



**Arboricultural Method Statement & Tree Protection Plan – In  
Accordance with BS 5837:2012**

Proj. No <b>10446</b>	<b>The Chimneys, New Road, Beyton Green, Rougham, Suffolk, IP30 9LR</b>		
Client:		Montpelier Estates	
Date of Report:	02/08/2023	Revision:	Original

***Arboricultural Method Statement &  
Tree Protection Plan  
In Accordance with  
BS 5837:2012***

## **Contents**

- 1.0 Introduction**
- 2.0 Specific Details**
- 3.0 Appendices**



# 1.0 Introduction

## 1.1 Terms of Reference

- 1.1.1 Hayden's Arboricultural Consultants Limited has been commissioned by Montpelier Estates to prepare a detailed Arboricultural Method Statement and Tree Protection Plan for the approved development at The Chimneys, New Road, Beyton Green, Rougham, Suffolk, IP30 9LR.
- 1.1.2 This report provides the working details for the parking bays in the west of the site only for the proposals submitted in the Tree Survey, Arboricultural Impact Assessment, and Preliminary Method Statement & Tree Protection Plan dated 31/01/2022, ref: 9274.
- 1.1.3 As required by Condition 6 of planning consent DC/22/0240/FUL, West Suffolk Council requires the following information in order to discharge the condition:
- (i) Site Meeting
  - (ii) Tree Surgery, Specialist Development Measures and Tree Felling to Facilitate Development
  - (iii) Tree Protection Measures
  - (iv) Ground Protection Measures
  - (v) Site Access and Storage of Materials, Equipment and Waste
  - (vi) Construction Methods
  - (vii) Phasing and Monitoring Schedule

# 2.0 Specific Details

## 2.1 Site Meeting

- 2.1.1 It will be necessary to have a site meeting between the developer and/or site manager, project arboriculturalist and council arboricultural officer to discuss the construction methods and tree protection measures.
- 2.1.2 The project arboriculturalist shall record minutes of the meeting with copies issued to all members of the development team.

## 2.2 Tree Surgery, Specialist Development Measures and Tree Felling to Facilitate Development

- 2.2.1 The necessary tree surgery, specialist development measures and tree felling is fully detailed in the Tree Survey, Arboricultural Impact Assessment, and Preliminary Method Statement & Tree Protection Plan dated 31/01/2022, ref: 9274. However, for ease of data management the specification is reproduced at Appendix C.



- 2.2.2 Further to the tree removals identified in the Tree Survey, Arboricultural Impact Assessment, and Preliminary Method Statement & Tree Protection Plan dated 31/01/2022, ref: 9274, the following trees will also require removal to facilitate the development phase of the approved design: -

Feature No	Reason for Removal	BS Category*
H004	Conflicts with approved structure	C
T007	Conflicts with approved landscaping	C

### 2.3 Tree Protection Measures

- 2.3.1 After the completion of the necessary tree surgery and tree felling to facilitate development, temporary tree barrier fencing will be installed on site. This must be fit for purpose and in full accordance with the requirements of BS 5837:2012 and positioned as shown on drawing no. 10446-D-AMS (Appendix G).
- 2.3.2 Details of temporary tree barrier fencing are supplied in the attached Appendices F.3, F.4 and F.5.
- 2.3.3 Tree barrier fencing may need to be realigned to be beneath the crown of H002 and T004 during installation of No Dig surfacing.
- 2.3.4 All detailed tree protection measures will be installed by the relevant site contractor and then inspected by the monitoring arboricultural consultant. The tree protection measures will be evidenced by photograph and recorded in an accompanying Arboricultural Monitoring Report. This will be further detailed within Statement of Supervision (Arboriculture) Appendix E.

### 2.4 Ground Protection Measures

- 2.4.1 During the construction process, Root Protection Areas must not be exposed to compaction or contamination. Where they cannot be enclosed by fencing (for practical site access reasons) it will be necessary to provide temporary ground protection that is fit for purpose. Examples of light weight and heavy duty ground protection measures are supplied in Appendix F.7.
- 2.4.2 Due to the complexities of construction, it is not possible to predict at this stage which type of ground protection will be necessary. This must therefore be agreed on site by the project arboriculturalist (item 2.7.2).
- 2.4.3 All detailed ground protection measures will be installed by the relevant site contractor and then inspected by the monitoring arboricultural consultant. The ground protection measures will be evidenced by photograph and recorded in an accompanying Arboricultural Monitoring Report. This will be further detailed within Statement of Supervision (Arboriculture) Appendix E.

### 2.5 Site Access and Storage of Material, Equipment and Waste

- 2.5.1 Construction access will be gained from the existing site entrance on the west boundary.
- 2.5.2 All materials, equipment and waste will be stored outside the Root Protection Area (RPA) of the retained trees. The precise location for storage will be confirmed and approved in writing by the main contractor and the Local Planning Authority.



