

Arboricultural Method Statement

Mr M Lewis

The Bothy, Brashfield House, Caversfield, OX27 8RE

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REVISION HISTORY

Rev	Description of change	Date	Initials
1	Original draft	17.07.2020	SW

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DISCLAIMER

While all reasonable efforts have been made to identify defects in the subject trees, the statements made in this report do not take into account the effects of extreme weather events, vandalism or accidents, or changes to the site that may affect trees that have taken place since the date of the survey. Lockhart Garratt Ltd does not accept any responsibility in connection with these factors. The comments and observations made within this report will cease to be valid either within two years of the date of the survey (unless specifically stated elsewhere within the report), or when site conditions change or any works to trees take place that have not been specified within this report, whichever is the sooner.

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Attachments

Description	Reference	Version
Tree Schedule	20-3413	1
Tree Protection Plan	20-3414	1

PURPOSE OF DOCUMENT

This report has been commissioned to provide details on how the retained trees will be protected and managed during the development process at The Bothy, Brashfield House in Caversfield. This includes a Tree Protection Plan that provides illustrative guidance on the tree protection measures that are required for the development of the site.

This document is prepared to assist in the discharge of planning conditions that have been attached to the consented application (Cherwell District Council Ref: 19/1271/F), and in particular, with condition 6 which states:

“6. Prior to any excavation of the development hereby approved, an arboriculture impact assessment/method statement undertaken in accordance with BS5837:2012 and all subsequent amendments and revisions, and tree protection plan shall be submitted to and approved in writing by the Local Planning Authority. Thereafter, all works on site shall be carried out in accordance with the approved arboricultural method statement and tree protection plan.”

Reason – To ensure the continued health of retained trees/hedges and to ensure that they are not adversely affected by the construction works, in the interests of the visual amenity of the area and to comply with Policy ESD 15 of the Cherwell Local Plan 2011-2031 Part 1, saved Policy C28 of the Cherwell Local Plan 1996 and Government guidance contained within the National Planning Policy Framework.”

The following explanations relate specifically to this site and they should be read in conjunction with the TPP.

A copy of this report must be kept on site and be permanently available for the duration of the development. It can be:

- Included in the tender documents to identify and quantify the tree protection and management requirements;
- Used to plan the timing of site operations to minimise the impact of trees; and
- Reference on site for practical guidance on how to protect trees.

1. SCOPE OF WORKS

- 1.1 The scheme is for the sub-division of existing dwelling into 2no. 4 bedroom houses including new ground and first floor extensions. Demolition of existing garden well. Erection of 2no. double garages with ancillary spaces. Creation of a new vehicular access to serve both houses. New hard and soft landscaping.
- 1.2 In order to discharge condition 6 the following arboricultural protection measures area required:
 - Arboricultural Clerk of Works supervision;
 - Tree Protection Fencing (TPF); and
 - Permanent ground protection.
- 1.3 Two trees and one hedge (T5, H6 and T7) will require removal.
- 1.4 One group of trees (G4) tree will require remedial pruning.
- 1.5 There is no requirement for any of the following within Root Protection Areas (RPAs) of retained trees:
 - Contractors parking
 - Storage of materials
 - Landscaping
 - Fires
 - Herbicide use

2. ARBORICULTURAL ACTIVITIES & SEQUENCE

It is recommended that this sheet is removed from this report, laminated and displayed within the main site office at a visible location to all site staff.

Arboricultural Requirements	Timing & Importance	Details
ACoW Supervision	Level of ACoW supervision will be determined at the pre-commencement meeting.	<ol style="list-style-type: none"> 1. Pre-commencement meeting 2. Installation of permanent ground protection
Tree Removals	Pre-construction	The following trees require removal: T5, H6 and T7
Tree Pruning	Pre-construction	<p>The following trees require facilitation pruning: G4.</p> <p>This will consist of a 1-2m crown reduction where the existing canopy overhangs the boundary wall. Pruning will be limited to the boundary line.</p>
Tree Protective Fencing	Pre-construction	Heras 151 fencing will be required to protect T1.
Permanent Ground Protection	Pre-construction	Permanent ground protection ('no-dig' cellular confinement system) will be required to protect T1.

Key Responsibilities:

- It is the responsibility of the main contractor to ensure that tree protection measures are adhered to all at times.
- It is the responsibility of the main contractor to ensure that all site personnel full understand the protection measures of the site.
- It is the responsibility of the main contractor to ensure that the project arboriculturist is contacted if there are any issues related to trees.

3. ARBORICULTURAL SUPERVISION

3.1 An ACoW will be appointed by the contractor) to advise on the tree management for the site and to attend:

- The pre-commencement meeting before any works start
- Regular supervision visits; and
- As needed to oversee specific works that could affect trees

3.2 Additionally the ACoW will have a supervisory input into the following operations:

- Site preparation, including tree works
- Installation of permanent ground protection

Sequencing and Timing

3.3 Effective tree protection relies upon following a local sequence of events and arboricultural inspection/supervision. Table 1 provides an indication to the likely sequencing and supervision requirements of the retained ACoW.

