www.geosyn.co.uk) Tel. 01455 617 140

**The company's generic method statement is attached herewith as additional information.**



Geosynthetics Ltd  
Fleming Road  
Harrowbrook Industrial Estate  
Hinckley, Leicestershire  
LE10 3DU  
Tel 01455 617139 Fax 01455 617140  
sales@geosyn.co.uk  
www.geosyn.co.uk

## **Method Statement**

### **For The Installation of Cellweb Tree Root Protection System.**



When considering damage to tree roots, in applications of vehicular access and parking, the risk of oxygen depletion caused by compaction of subsoil's, site clearance damaging the root source and type of reinforcement are areas which need to be given due consideration.

#### **Other risk factors are:**

- Creating an impermeable surface
- Causing a rise in the water table due to construction
- Increasing ground level
- Contamination of subsoil's

#### **1. Compaction**

When looking at site conditions and use, the following information should be considered to enable a load bearing structure capable of supporting traffic to be proposed:

- Californian Bearing ratio (CBR) — Standard test method for measuring soil strength
- Soil types
- Water table
- Maximum load (vehicles)
- Acceptable rut depth
- Reinforcement type                      Cellweb Cellular Confinement
- Type and Depth of engineered infill material      Clean, angular. Usually 40mm to 20mm.

## **2. Dig (site strip)**

Site stripping does damage some root structure prior to construction; however, the use of no-dig construction elevates the access road requiring edge protection.

## **3. No dig**

- |   |  |
|---|--|
| 3.1. Remove surface vegetation                    | Use a suitable herbicide suitable for the specific vegetation and not harmful to the tree root system  |
| 3.2. Place geotextile separation filtration layer | Use a Fibretex F4M non woven Geotextile over the prepared sub-grade. Overlap dry joints by 300mm.  |
| 3.3. Cellular Confinement System                  | The three dimensional cell structure, is formed by ultrasonically welding polyethylene (perforated) strips / panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and the cell wall, increasing the stiffness of the system |
| 3.4. Edge restraint                               | A treated timber edging is usually acceptable.   |

## **4. Cellular Confinement and Backfill Material.**



Expand the Cellweb 2.56m wide panels to the full 8.1 metre length. Pin the Cellweb panels with staking pins to anchor open the cells and staple adjacent panels together to create a continuous mattress. Infill the Cellweb with a no fines angular granular fill (typically 40-20mm) within each open cell. The use of cellular confinement reduces the bearing pressure on the subsoil by stabilising aggregate surfaces against rutting under wheel loads. Comparisons between cellular confinement and traditional aggregate and geogrid-reinforced structures demonstrate a 50% reduction in construction thickness of the granular material.

## 5. Surfacing Options

### **Block Paving:**

5.1. Lay second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections

5.2. Lay sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.

5.3. Place block paviors as per manufacturers instructions.

### **Tarmac:**

Place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing courses.

### **Loose Gravel:**

5.4. Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections

5.5. Place decorative aggregate to required depth

NOTE: A treated timber edge should be provided to restrict gravel movement.

### **Grass Blocks:**

5.6. Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections

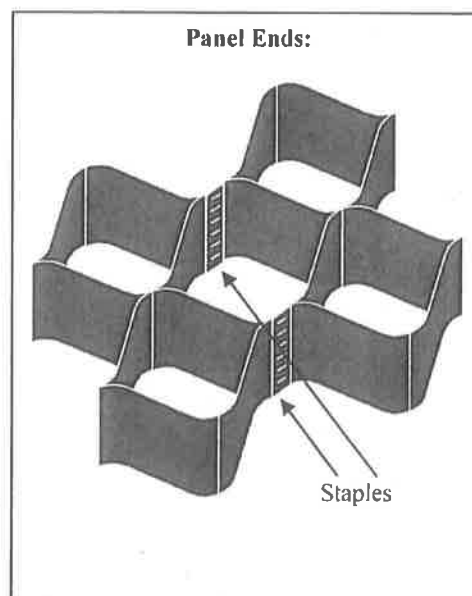
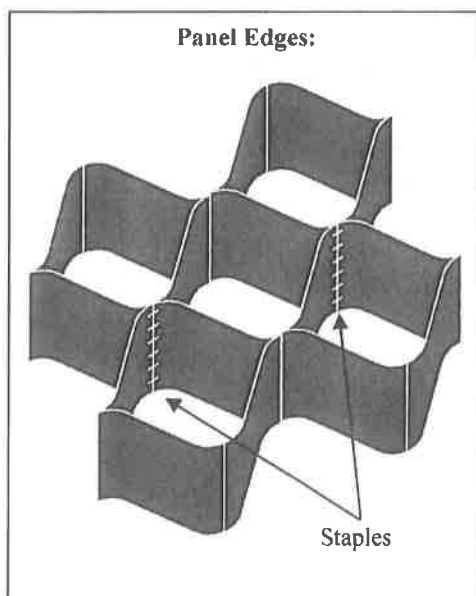
5.7. Place 50/50 rootzone bedding layer to the required depth