## 2.6 Construction Methods

2.6.1 No dig surfacing will be required for the parking bays at the front of the site. As part of the provided 21011-50-02-C6 Drainage Layout sheet 2 drawing, this permeable block paving no dig construction shall be installed with a sub-base of 150mm deep Geocell TRP Grade 25/15 in-filled with 20mm stone on top of a filtration textile. The Geocell shall be top dressed with 50mm bedding stone and 60mm porous concrete block pavers. The following is an example method for construction, but the exact methodology will need to be provided by the cellular confinement system manufacturer, in conjunction with the project arboriculturalist and project engineer:

- Construction of the hard surface should be undertaken in dry weather between May and October when the ground is driest and least prone to compaction.
- All protective fencing and any required ground protection will be installed prior to any construction work beginning on site. The protection will be confirmed as acceptable by the monitoring arboricultural consultant.
- Kill ground vegetation using a translocated herbicide (glyphosate), ensuring that the selected herbicide does not damage the root of the tree(s) below the surface to be installed.
- Remove the dead or organic material from the site and ensure that large stones and shrub stumps are removed from the proposed route.
- Any machinery used to install the no dig surface will not exceed the maximum load bearing capacity of the surface, or ground protection provided as a working platform. This is to ensure that compaction does not occur to the ground below and/or to prevent damage to the cellular confinement matting.
- Should operatives or machinery need to operate from the newly formed no dig surface, a suitable load bearing working surface will be required.
- The cellular confinement matting of the no dig surface will then be laid out over the existing ground with a geotextile membrane beneath, and edging also installed.
- Specified clean angular stone should then be used to fill the cellular confinement matting to a depth so that it buries the cellular confinement matting. The stone used should not include any fines within the stone.

2.6.2 The installation of the no dig surface must be monitored and supervised by the project arboriculturalist to ensure that the arboricultural aspects of the no dig design are complied with. As such, a method statement flowchart/checklist included on drawing no. 10446-D-AMS should be used as an auditable monitoring schedule to assess the progress of key events/activities.

## 2.7 Phasing and Monitoring Schedule

2.7.1 The proposal involves the integration of several complex aspects that affect tree protection. Accordingly, Hayden's Arboricultural Consultants have produced a method statement flowchart/checklist to cover the major operations on site as they affect retained trees. This is included on drawing no. 10446-D-AMS. This complies with the Statement of Supervision (Arboriculture) in Appendix E.



- 2.7.2 In accordance with item 6.3 of BS 5837:2012, the site and associated development must be monitored regularly by a competent project arboriculturalist to ensure compliance with the arboricultural aspects of the planning permission. As such, the method statement flowchart/checklist included on drawing no. 10446-D-AMS should be used as an auditable monitoring schedule to assess the progress of key site events/activities. This is commensurate with the Statement of Supervision (Arboriculture) in Appendix E.
- 2.7.3 In addition to the method statement flowchart/checklist, it is beneficial to identify the key arboricultural responsibilities associated with the progression of the development. Accordingly, a “Statement of Supervision (Arboriculture)” has been included at Appendix E. The purpose of this document is to identify a definite decision making and data recording structure in the monitoring process, together with providing a list of specific inspection trigger points. Prior to works commencing on site, this document should be re-issued with contact names and document reference numbers included.
- 2.7.4 It is the responsibility of the Site Manager, with authorisation from their client, to commission and plan Arboricultural Monitoring site visits as listed in the Statement of Supervision (Appendix E) and on drawing no. 10446-D-AMS. Hayden’s, upon request will produce a detailed quotation to match with the critical Arboricultural Monitoring points outlined.



## 3.0 Appendices

Appendix	<b>A</b>	Species List
Appendix	<b>B</b>	Schedule of Trees
Appendix	<b>C</b>	Schedule of Works to Allow Development
Appendix	<b>D</b>	Explanatory Notes
Appendix	<b>E</b>	Statement of Supervision (Arboriculture)
Appendix	<b>F</b>	Advisory Information & Sample Specifications
	1.	BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care
	2.	European Protected Species and Woodland Operations Checklist (v.4)
	3.	BS 5837:2012 Figure 2 - Default specification for protective barrier
	4.	BS 5837:2012 Figure 3 - Examples of above-ground stabilising systems
	5.	Figure 4 Detail of protective barrier where construction encroaches within BS5837:2012 Root Protection Area
	6.	Method Statement for 'No Dig' Construction in line with Arboricultural Practice Note 12 ' <i>Through the Trees to Development</i> '
	7.	GroundGuards Multitrack Ground Protection
	8.	Air Spade/Air Excavation Specification
Appendix	<b>G</b>	Drawing No 10446-D-AMS



## Appendix A - Species List

### Species List:

Apple	<i>Malus sp</i>
Cherry	<i>Prunus sp</i>
Cut Leaved Hawthorn	<i>Crataegus laciniata</i>
English Oak	<i>Quercus robur</i>
Goat Willow	<i>Salix caprea</i>
Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
False Acacia	<i>Robinia pseudoacacia</i>
Leyland Cypress	<i>X Cuprocyparis leylandii</i>
Lombardy Poplar	<i>Populus nigra 'Italica'</i>
Maidenhair tree	<i>Ginkgo biloba</i>
Scarlet Oak	<i>Quercus coccinea</i>