Table 1: Sequencing and Supervision

Stage	Action	Arboricultural Input Required
1	Pre-commencement meeting	Attend
2	Tree Protective Fencing	Inspect
3	Construction of special surfaces	Supervise

3.4 The retained ACoW's initial role is to liaise with the contractor) and Local Planning Authority (LPA) to ensure the tree protection measures are fit for purpose and in place before any works commence on site. Once the site is working that role will switch to monitoring compliance with arboricultural planning conditions and advising on any tree problems that arise or modifications that become necessary.

3.5 It is the contractor's responsibility to ensure that details of this AMS and any agreed amendments are known and understood by all site personnel. An AMS Briefing Statement has been prepared and attached to this document, see **Appendix 1**. This document provides summarised details of the key protection measures contained within this document. A copy of this should be made available to all staff and used in any site inductions.

3.6 The final details of supervision and the frequency of inspection visits will be agreed at the pre-commencement meeting. The supervision arrangement will be sufficiently flexible to allow the supervision of all sensitive works as they occur. Due to the scale and extent of the project, regular ACoW visits are not recommended. Instead site photographs demonstrating compliance with the AMS and TPP are to be provided by the contractor every 2 months. These photographs will be provided to the ACoW and LPA Tree Officer.

3.7 Where the ACoW does undertake a site visit, a record of the visits and a copy will be sent to the LPA. The purpose of these written records is firstly to provide proof of compliance that will allow the contractor to robustly demonstrate adherence to best practice in the event of any dispute. Secondly it will help the LPA efficiently discharge the relevant planning conditions.

Pre-commencement Meeting

- 3.8 A pre-commencement site meeting involving the land owner, representative of the development company, ACoW, contractors and engineers (as appropriate), the relevant LPA officers will be held to ensure that all aspects of the tree protection processes are understood and agreed.
- 3.9 The meeting is where the details of the programme of tree protection will be agreed and finalised, which will then form the basis of any supervision arrangements between the ACoW and the contractor.
- 3.10 The ACoW will send a record of the meeting to all parties.
- 3.11 The ACoW will request that the contractor signs a Statement of Undertaking (SoU). This document confirms that the contractor fully understands the tree protection measures required throughout the construction process and accepts full responsibility for the protection of retained trees. A copy of the signed document will be kept onsite throughout the duration of the project. A copy will also be sent to the LPA officer for reference.
- 3.12 An example of this document can be found in **Appendix 2**.

4. TREE REMOVAL & PRUNING

Tree Removals

4.1 Trees for removal have been noted on the TPP with a dashed red circle around each location. Table 2 provides details of trees required for removal.

Table 2: Tree Removals

	Category A	Category B	Category C	Category U	Total
Trees	0	0	T5 & H6	T7	3
Total	0	0	2	1	3

4.2 All works will be conducted in accordance with BS3998:2010 *Tree Work – Recommendations*.

Tree Works

4.3 The details of tree works have been set out in Table 3 below.

Table 3: Tree Works

Tree No	Details of Works
G4	A crown reduction of 1-2m where the existing canopy overhangs the boundary wall. Pruning will be limited to the boundary line.

4.4 Obvious pruning to allow the installation of the structure has been listed, but additional minor pruning may be necessary to address unanticipated local problems with individual branches. Any additional works will be assessed and authorised as necessary by the retained ACoW. Where necessary, the LPA tree officer will be notified of any additional tree works.

4.5 All pruning works will be conducted in accordance with BS3998:2010 *Tree Works – Recommendations*.

5. BARRIERS AND GROUND PROTECTION

Tree Protection Fencing

- 5.1 Due to the extent of existing hardstanding and boundary walls that provide adequate protection to retained trees, a protective fence will be erected around one tree (T1). This fencing will be erected prior to the commencement of any site works. This includes any materials or machinery brought onto site, development or the stripping of soil.
- 5.2 The fence is to be sited in accordance with the TPP enclosed with this method statement. This is shown as a black dashed line.
- 5.3 For a proposal of this nature, the Heras 151 system of fencing will provide the necessary protection to T1. Details of this fencing can be seen in **Appendix 3**.
- 5.4 The fence will have signs attached to it stating that it defines a sacrosanct area and that no works are permitted within the fence. No notice boards, cables or other services will be attached to any tree. An example of a fencing sign is provide in **Appendix 4**.
- 5.5 After the protective fencing has been erected, the contractor will provide photographic evidence to the retained ACoW and LPA Tree Officer, demonstrating compliance with the TPP prior to any works commencing.
- 5.6 The protective fencing may only be removed following completion of all construction works.