5.8. Lay recycled Duo Block 500 Grass Protection System infilled with 50/50 rootzone mix.

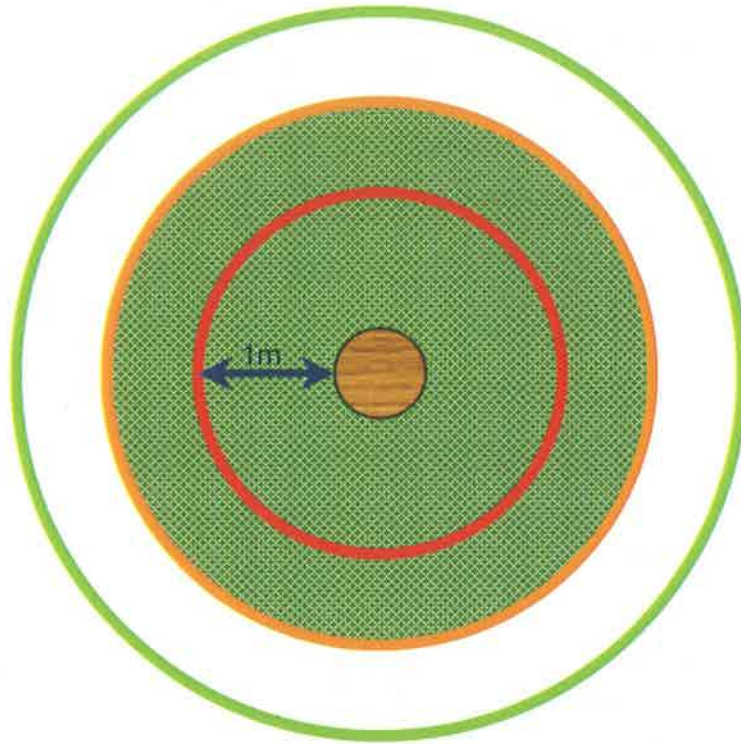
5.9. Seed as per architects instructions.

(Alternatively the Grass Blocks may be infilled with gravel.)

Below are illustrations of the correct stapling procedure for joining both edges and ends of panels together;







### TREE PROTECTION ZONE

#### Key to Diagram



Trunk of Tree



Spread of canopy or branches



**PROHIBITED ZONE – 1m from trunk.** Excavations of any kind must not be undertaken within this zone unless full consultation with Local Authority Tree Officer is undertaken. Materials, plant and spoil must not be stored within this zone.



**PRECAUTIONARY ZONE – 4 x tree circumference.** Where excavations must be undertaken within this zone the use of mechanical excavation plant should be prohibited. Precautions should be undertaken to protect any exposed roots. Materials, plant and spoil should not be stored within this zone. Consult with Local Authority Tree Officer if in any doubt.



**PERMITTED ZONE – outside of precautionary zone.** Excavation works may be undertaken within this zone however caution must be applied and the use of mechanical plant limited. Any exposed roots should be protected.

## NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Issue 2

### DAMAGE TO TREES

Tree roots keep a tree healthy and upright. Most roots are found in the top 600mm of soil and often grow out further than the tree's height. The majority of these roots are very fine; even close to a tree few will be thicker than a pencil. Most street tree roots grow under the footway but may also extend under the carriageway. If roots are damaged the tree may suffer irreversible harm and eventually die.

### PROTECTING ROOTS - DO'S and DON'TS

There are three designated zones around a tree each of which has its own criteria for working practices.

#### THE PROHIBITED ZONE

**Don't** excavate within this zone.

**Don't** use any form of mechanical plant within this zone

**Don't** store materials, plant or equipment within this zone.

**Don't** move plant or vehicles within this zone.

**Don't** lean materials against, or chain plant to, the trunk.

**Do** contact the local authority tree officer or owner of the tree if excavation within this zone is unavoidable.

**Do** protect any exposed roots uncovered within this zone with dry sacking.

**Do** backfill with a suitable inert granular and top soil material mix as soon as possible on completion of works.

**Do** notify the local authority tree officer or the tree's owner of any damage.

#### THE PRECAUTIONARY ZONE

**Don't** excavate with machinery. Where excavation is unavoidable within this zone excavate only by hand or use trenchless techniques.

**Don't** cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.

**Don't** repeatedly move / use heavy mechanical plant except on hard standing.

**Don't** store spoil or building material, including chemicals and fuels, within this zone.

**Do** prune roots which have to be removed using a sharp tool (e.g. secateurs or handsaw). Make a clean cut and leave as small a wound as possible.

**Do** backfill the trench with an inert granular material and top soil mix. Compact the backfill with care around the retained roots. On non highway sites backfill only with excavated soil.

**Do** protect any exposed roots with dry sacking ensuring this is removed before backfilling.

**Do** notify the local authority tree officer or the tree's owner of any damage.

#### THE PERMITTED ZONE

**Don't** cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.

**Do** use caution if it is absolutely necessary to operate mechanical plant within this zone.

**Do** prune roots which have to be removed using a sharp tool (e.g. secateurs or handsaw). Make a clean cut and leave as small a wound as possible.

**Do** protect any exposed roots with dry sacking ensuring this is removed before backfilling.

**Do** notify the local authority tree officer or the tree's owner of any damage.