## **Appendix B**

### Schedule of Trees

# SCHEDULE OF TREES (AIA) The Chimneys, New Road, Beyton Green, Rougham, Suffolk

Surveyed By: Alex Turner Date: 11/01/2022  
 Managed By: Alex Turner

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
		RPA (m <sup>2</sup> )	Aspect	Aspect	SULE	Ground Cover						
<b>A001</b>	Leyland Cypress, Holly, Cherry Spp	250	6		Moderate	N2, E2, S2, W2	Jan 2022: Larger trees growing within Hawthorn hedge. Average dimensions provided. Ivy clad stems inhibits full visual inspection. Fair form and condition.	C1	No work required.	4	Crown lift to 2m on southern aspect as shown on drawing no. 10446-D-AMS.	0
	3	0.5		SM	High							
<b>Yes</b>	28.3			10+ years	Dense undergrowth, Tarmac							
<b>H001</b>	Hawthorn, Cut Leaved Hawthorn	70	3.5		High	N1, E1, S1, W1	Jan 2022: No significant change since previous survey.  Sep 2020: Long linear feature forming site boundary with neighbouring field. Good screening value. Hedge is unbroken along length. Average dimensions provided. Fair form and condition.	C2	No work required.	4	Reduce crown on northern aspect 0.5m and root prune to accommodate parking bays 17-25 as shown on drawing no. 10446-D-AMS.	0
	0.84	0.1		SM	High							
<b>Yes</b>	2.2			20+ years	Dense undergrowth, Grass							
<b>H002</b>	Leyland Cypress	350	6		Moderate	N3.0, E3.0, S3.0, W3.0	Jan 2022: No significant change since previous survey.  Sep 2020: Boundary hedge reinforcing fence line. Hedge has had height reduced in the past as part of management. Average dimensions provided. Hedge is two ranks thick in the northern section of the length. Hedge forms unbroken landscape feature. Good screening value from road. Fair form and condition.	C2	No work required.	4	Fell sections and crown lift western aspect to 2.5m as shown on drawing no. 10446-D-AMS for the visibility splay. Crown lift eastern section to 2.5m as shown on drawing no. 10446-D-AMS for car park access.	0
	4.2	0.1		EM	High							
<b>Yes</b>	55.4			20+ years	Grass, Gravel, Tarmac							
<b>H003</b>	Hawthorn, Holly	50	3.5		Moderate	N1.5, E1.5, S1.5, W1.5	Jan 2022: No significant change since previous survey.  Sep 2020: Linear feature forming site boundary. Fair form and condition.	C2	No work required.	4	Fell eastern section as shown on drawing no. 10446-D-AMS.	0
	0.6	0.1		SM	High							
<b>Yes</b>	1.1			20+ years	Bare earth, Grass							
<b>H004</b>	Leyland Cypress	200	5		Low	N2, E2, S2, W2	Jan 2022: No significant change since previous survey.  Sep 2020: Linear feature adjacent to internal fence and shed. Regularly clipped to height and width. Not a significant landscape feature.	C2	No works required.	4	Fell to ground level.	0
	2.4	0		SM	High							
<b>Yes</b>	18.1			20+ years	Grass							

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
		RPA (m <sup>2</sup> )	Aspect	Aspect	SULE	Ground Cover						
<b>H005</b>	Leyland Cypress	200	4		Low	N2.5, E2.5, S2.5, W2.5	Jan 2022: No significant change since previous survey.	C2	No works required.	4	Fell to ground level.	0
		2.4			SM	High	Sep 2020: Linear feature adjacent to internal fence and shed. Regularly clipped to height and width. Not a significant landscape feature.					
<b>Yes</b>		18.1			20+ years	Grass						
<b>H006</b>	Leyland Cypress	180	5		Moderate	N2, E2, S2, W2	Jan 2022: Section of hedge typical for species. Lowest portion of crown is managed but the apex has been left to grow. Fair form and condition.	C1	No work required.	4		
		2.16	0.2		SM	High						
<b>Yes</b>		14.7			10+ years	Grass, Building						
<b>T001</b>	False Acacia	270	9		Moderate	N3.5, E3.5, S4, W3.5	Jan 2022: No significant change since previous survey.	C1	No work required.	4	Root prune to accommodate parking bay 17 as shown on drawing no. 10446-D-AMS.	0
		3.24	2		SM	Moderate	Sep 2020: Tree growing within hedge. Twin stemmed from 1.8 metres. Minor deadwood typical for species. Fair form. Good vitality.					
<b>Yes</b>		33			10+ years	Grass, Dense undergrowth						
<b>T002</b>	Apple Sp	130	5.5		Low	N4, E4, S2, W2	Jan 2022: No significant change since previous survey.	C1	No work required.	4		
		1.56	1		Y	Moderate	Sep 2020: Stem wound on northern aspect at 0.4 metres that is occluding well and without visible indicators of decay. Stem leans northwards likely due to close proximity and competition for light with hedge to the south. Evidence of past crown lifting. Crossing and rubbing branches abrading bark. Dysfunction in one branch has led to bark disfigurement but not thought to compromise physiological condition at present. Tree exhibits sparse crown but causation unclear. Fair form and condition.					
<b>Yes</b>		7.6			10+ years	Grass						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
		RPA (m <sup>2</sup> )	Aspect	Aspect	SULE	Ground Cover						
<b>T003</b>	Maidenhair Tree	440	8		Moderate	N4, E4, S4.5, W4	Jan 2022: No significant change since previous survey.	C1	Monitor tight unions annually.	3	Fell to ground level.	0
		5.28	1		EM	Moderate	Sep 2020: Multi-stemmed form from 1 metre. Clustered stem union point. Two largest stems exhibit tight stem unions and included bark but with a possible natural brace at 2 metres on the western aspect. Tight unions visible at main union point. Stability of tight unions is unclear. Subpar form. Good vitality. Tree included in survey due to proximity with main site access. Crown base 2 metres over driveway edge. Crown base 4 metres over middle of driveway.					
<b>Yes</b>		87.6			10+ years	Block paving, Grass						
<b>T004</b>	Scarlett Oak	450	11		Moderate	N4.5, E5.5, S3, W4.5	Jan 2022: No significant change since previous survey.	C1	No work required.	4		
		5.4	6		SM	High	Sep 2020: Roadside tree growing out of hedge. Minor deadwood. Restricted access to tree due to hedge and boundary fence. Southern crown portion has been reduced historically due to proximity to telecoms pole and cable. Fair form and condition.					
<b>Yes</b>		91.6			10+ years	Grass, Tarmac, Gravel						
<b>T005</b>	Lombardy Poplar	490	10		Moderate	N1, E1, S1, W1	Jan 2022: No significant change since previous survey.	U	Fell to ground level.	3		
		5.88	0.5		SM	High	Sep 2020: Poor quality specimen with regrowth from previous pollarding point at 4 metres. Evidence of Honey Fungus at the base on the northern aspect. Not critical at present but liable to destabilise the tree over time.					
<b>Yes</b>		108.6			<10 years	Bare earth and patio						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
		RPA (m <sup>2</sup> )	Aspect	Aspect	SULE	Ground Cover						
<b>T006</b>	English Oak	680	14		High	N7, E6.5, S7, W6.5	Jan 2022: Tree lining access track. Tree is surrounded by concrete hard surfacing and is located within a small retaining feature that it is out growing. Obvious damage to the retaining wall likely attributable to the tree. Surrounding concrete is cracked and being lifted. Evidence of past surgery with good occlusion around the wounds. No obvious visible defects although the tree is situated poorly given its size and the constraints posed. Main crown base on north aspect is 4 metres. Crown base on southern aspect is 2.5 metres. No topo position so location is indicative. Fair form and condition.	B1	No work required.	4	Reduce crown on southern aspect by 2m and root prune as shown on drawing no. 10446-D-AMS.	0
	8.16	1.5		EM	High							
<b>Yes</b>	209.2			20+ years	Building, Concrete							
<b>T007</b>	Cherry Sp	70	5		Low	N1.5, E1.5, S1.5, W1.5	Jan 2022: Young tree becoming established. No central leader and form becomes effectively multi-stemmed and fastigate from 2 metres. Fair form and condition.	C1	No work required.	4	Fell to ground level.	0
	0.84	2.5		Y	Moderate							
<b>Yes</b>	2.2			10+ years	Bare earth							
<b>T008</b>	Goat Willow	310	5		Low	N4.5, E4, S2.5, W3	Jan 2022: Multi-stemmed form. Evidence of recent pruning. Fair form and condition.	C1	No work required.	4		
	3.72	1.5		SM	High							
<b>Yes</b>	43.5			10+ years	Grass							