6. CONSTRUCTION OF SPECIAL SURFACES

Permanent Ground Protection

- 6.1 Where, due to site constraints, construction activity cannot be excluded through the use of fencing, appropriate ground protection must be installed to protect the rooting environment during the construction process.
- 6.2 The construction of a new car port and access drive will require permanent ground protection to protect T1.
- 6.3 The car port will be partly constructed using raft/slab foundations for the workshop and storage areas. This area equates to 3.5% of the total RPA area of T1 and therefore piled foundations are not required. The remainder of the car port will be constructed using permanent ground protection, this includes where the cars will park post construction.
- 6.4 The installation of permanent ground protection will be implemented at the start of the project to enable a suitable surface from which machinery can operate throughout the duration of the construction process.
- 6.5 Where permanent hard surfaces are required within the RPA, there must be no excavation into the soil, either through the lowering of levels and/or scraping, other than the removal of turf or other surface vegetation. All such works shall be carried out using hand tools only.
- 6.6 In order to protect the RPA of T1 'no-dig' construction in the form of a three-dimensional Cellular Confinement System (CCS) will be installed. This is a load bearing system which protects roots from the effects of compaction from regular vehicular movement. Whatever system is used, the end result must be that the underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new roots.
- 6.7 The dimensions for the area protected by the Cellweb have been marked on the TPP, which can be identified by the purple cross-hatch on the plan.
- 6.8 The CCS will be pinned in place and backfilled with Type 1 MOT and finished with a wearing surface of blinded crushed stone and gravel. Due to the level change between the existing site access and new onsite driveway, a minimal scrape (i.e. <100mm depth) of the existing ground surface may be required. Furthermore, double layered CCS may be required in order to ensure adequate protection to the rooting environment of T1. Should this be required, advice must be sought from the product's manufacturer before installation.
- 6.9 The retained ACoW will supervise the installation of the CCS to ensure any onsite issues can be addressed in a timely manner.
- 6.10 Once the system has been installed and backfilled correctly machinery can work from on top of the system.
- 6.11 Details of a CCS system are included in **Appendix 5**, and a methodology for installation given in **Appendix 6**. This methodology has been provided by the manufacturer and it will be the responsibility of the contractor to ensure that whatever system is used, it is installed in accordance with the latest guidelines provided by the manufacturer.

Additional precautions outside the exclusion zone

- 6.12 Any risk from activities outside RPAs but close enough to have an impact will be assessed during the day-to-day running of the site, and appropriate precautions put in place to reduce that risk.
- 6.13 It is a presumption of this report that all RPAs that have been identified for protection but which lie outside of the protective fencing, will be protected from soil degradation at all times during construction activity.
- 6.14 Further details for working within the RPA are also provided in **Appendix 7**.

7. DEVELOPMENT

- 7.1 Once all tree works and protective fencing have been completed, the contractor can commence the on-site preparation works and construction can begin.

Demolition

- 7.2 Demolition of the existing boundary wall will be undertaken by machinery working from on top of the existing hardstanding access drive.
- 7.3 Should access to the southern side of the wall be required, temporary ground protection in the form of load-bearing matting must be installed over the extents of RPAs before machinery can utilise this part of the site.
- 7.4 Any temporary ground protection measures should be assessed as appropriate by the retained ACoW before works commence.

Site Storage, Cement Mixing and Washing Points

- 7.5 No storage of materials will take place within the RPA of any retained trees.
- 7.6 No mixing or storage of materials will take place up a slope where they may leak into a RPA. Where contours of the site create a risk of polluted water running into RPAs, precautionary measures of using heavy duty plastic sheeting and sandbags with the ability to contain accidental spillage will be put in place to prevent contamination.
- 7.7 Water will be kept readily available on site and will be used to flush split materials through the soil and avoid contamination of tree roots.
- 7.8 At the time of any spillage the main contractor will contact the retained ACoW for advice.

Contractors Parking

- 7.9 Contractors parking will not be within or in close proximity to any RPAs, unless existing hardstanding is present.

Utility Services

- 7.10 There is no requirement for any service to be installed within a RPA of any retained tree on this site.

Fires

- 7.11 No fires will be lit on this site.

Site Gradient

- 7.12 There will be no changes to any levels on this site within or in close proximity to the RPA of any retained tree on this site, other than already detailed in this AMS.

Use of Herbicides

- 7.13 There is no requirement of any herbicide to be used on this site.

8. POST DEVELOPMENT

Landscaping Within the Tree Canopies

- 8.1 The final tidying up and reinstatement can only be carried out when all the protective measures have been removed. This means great care is required by the contractors to observe tree protection measures.
- 8.2 No machines can be used within the RPAs. The use of rotavators is specifically prohibited.
- 8.3 All soil level variations required within the RPAs of retained trees to enable the agreed landscaping works must be agreed by the retained ACoW.

9. RESPONSIBILITIES

- 9.1 It is the responsibility of the contractor to ensure that the planning conditions attached to planning consent area adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site.
- 9.2 The contractor will be responsible for contacting the LPA at any time issues are raised related to the trees on site.
- 9.3 If at any time pruning works are required advice must be sought from the ACoW first, and if required permission obtained from the LPA and then carried out in accordance with BS3998:2010 Tree Works – Recommendations and industry best practice.
- 9.4 The contractor will ensure the build sequence is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of ALL construction works on the site.
- 9.5 The fencing and signs must be maintained in position at all times and checked on a regular basis by an on-site person designed that responsibility.
- 9.6 The contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

10. CONTACTS

10.1 Table 4 shows a list of all relevant contacts for this development. This table will be completed once the pre-commencement meeting has been undertaken.

Table 4: Development Contacts

Title	Name	Contact
Main Works Contractor	TBC	
Agent	Shane Weir	
LPA Tree Officer	Ian Ossenton	TBC
Site Manager/Foreman	TBC	
ACoW	Stephen Westmore	Stephen.westmore@lgluk.com
Tree Surgeon	TBC	

THIS AMS IS NOT A CONTRACT. THE RETENTION OF A QUALIFIED ARBORICULTURALIST FOR SUPERVISION AND MONITORING MUST BE AGREED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY.

Stephen Westmore MSc BSc (Hons) MArborA MICFor
Senior Arboricultural Consultant

17th July 2020

11. APPENDICES

Appendix 1: AMS Briefing Statement

Arboricultural Method Statement – Briefing Statement

The Bothy, Brashfield House, Caversfield

Purpose

The purpose of this briefing document is to ensure that all contractors, sub-contractors and any other personnel working on the The Bothy project are fully aware of the purpose of the tree protection measures that have been implemented on site.

Key Messages

- The protection of the retained trees and hedges on site is a critical requirement of both the client and the Local Planning Authority.
- A detailed Arboricultural Method Statement has been prepared. This details the requirements for ensuring that retained trees are protected. This document is available on site at the site office and should be read and understood by all personnel working on the site.
- A Tree Protection Plan has been prepared to provide graphical illustration as to the extent of tree protection measures.
- The approved Tree Protection Fencing is Heras panels to protect areas that are being actively worked.
- No Tree Protection Fencing can be moved, opened, or breached in any way without the prior written approval of the project Arboriculturist.
- The area within the Tree Protective Fencing is to remain sacrosanct. This means that there must be no machinery, no materials, and no personnel within the area. Unauthorised access will be a breach of planning conditions and could lead to enforcement notices from the Local Planning Authority.
- All Permanent Ground Protection will be installed under the supervision of the project Arboriculturist and constructed prior to demolition/construction vehicles accessing the site.
- Where additional tree works are required, there may be a requirement to obtain input and approval from the Local Planning Authority. If any additional works are required, as much notice as possible must be given to ensure that there are no delays to the works programme while the necessary approvals are obtained.

Project Arboriculturist: Steve Westmore
Contact: Stephen.westmore@lgluk.com / 07805092844

Appendix 2: Statement of Undertaking

STATEMENT OF UNDERTAKING

I confirm that I have read and fully understood the tree protection measures that have been detailed in the Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) that have been provided for The Bothy. These documents have been provided to ensure that retained trees on the site are protected at all times during the construction process, and to assist the contractor/construction company maintain compliance with the planning conditions.

I will ensure that tree protection measures are in accordance with the AMS and TPP throughout the construction process. I will also ensure that all site personnel are aware of the tree protection measures that are required throughout the site.

Where issues arise from tree related matters I will consult the retained Arboricultural Clerk of Works (ACoW) before undertaking any activities that may cause damage to the protected trees.

Position:

Name:

Signature:

Company:

Date:

Approved by:

Position:

Name:

Signature:

Company:

Date:

Appendix 3: Tree Protective Fencing

heras® 151 and 151steadfast system
 round top panel with anti-climb mesh
 high visibility orange blocks
 steadfast strut
 anti-tamper coupler
 fully tested and certificated
 health and safety compliant (HSG 151)

151 system
 The key components of the Heras 151 system are as listed.
Round Top Panel with Anti-Climb Mesh
 ■ The strongest panel on the market, with 3 sides formed from a continuous length of tube, eliminating the top corner weld, often the weakest point in traditional panel design.
High Visibility Orange Block
 ■ Permanently coloured with a durable UV stabilised "h-act" paint and filled with solid high density concrete.
 ■ Effectively highlights any potential trip hazard.
 ■ Beware of cheap imitations – painted coatings will chip and peel.
Heraslock® Anti-Tamper Coupler
 ■ Providing additional security, these couplers can only be removed with the use of the specialist tool.

Having invented the original concept of temporary fencing back in the 80's, Heras is proud of its reputation as a true innovator.
 Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.
 Our safest, most stable and most secure system ever offers you total peace of mind, and unrivalled performance.
 You can be sure that by installing the Heras® 151 Steadfast System (patent pending), you are conforming fully to the latest HSE Guidelines on "Protecting the Public" from the dangers of construction sites.
 Heras has campaigned widely over recent years against falling product standards, and has consulted closely with senior figures across the construction industry to ensure our products meet and exceed your expectations. The latest innovative system means you should never again need to compromise on:
 ■ Value for money
 ■ Quality
 ■ Performance
 ■ Design
 ■ Ease of installation.
 All backed up with unbeatable service from our nationwide branch network – deal direct with Heras – your safety first fencing supplier.

151 steadfast system
 The Heras 151 steadfast system incorporates all the benefits of the 151 system, with the addition of the patented...
Heras® Steadfast Strut
 ■ The unique design of this clever strut dramatically increases the stability of the fence.
 ■ The strut fits neatly within the high visibility block allowing a neat and compact solution, and acts as an integrated anti-lift device.
 ■ 3 additional fixing holes incorporated into the design allow for soil pins and handholds, dependent on ground conditions.