## **Appendix C**

Schedule of Works to Allow Development

## SCHEDULE OF WORKS (AIA)

The Chimneys, New Road, Beyton Green, Rougham, Suffolk

Surveyed By: Alex Turner

Surveyed: 11/01/2022

Managed By: Alex Turner

Tree No.	Species	Work required	Priority
A001	Leyland Cypress, Holly, Cherry Spp	Crown lift to 2m on southern aspect as shown on drawing no. 10446-D-AMS.	0
H001	Hawthorn, Cut Leaved Hawthorn	Reduce crown on northern aspect 0.5m and root prune to accommodate parking bays 17-25 as shown on drawing no. 10446-D-AMS.	0
H002	Leyland Cypress	Fell sections and crown lift western aspect to 2.5m as shown on drawing no. 10446-D-AMS for the visibility splay. Crown lift eastern section to 2.5m as shown on drawing no. 10446-D-AMS for car park access.	0
H003	Hawthorn, Holly	Fell eastern section as shown on drawing no. 10446-D-AMS.	0
H004	Leyland Cypress	Fell to ground level.	0
H005	Leyland Cypress	Fell to ground level.	0
T001	False Acacia	Root prune to accommodate parking bay 17 as shown on drawing no. 10446-D-AMS.	0
T003	Maidenhair Tree	Fell to ground level.	0
T006	English Oak	Reduce crown on southern aspect by 2m and root prune as shown on drawing no. 10446-D-AMS.	0
T007	Cherry Sp	Fell to ground level.	0

## **Appendix D**

### Explanatory Notes



# Explanatory Notes



## Categories

Below is an explanation of the categories used in the attached Tree Survey.

**No** Identifies the tree on the drawing.

**Species** Common names are given to aid understanding for the wider audience.

**BS 5837 Main Category** Using this assessment (BS 5837:2012, Table 1), trees can be divided into one of the following simplified categories, and are differentiated by cross-hatching and by colour on the attached drawing:

**Category A** - Those of high quality with an estimated remaining life expectancy of at least 40 years;

**Category B** - Those of moderate quality with an estimated remaining life expectancy of at least 20 years;

**Category C** - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm;

**Category U** - Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

**BS 5837 Sub Category** Table 1 of BS 5837:2012 also requires a sub category to be applied to the A, B, C, and U assessments. This allows for a further understanding of the determining classification as follows:

**Sub Category 1** - Mainly arboricultural qualities;

**Sub Category 2** - Mainly landscape qualities;

**Sub Category 3** - Mainly cultural values, including conservation .

Please note that a specimen or landscape feature may fulfil the requirements of more than one Sub Category.

**DBH (mm)** Diameter of main stem in millimetres at 1.5 metres from ground level. Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.