Fully Tested and Certificated
 ■ Extensive independent testing by Sheffield Hallam University has proved the performance of the system, resisting wind speeds well in excess of gale force.
 ■ The HSE has confirmed that the system meets all of the guidelines in the HSG 151 Publication "Protecting the Public - 'four next move'".
 ■ In turn, therefore, we can offer customers a certificate of compliance when they purchase this system from Heras.
 ■ It is your responsibility to ensure the system is correctly installed and fixed. For help and advice, contact your nearest branch.

Optional Extras
 ■ Heras® Steadfast Safety Strips with reflective coating can be fitted in minutes to highlight site dangers.
 ■ Front support brackets allow vastly improved performance on softer ground conditions and fit quickly and easily into the high visibility blocks.



ROUND TOP PANELS WITH ANTI-CLIMB MESH

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.



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 Telephone: 0844 472 0011

Heras | The Original Name for Temporary Fencing
 www.herasofence.co.uk

Appendix 4: Example of Protective Fencing Signage



(Lockhart Garratt is able to provide useable, weather-proof copies of this sign if required, for attaching to the protective fencing. If required, please contact us for further details).

Appendix 5: Permanent Ground Protection



Cellweb®TRP

Why protect trees?

Trees provide a wealth of benefits within the urban environment including cleaning the air, prevention of flooding and moderation of the climate.

As a result, within the UK it is an offence to cut down, lop, uproot, top, wilfully damage or destroy a protected tree without authorisation. Fines, if the defendant is found guilty in a Crown Court, are unlimited.

To minimise the environmental impact and avoid legal proceedings, we offer the independently tested Cellweb®TRP system.



What is Cellweb®TRP?

Cellweb®TRP is a cellular confinement system specifically designed for tree root protection. The system creates a stable, load-bearing surface for traffic or footfall whilst eliminating damage to roots through compaction and desiccation.

The Cellweb®TRP system comprises of three specific elements, Cellweb®TRP, Treetex™ pollution control geotextile and an infill of clean angular stone. The system has been designed to create an unparalleled solution to tree root protection applications.

Cellweb®TRP is a no-dig solution that ensures that the load placed upon it is laterally dissipated rather than transferred to the soil and roots below. The use of Treetex™ pollution control geotextile allows for drainage and separation whilst preventing contaminants from reaching the roots.

The walls of the cells are perforated and when combined with the infill of clean angular stone, enables free movement of water and oxygen, ensuring that supplies to the tree roots are maintained.



Geosynthetics
Engineered Solutions

“Creating Innovative Solutions with Outstanding Products”



What makes Cellweb®TRP different?

With over 15 years of captured data and thousands of installations, the Cellweb®TRP system has developed a reputation for excellence.

We are so confident in our system, we offer a guarantee that covers the replacement of the trees and of the system itself. With Cellweb®TRP being quick to install and having a 100% success rate it is clear to see why the Cellweb®TRP is regularly specified by tree officers and arboriculturalists across the country.

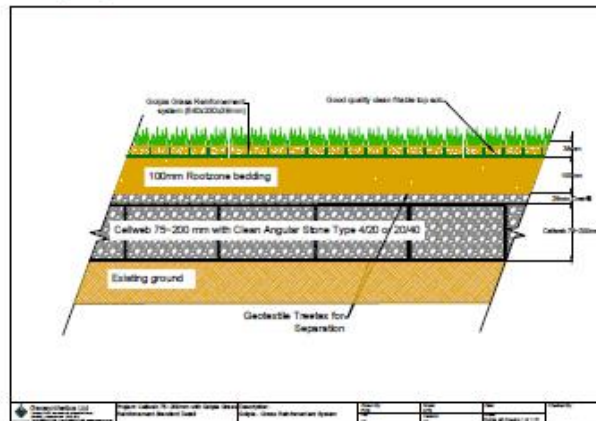
From the drawing board to installation, we are here to help.

We have been supplying the Cellweb®TRP system since 1998 and our technical team have vast experience with tree root protection and the associated legislation.

Delivering complete peace of mind to customers is our number one priority. As part of this customer care package we offer free on site consultations, technical recommendations and on site installation guidance on all projects.

Our in-house engineering team provide site specific recommendations to ensure the solution used is cost effective and environmentally sound.

For more information on Cellweb®TRP or Geosynthetics Limited please contact our sales office on 01455 617139 or visit www.geosyn.co.uk.



Appendix 6: Example Methodology for Construction of Surface

(This document has been produced by Geosynthetics Ltd for the installation of the Cellweb Tree Root Protection System – it does not apply to other products which may serve a similar purpose).



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 150mm deep
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 Treetex T300 non-woven Geotextile over the prepared sub-grade. Overlap dry joints by 300mm.
	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 4-20mm) 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 Treetex T300 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 pavers 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. Ensure Cellweb is completely filled.
- 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 Treetex T300 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.)

Concrete Slab

6.0 Lay Cellweb as previous and place second layer of Treetex Geotextile directly over the filled panels.
Pour concrete base as specified.

If you have any queries about installation please contact Geosynthetics Ltd on 01455 617139.

Appendix 7: Site Guidance for working in the RPA

a) What is the purpose of this guidance?

This guidance sets out the general principle that must be followed when working in the RPA. Where more detail is required, it will be supplemented by illustrative specifications in other appendices to this document. Before work starts on site, the purpose of this guidance is to demonstrate to the LPA that tree protection issues have been properly considered and to provide a written record of how they will be implemented.

Once the site work has started, this guidance is specifically for the site personnel to help them understand what has been agreed and explain what is required to fully meet their obligations to protect trees. All personnel working in the RPA must be properly briefed about their responsibilities towards important trees based on this guidance.

b) What are the RPAs?

RPAs are the areas surrounding important trees where disturbance must be minimised if they are to be successfully retained. All RPAs close to the construction area are identified on the Tree Protection Plan attached to this report. Damage to roots re degradation of the soil through compaction and/or excavation within the RPA will damage the tree. Any work operations within the RPA must be carried out with great care if trees are to be successfully retained.

c) When should this guidance be followed?

Anyone entering a RPA must follow this guidance if the trees are to be retained unharmed. Anyone working in a RPA must take care to minimise excavation into existing soil levels and limit any fill or covering that may affect soil permeability. There are two main scenarios where this guidance must be followed when entering and working within a RPA:

- i. Removal of existing surfaces/structures and replacement with new surfaces, structures or landscaping.
- ii. Preparation and installation of new surfacing structures and/or landscaping.

d) Where does this guidance apply?

This guidance should always be read in conjunction with the site plans illustrating the areas where specific precautions are necessary. Each area where precautions are required is annotated on the plans as identified on their keys. All plans are illustrative and are intended to be interpreted in the context of the site conditions when the work commences. All protective measures should be installed according to the prevailing site conditions and agreed as satisfactory by the appropriate supervising officer before any demolition or construction works commence.

e) What references is this guidance based on?

This guidance is based in the assumption that the minimum general standards for development issues are those set out in BS5837 (2012): Trees in relation to design, demolition and construction – Recommendations, and the NJUG Vol.4 Issue 1: Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.

f) Preventing adverse impact to the RPA beyond the immediate work area

Any part of the RPA beyond the agreed work area must be isolated from the work operations by protective barriers or ground protection to at least the minimum standard described in BS5837 for the duration of the work.

g) Excavation and dealing with roots

All excavation must be carried out carefully using spades, forks and trowels, taking care not to damage the bark and wood of any roots. Specialist tools for removing soil around roots using compressed air may be an appropriate alternative to hand digging, if available. All soil removal must be undertaken with care to minimise the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of small roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage.

If digging by hand, a fork should be used to loosen the soil and help locate any substantial roots. Once the roots have been located the trowel should be used to clear the soil away from them without damaging the bark. Exposed roots that are to be removed should be cut cleanly with a sharp saw or secateurs 10-20cm behind the final face of the excavation.

Roots temporarily exposed must be protected from direct sunlight, drying out and extreme temperatures by appropriate covering. Roots 2.5-10cm in diameter should only be cut in exceptional circumstances. Roots greater than 10cm in diameter should only be cut after consultation with the appropriate supervisory officer.

h) Arboricultural supervision

Any work within the RPA requires a high level of care. Qualified arboricultural supervision is essential to minimise the risk of misunderstanding and misinterpretation. Site personnel must be properly briefed before any works commence.

Ongoing work must be inspected regularly, and on completion, the work must be signed off by the arboriculturist to confirm compliance by the contractor. In the context of this guidance, an appropriate supervising officer would be an arboriculturist.

Installation of new surfaces in RPAs

a) Basic Principles

New surfacing is potentially damaging to trees because it may require changes to existing ground levels. This can result in damage to the soil structure affect the efficient exchange of water and gases in and out of the soil. Mature and over mature trees are much more likely to suffer as a result of these changes. These impacts can be minimised by reducing the extent of changes within the RPA. The most suitable surface will be one that is permeable (allowing the movement of water and gas), load bearing (to avoid compaction) and requires little or no excavation (to limit root damage). The actual specification is an engineering issue that needs to be addressed by a suitably qualified professional, and is beyond the scope of this report.

b) Establish the depth of excavation and surface gradient

The precise location and depth of roots within the soil is unpredictable and can only be established once digging has commenced. Ideally, all RPAs should be no-dig, but this is often not possible on undulating surfaces. New surfacing normally requires an evenly graded sub-base layer, which can be made up to high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted. Some limited excavation may be required to achieve this, and this is not necessarily damaging to trees if it is done carefully and no large roots are cut. The top 5mm of soil on grass surfaces is unlikely to contain any tree roots and therefore the removal of this will not impact the tree. It may be possible to dig deeper than this depending on local conditions, but this would need to be assessed by the retained ACoW.