**Age** Recorded as one of seven categories:

**Y** Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.

**S/M** Semi-mature. An established tree, but one which has not reached its prospective ultimate height.

**E/M** Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.

**M** Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.

**O/M** Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.



## D Dead.

<b>Height</b>	Recorded in metres, measured from the base of the tree.
<b>Crown Base</b>	Recorded in metres, the distance from ground and aspect of the lowest branch material.
<b>Lowest Branch</b>	Recorded in metres, the distance from ground and aspect of the emergence point of the lowest significant branch.
<b>Life Expectancy</b>	Relates to the prospective life expectancy of the tree and is given as 4 categories:  1 = 40 years+; 2 = 20 years+; 3 = 10 years+; 4 = less than 10 years.
<b>Crown Spread</b>	Indicates the radius of the crown from the base of the tree in each of the northern, eastern, southern and western aspects.
<b>Minimum Distance</b>	This is a distance equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level tree for multi stemmed specimens. (BS 5837:2012, section 4.6).
<b>RPA</b>	This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as “a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority”. The RPA is shown on the drawing.. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority’s tree officer.
<b>Water Demand</b>	This gives the water demand of the species of tree when mature, as given in the NHBC Standards Chapter 4.2 “Building Near Trees”.
<b>Visual Amenity</b>	Concerns the planning and landscape contribution to the development site made by the tree, hedge or tree group, in terms of its amenity value and prominence on the skyline along with functional criteria such as the screening value, shelter provision and wildlife significance. The usual definitions are as follows:  Low                    An inconsequential landscape feature.  Moderate            Of some note within the immediate vicinity, but not significant in the wider context.  High                    Item of high visual importance.
<b>Problems/ Comments</b>	May include general comments about growth characteristic, how it is affected by other trees and any previous surgery work; also, specific problems such as deadwood, pests, diseases, broken limbs, etc.
<b>Work Required (TS)</b>	Identifies the necessary tree work to mitigate anticipated problems and deal with existing problems identified in the “Problems/comments” category.



**Work Required (AIA)**

Identifies the tree work specifically necessary to allow a proposed development to proceed.

**Priority**

This gives a priority rating to each tree allowing the client to prioritise necessary tree works identified within the Tree Survey.

- 1 Urgent – works required immediately;
- 2 Works required within 6 months;
- 3 Works required within 1 year;
- 4 Re-inspect in 12 months,
- 0 Remedial works as part of implementation of planning consent.



## BS 5837:2012 Terms and Definitions

<b>Access Facilitation Pruning</b>	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
<b>Arboricultural Method Statement</b>	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
<b>Arboriculturist</b>	Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
<b>Competent Person</b>	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. <i>NOTE - a competent person is expected to be able to advise on the best means by which the recommendations of this British Standard may be implemented.</i>
<b>Construction</b>	Site-based operations with the potential to affect existing trees.
<b>Construction Exclusion Zone</b>	Area based on the root protection area from which access is prohibited for the duration of a project.
<b>Root Protection Area (RPA)</b>	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
<b>Service</b>	Any above or below ground structure or apparatus required for utility provision. <b>NOTE</b> - examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.
<b>Stem</b>	Principal above ground structural component(s) of a tree that supports its branches.
<b>Structure</b>	Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
<b>Tree Protection Plan</b>	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures.
<b>Veteran Tree</b>	Tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. <b>NOTE</b> - these characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem.



## **Appendix E**

### Statement of Supervision

## **The Chimneys, New Road, Beyton Green, Rougham, Suffolk, IP30 9LR**

### **Statement of Supervision (Arboriculture)**

#### **Introduction**

In accordance with Planning Permission DC/22/0240/FUL (dated 10/03/2022), Montpelier Estates Ltd are undertaking the development of the above site.

The purpose of this document is to ensure that all works that have an impact on retained trees are undertaken in accordance with the approved Method Statement and Tree Protection Plan. As such, the purpose of the Statement is to identify the following arboricultural issues:

- Approved documents;
- Key staff and contacts;
- Critical phases of pre-commencement, induction and construction.

#### **Approved Documents**

The following documents must be available to all those with responsibility for arboricultural matters during construction:

- BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.
- Notice of Planning Decision DC/22/0240/FUL, dated 10/03/2022.
- Preliminary Arboricultural Method Statement & Tree Protection Plan for this project – produced by Hayden’s Arboricultural Consultants dated 31/01/2022.
- Arboricultural Method Statement & Tree Protection Plan for this project – produced by Hayden’s Arboricultural Consultants dated 31/07/2023.

#### **Key Staff**

The following have or are to be appointed responsible for arboricultural matters at the site:

- Developer: Montpelier Estates Ltd (or their representative).
- Arboricultural Consultant: Hayden’s Arboricultural Consultants Ltd. Contact Mr David Carmichael (Practice Manager) – 01284 765391, [info@treesurveys.co.uk](mailto:info@treesurveys.co.uk), (or his representative).
- Site Manager/Agent – TBC, (or their representative).

**Critical phases of pre-commencement, induction, construction & completion**

<b>REF</b>	<b>ACTIVITY</b>	<b>ONE OFF /REPEAT</b>	<b>ATTENDEES</b>	<b>ACTION</b>
1	Site meeting (to discuss working methods, timescales and tree protection schemes)	One off	Developer, Arboricultural Consultant, Site Manager/Agent, Ground Works Contractor	Arboricultural Consultant to record minutes – copies to be submitted to attendees
2	Inspection of completed tree surgery & installation of tree protection	One off	Arboricultural Consultant, Site Manager/Agent	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
3	Supervision of 'No Dig' surfacing installation around H002 and T004	Repeat: until complete	Arboricultural Consultant, Site Manager/Agent, Contractors	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
4	Top dress 'No Dig' surfacing (does not require supervision)	N/A	N/A	N/A
5, 6 & 7	Final tree assessment – after fencing removal	One off	Developer, Arboricultural Consultant, Site Manager/Agent, Ground Works Contractor, Council Arboricultural Officer	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer
*	Additional inspections (if necessary) to ensure periods not greater than three months elapse between any of above listed monitoring events	Dependent on progress of the project	Arboricultural Consultant, Site Manager/Agent	Arboricultural Consultant to record minutes – copies to be submitted to Developer and Council Arboricultural Officer

## **Variations and Incidents**

Any proposed variations to the proposed working method (relating to arboricultural matters) will be referred by the on-Site Manger/Agent to the Developer who will seek advice from the Arboricultural Consultant. The Arboricultural Consultant shall advise on minor amendments (e.g. realignment of fencing etc) and will subsequently report these to the Arboricultural Officer by e mail or minutes. Issues directly relating to tree surgery or tree retention will be forwarded by the Arboricultural Consultant (with recommendations) to the Arboricultural Officer for approval. Except in an emergency situation **and** when the Arboricultural Officer is unavailable, no such actions will occur without the written approval of the Arboricultural Officer.

*Alexander Turner*

**Alex Turner**

Arboricultural Consultant  
Hayden's Arboricultural Consultants Ltd

31/07/2023.



## **Reasons for a Qualified Monitoring Arboriculturalist**

It is essential that the works are monitored by a qualified and experienced Arboriculturalist for the following reasons.

1. An Arboriculturalist has the skill and expertise to identify if the approved tree surgery specification has been complied with and the knowledge to provide appropriate remedial advice.
2. It is necessary for informed decisions to be made regarding the impact of tree surgery, particularly root pruning. The location of roots is assessed via a calculation, but in reality, roots may grow in a more unpredictable fashion dependent on topographic and historic features. Under CDM it is essential that expert individual knowledge is available and can advise on the inevitable unforeseen circumstances that arise.
3. An Arboriculturalist provides the point of liaison and information exchange with the Local Planning Authority's Tree Officer who is also normally a qualified Arboriculturalist. This allows fellow professionals to discuss the technical matters that inevitably arise and agree appropriate and balanced solutions. Having an Arboriculturalist engaged on the supervision of a project provides comfort to the Local Planning Authority that tree protection measures are complied with and hence it is much more likely that there will be less direct scrutiny from the Local Planning Authority (regarding tree matters) during the build of the project than would otherwise be the case.
4. Arboricultural input is essential to confirm that tree protection measures are adequate and fit for purpose. This can often save the client time (and therefore money) by identifying working methods and systems that are site efficient.
5. As living entities sensitive to their environment, the condition of trees changes, and over the course of a project it may be necessary to advise on additional tree surgery or felling as a result of, for example disease or storm damage.
6. An Arboriculturalist will provide detailed briefing notes and "toolbox talks" to site staff to ensure their compliance with conditions and prevent arboricultural breaches of conditions arising which can have severe consequences for project progression.
7. Close liaison between the Site Manager and the Arboriculturalist will ensure that the retained trees are protected but as minimal an inconvenience to construction as possible. This leads to the final outcome which is the completion of the project with retained healthy trees complementing the buildings in the manner that the designers and planners envisaged.



**David M Carmichael**  
Practice Manager



## Tree Protection Briefing Note

### ***Introduction:***

The trees that are to remain as part of the development are important and must not be harmed. They have been carefully selected as part of an extensive appraisal, design and planning process and therefore are legally protected by a combination of Tree Preservation Orders and Planning Conditions. This means that any damage caused to retained trees is a serious offence, as is the undertaking of any work to trees that has not been authorised in writing by the Local Planning Authority. Contravention of this legislation is liable to lead to heavy personal or corporate fines together with the imposition of stop notices, expensive mitigation measures and replacement planting instructions. Given this, it is vital that all development staff are familiar with the approved Tree Protection Plan (TPP).

### ***Typical Forms of Construction Damage to Trees:***

1. **Physical Injury to Trunk and Crown.** Construction equipment can injure the above-ground portion of a tree by breaking branches, tearing the bark, and wounding the trunk. These injuries are permanent and, if extensive, can be fatal.
2. **Root Cutting\*.** Excavation, grading and trenching associated with construction and underground service installation can be very damaging to tree roots which are vital for both anchoring the tree in the ground and gathering moisture and nutrients. Unacceptable levels of damage to the roots will lead to a tree losing vitality, dropping branches, dying or becoming unsafe – either immediately or in the future.
3. **Soil Compaction.** An ideal soil for root growth and development contains about 50% pore space for water and air movement. Tracking by construction equipment and the storage of materials can compact soil and dramatically reduce pore space. Compaction inhibits root growth, limits water penetration, and decreases oxygen needed for root survival. If the compaction is too severe, in addition to preventing effective root growth, it will cause physical injury to both anchor and feed roots.
4. **Smothering Roots by Adding Soil\*.** The majority of fine moisture and nutrient absorbing roots are within the top 30 cm of soil. Even a few centimetres of soil piled over the root system to change the grade can smother fine roots and eventually lead to the death of larger roots.
5. **Rooting Zone Contamination\*.** Many materials used on development sites (e.g. salt, lime, concrete, cement, oil) are toxic to trees. If such contaminants are spilled or allowed to leach into the RPA, they can quickly kill the roots, thus causing the same effects as root cutting, soil compaction and smothering.