On undulating surfaces, finished gradients/levels must be planned with sufficient flexibility so as to allow changes to occur if the excavation of high points reveals unexpected large roots. If roots are less than 25mm in diameter, it would normally be acceptable to cut these. However, for roots over 25mm diameter, cutting them may cause damage to the tree and further excavation may not be possible. In this case, the surrounding levels must be adjusted to take account of these high points, by filling with suitable material. If this is not possible and it is necessary to cut larger roots, discussions should be held with the retained ACoW before any final decision is made.

c) Base and finish layer

Once the sub-base layer is finished, the load-spreading surface is installed on top, without compaction. Generally, the load-spreading surface will normally be cellular and filled with crushed stone – care must be taken as different products produce different results, and the detail must be confirmed prior to installation. Suitable finishes included washed gravel, permeable tarmac or permeable block paving. For lightly loaded surfaces such as pedestrian footpaths, preformed concrete slabs may be appropriate if the sub base is prepared as detailed above.

d) Edge Retention

Conventional kerb retention set in concrete trenches is likely to cause damage to the roots and should be avoided. Effective edge retention within the RPA must be custom designed to avoid significant excavation in to existing soil surfaces. Generally, the use of pre-formed edging secured by metal pins or wooden pegs will be sufficient to ensure minimal impact on the trees.

e) Installing new surfacing on top of existing surfacing

It may be possible/preferable in some instances to use existing surfaces as the base for a new surface. This will not normally result in any significant excavation that could damage the roots, so no special precautions are required. However, if large roots appear above the existing surface, then the precautions and procedures detailed above must be followed.

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AERIAL SURVEYING

SITE SURVEYING | SITE MONITORING | 3D MODELLING | ORTHOMOSAIC | DIGITAL SURFACE MAPPING

ARBORICULTURE

TREES & DEVELOPMENT | TREE RISK MANAGEMENT | TREES & THE LAW | EXPERT WITNESS

DIGITAL MAPPING & GRAPHIC DESIGN

DIGITAL REPRESENTATION AND GIS ANALYSIS | GRAPHIC DESIGN

ECOLOGY

HABITAT & SPECIES SURVEYS AND LICENSING | HABITAT CREATION, RESTORATION AND MANAGEMENT
STAKEHOLDER ENGAGEMENT | ECOLOGICAL IMPACT ASSESSMENT

FORESTRY & WOODLAND MANAGEMENT

FORESTRY MANAGEMENT ADVICE | OPERATIONAL MANAGEMENT | TIMBER SALES | GRANT APPLICATIONS
NEW WOODLAND DESIGN | CARBON | WOODLAND EVALUATION

LANDSCAPE & GREEN INFRASTRUCTURE

LANDSCAPE & VISUAL IMPACT ASSESSMENT | LANDSCAPE DESIGN & SPECIFICATION
LANDSCAPE MANAGEMENT PLANS | GREEN INFRASTRUCTURE PLANNING & DESIGN | EXPERT WITNESS

MINERALS & WASTE RESTORATION

PLANNING RATIONALISATION & STAKEHOLDER LIAISON | LAND SURVEY & MANAGEMENT PLANNING
COST ENGINEERED LANDSCAPE & HABITAT DESIGN | IMPLEMENTATION MANAGEMENT & CLERK OF WORKS
RESTORATION & AFTERCARE MANAGEMENT PLAN (RAMP) | SOIL SURVEY & ADVICE

Client:	Mr M Lewis			Reference:	20-3413
Site:	The Bothy, Brashfield House, Caversfield	Surveyor(s):	Steve Westmore	Date of survey:	13.07.20
Key to Notations					
	Age Class		Definition	Category Grading	ERC
Stem Dia:	Stem diameter (mm) at 1.5m above ground level	Y	Young	Trees that have not yet reached 1/3 of their expected mature height	40+
C.C.	Height of crown clearance above ground level	EM	Early Mature	The stage in the life cycle of a tree between youth and maturity	20+
L.B.	Lowest branch height in meters	M	Mature	Close to full height and crown size	10+
D.L.B.	Direction of Lowest Branch	OM	Over Mature	Close to full height and crown size while main-stem diameter increases more slowly	<10
E.R.C.	Estimated Remaining Contribution (in years)	V	Veteran	A tree that has survived the rigours of life and shows signs of ancientness	Unsuitable for retention
Physiological condition (PC)	Good - No significant health problems	Fair - Symptoms of health that can be remediated	Poor - Significant ill health		
Structural condition (SC)	Good - No significant defects	Fair - Significant defects that can be remediated	Poor - Significant defects with no remedy		
					NOTES: If a tree is designated as veteran, the RPA calculation is determined as 15x the stem diameter for greater protection