\* As the location of tree roots cannot be seen, each retained tree close to a developable portion of the site has a designated Root Protection Area (RPA) as shown on the approved TPP. No excavation, grading, trenching, storage of materials nor any other activity may take place within the designated RPA unless it is in accordance with the approved Tree Protection Plan and completed under the supervision of Hayden's Arboricultural Consultants.

### ***Preventing Damage to Trees During Construction:***

The approved TPP provides specific instruction on the tree protection measures required across whole site in order to prevent damage. The primary methods of protection are as follows: -

1. **Installation of Protective Fencing.** The alignment and specification of this is shown to scale on the approved TPP. It must be erected prior to any demolition or development commencing on site and must not be moved or altered without prior written agreement of the Hayden's Arboricultural Consultants or the Local Planning Authority. No activities may take place within the fenced area, and no materials may be stored within the fenced area. The fencing may not be removed until ALL construction activities in the vicinity have been completed and only then with the written agreement of Hayden's Arboricultural Consultants or the Local Planning Authority.
2. **Ground Protection.** Where fencing is impractical the TPP provides instruction on other forms of effective ground protection. An example of this would be the provision of a temporary load bearing surface to prevent soil compaction and contamination. This must be of bespoke design for each situation so as to ensure it is fit for purpose. As with the fencing, this must be installed prior to any demolition or development commencing on site and must not be moved or altered without prior written agreement of the Hayden's Arboricultural Consultants or the Local Planning Authority. The temporary ground protection may not be removed until ALL construction activities in the vicinity have been completed and only then with the written agreement of Hayden's Arboricultural Consultants or the Local Planning Authority.
3. **Monitoring Visits from Hayden's Arboricultural Consultants.** Under the terms of the planning permission the development must be monitored by an Arboriculturalist on a suitably frequent basis. The purpose of this is twofold: -
  - a. To ensure that the above tree protection measures are complied with and report findings to the developers AND the Local Planning Authority.
  - b. To be available to provide help and advice regarding the inevitable requests for changes and supervision when working around retained tree.
4. **Operational Planning.** Whilst it is understood that trees are far from the only issue to be managed on site, they do represent a significant and potentially costly constraint if the protection measures required in the TPP are not strictly adhered to and as a result construction damage to trees occurs. Therefore, if problems in terms of work space conflicting with tree protection measures are identified, early liaison with Hayden's Arboricultural Consultants is essential so as to agree supervised works, alternate working methods or if necessary seek additional approval from the Local Planning Authority. Failure to identify these matters at an early stage may lead to significant delays as it can be a lengthy procedure in gaining a response from the Local Planning Authority.



**Conclusion:**

- Tree Protection Measures are there to protect the environment. They are also there to protect you. If they are complied with, trees will not be harmed. Therefore, DO NOT amend the protection unless you have written consent from Hayden's Arboricultural Consultants or the Local Planning Authority.
- If you are unsure on any tree related matter, seek advice before you act. Hayden's Arboricultural Consultants will discuss your concerns and help find practical and timely solutions (where possible).
- Hayden's Arboricultural Consultants, in conjunction with the Local Planning Authority, may change the frequency of Arboricultural Monitoring Inspections if it is deemed necessary to ensure the approved standards of tree protection are adhered to.
- Hayden's Arboricultural Consultants can be contacted in the first instance at the Head Office on 01284 765391.



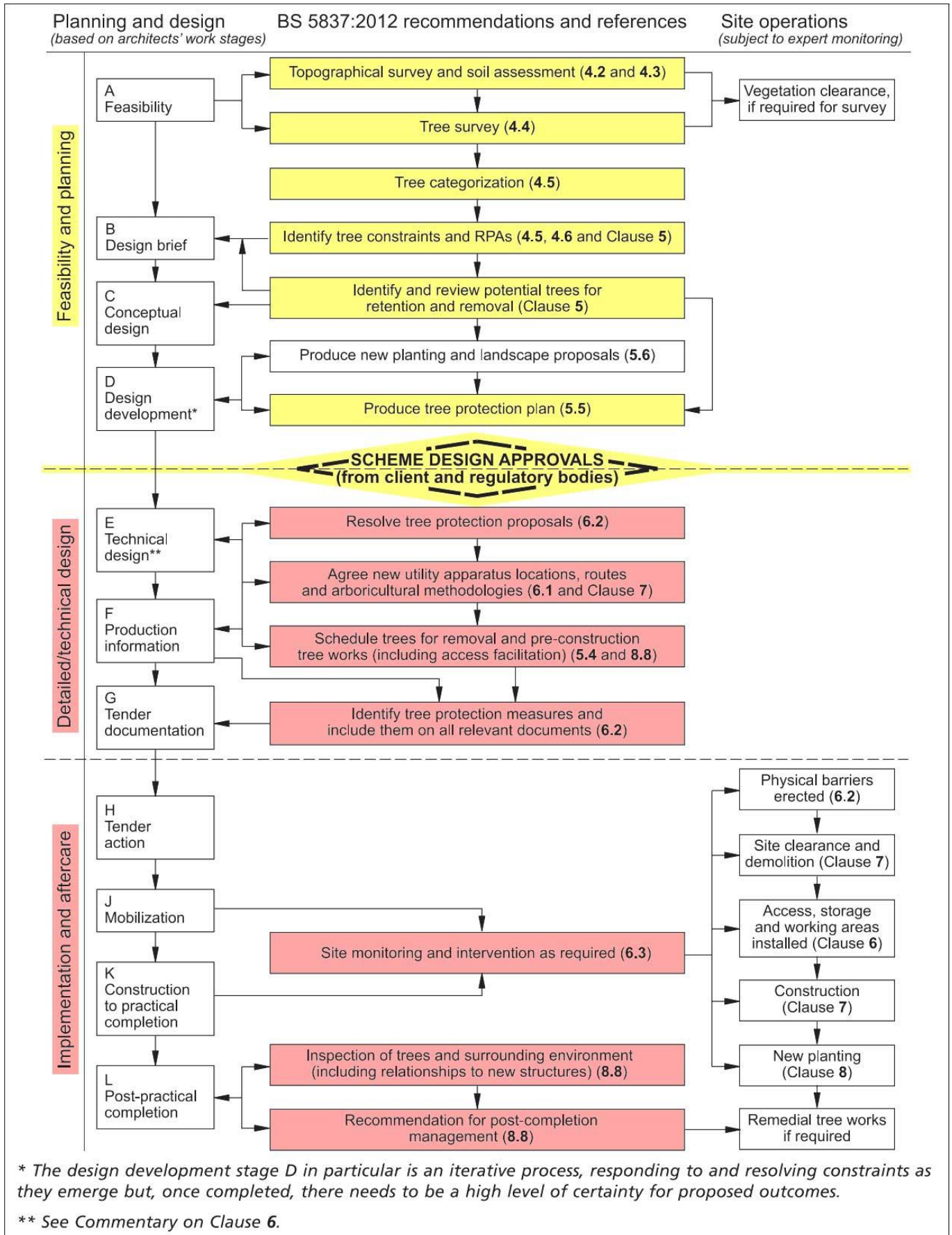
**David M Carmichael**  
Practice Manager