Tree No.	Species	H (m)	Stem Dia.	No of Stems	Canopy (m)	CC (m)	LB (m)	DLB (m)	Age	Condition	Observations	Recommendations	ERC	Cat.	Sub Cat	RPA (m2)	RPA Radial distance (m)
T1	Plane, London (Platanus x hispanica)	22	1080	1	N - 7.5 E - 8 S - 6.5 W - 5.5	6	4	East	Mature	PC - Good SC - Good	Prominent tree adjacent existing access drive. Buttress roots causing disruption of access drive. Previously crown lifted and reduced. Stem bifurcates at 3.5m. Prominent tree and good example of species.	None.	40+	A	1	523	12.90
T2	Walnut, Common (Juglans regia)	10	510	1	N - 5 E - 6 S - 6 W - 6	2	2	North	Mature	PC - Good SC - Fair	Offsite tree - all measurements estimated. Canopy overhangs boundary wall. Stem bifurcates at 2m. Good example of species. Boundary wall and level change restricted rooting environment into site.	None.	20+	B	1	113	6.00
T3	Walnut, Common (Juglans regia)	12	670	2	N - 6.5 E - 6 S - 7 W - 6	2	2	East	Mature	PC - Good SC - Fair	Offsite tree - all measurements estimated. Canopy overhangs boundary wall. Stem bifurcates at 1.5m. Good example of species. Boundary wall and level change restricted rooting environment into site.	None.	20+	B	1	206	8.10
G4	Mixed species (Mixed species)	8	100	1	N - 3 E - 3 S - 3 W - 3	2	-	North	Varied	PC - Fair SC - Fair	Offsite group - all measurements estimated. Consists of apple, walnut, pear and hazel. Majority in southern corner but young pear stretch extent of southern boundary wall. Canopy overhangs boundary wall and majority multi stemmed from base.	None.	10+	C	2	5	1.20
T5	Plum (Prunus domestica)	5	173	4	N - 3 E - 3 S - 2.5 W - 2.5	1	-	North	Mature	PC - Good SC - Fair	Multi stemmed from base and growing tight against boundary wall. Not plotted on topographical survey - position on plan remains indicative.	None.	10+	C	1	14	2.10
H6	Hornbeam (Carpinus betulus)	3.5	75	1	N - 1 E - 1 S - 1 W - 1	-	-	N/A	Mature	PC - Fair SC - Fair	Very small section of well managed hedgerow at end of boundary wall. Not plotted on topographical survey - position on plan remains indicative.	None.	10+	C	1	3	0.90
T7	Pine (Pinus sp.)	6	167	4	N - 3 E - 2 S - 2 W - 2.5	1	-	North	Early Mature	PC - Fair SC - Poor	Small multi stemmed tree in planter. Dense ivy covered stem and dieback in canopy.	Consider removal as good arboricultural practice.	<10	U		14	2.10
W8	Mixed species (Mixed species)	17	370	1	N - 5 E - 5 S - 5 W - 5	1	1	North	Varied	PC - Fair SC - Fair	Offsite woodland - all measurements estimated. Consists of ash, hazel, beech, hornbeam. Majority ivy clad. Only north western end overhangs site.	None.	20+	B	2	64	4.50
H9	Leylandii (Cupressocyparis leylandii X)	4.5	100	1	N - 1 E - 1 S - 1 W - 1	-	-	N/A	Mature	PC - Good SC - Fair	Well maintained boundary hedge that stretches length of western boundary. Good screening feature.	None.	20+	B	2	5	1.20
G10	Mixed species (Mixed species)	9	200	1	N - 3.5 E - 3.5 S - 3.5 W - 3.5	-	-	South	Varied	PC - Fair SC - Fair	Linear group on northern side of offsite footpath. Pruned south to provide footpath clearance. Consists of ash, elder, elm, field maple, sycamore, hawthorn, yew, hazel. All measurements estimated and aggregated.	None.	10+	C	2	18	2.40



Legend:

- Site Boundary
- Survey Extents
- Category A Trees (Stem and Canopy Spread)
- Category B Trees (Stem and Canopy Spread)
- Category C Trees (Stem and Canopy Spread)
- Category U Trees (Stem and Canopy Spread)
- Root Protection Area
- Trees to be Removed
- Tree Protection Fencing
- Permanent Ground Protection
- Existing Layout
- Proposed Layout

Existing block paving to remain in situ. No mixing of chemicals or storage of materials within RPA of T1.

Minimal depth raft/slab foundations required for new workshop and stores (3.5% of total RPA area).

Majority of timber framed car port to be formed from 'no-dig' ground protection measures.

Minor localised pruning of H9 may be required to enable tie-in fencing.

Heras 151 fencing to be erected around stem of tree to ensure protection.

Existing boundary wall will provide adequate protection around stem.

'No-dig' permanent ground protection in the form of cellular confinement system to be constructed.

(Double layered system may be required to ensure site levels match existing driveway).

Notes:

- Tree positions are approximate only.
- RPAs of T2 and T3 have been offset to account for existing built structures and topography.
- Extents of G4, W8 and G10 extend beyond that depicted on this plan.



TITLE:	Tree Protection Plan	
LAYOUT:	N/A	
PROJECT/SITE:	The Bothy, Brashfield House, Caversfield	
CLIENT:	Mr M Lewis	
MAP REF:	4649/01/20-3414	
REVISION:	v1	
DATE:	12/07/20	SCALE: 1:250@A3
APPROVED BY:	AP	PRODUCED BY: SW

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