## **Appendix F**

### Advisory Information & Sample Specifications

1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care



## European Protected Species and woodland operations. (V4)

Complete all sections of the Checklist

Checklist		Details													
<b>1</b>	<p>Are you within, or close to, the known mapped range of any of the protected species OTHER THAN BATS which are potentially everywhere? Tick any that apply. See distribution maps in the Good Practice Guidance for each species -</p> <p><input type="checkbox"/> Dormice  <input type="checkbox"/> Otters  <input type="checkbox"/> Great crested newts  <input type="checkbox"/> Sand lizards  <input type="checkbox"/> Smooth snakes</p>	<p>Name of Wood:</p> <hr/> <p>Grid Reference:</p> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> </table>													
<b>2</b>	<p>Does your wood contain any of the following habitats? Tick any that apply.</p> <p><input type="checkbox"/> Old trees with holes and crevices which might be used bats  <input type="checkbox"/> Species rich scrub/coppice, early growth stage plantations and forest interfaces  <input type="checkbox"/> Rivers on which otters might be found  <input type="checkbox"/> Ponds which might be occupied by great crested newts  <input type="checkbox"/> Open areas on heathy soils</p>	<p>Area: (ha)</p> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> </table> <p>Date of Assessment:</p> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> </table> <p>Name of Assessor:</p>													
<b>3</b>	<p>Have any of the protected species been recorded in this wood or on adjoining sites? Tick any that apply. Indicate which sources of information you have checked:</p> <p><input type="checkbox"/> National Biodiversity Network (<a href="http://www.nbn.org.uk">www.nbn.org.uk</a>)  <input type="checkbox"/> Local Biological Records Centre  <input type="checkbox"/> Local Wildlife Trust  <input type="checkbox"/> Other  <i>Specify Other:</i></p>	<p>YES</p> <p>NO</p>													
<b>4</b>	<p>Have your inspections or any expert surveys found any of the following signs or evidence? Tick any that apply.</p> <p><input type="checkbox"/> Signs (e.g. otter spraint, nuts gnawed by dormice, leaves folded by newts)  <input type="checkbox"/> Sightings (or echo-location)  <input type="checkbox"/> Potential breeding or roosting sites (e.g. veteran trees, old trees with crevices, riverside hollow trees, ponds, timber stacks, large fallen deadwood)  <input type="checkbox"/> Confirmed breeding or roosting sites (i.e. evidence of sites actually being used)  <i>Details:</i></p>	<p>YES</p> <p>NO</p>													
<b>CHECK POINT</b>	<p>If you have answered NO to ALL of the above then only bats need to be considered in your operations.</p> <p>If you have answered YES to any of the above then the species concerned must be considered as well as bats.</p>	<div style="background-color: #e6f2ff; border: 1px solid black; padding: 5px; text-align: center; font-weight: bold;">Notes</div>													
<b>5</b>	<p>Do the operations comply with Good Practice for bats and any other species found (or likely to be found in your wood) or can the operations be modified to do so? <i>Details: Use reverse of form to expand as required:</i></p>	<p>YES</p> <p>NO</p>													
<b>6</b>	<p><u>Whether or not a licence is required...</u> Has the information been communicated to operators (including the location of breeding sites and sensitive areas)? Tick any that apply.</p> <p><input type="checkbox"/> Included in documentation (e.g. contract, letter of instruction, site assessment or other management plan)  <input type="checkbox"/> Shown to operators and/or their supervisor  <input type="checkbox"/> Marked with paint or hazard tape  <input type="checkbox"/> Shown on the site plan  <i>Other means:</i></p>	<p>YES</p> <p>NO</p>													
<b>7</b>	<p>Have arrangements for supervision been made to ensure Good Practice guidance is complied with during the operations? <i>Details:</i></p>	<p>YES</p> <p>NO</p>													

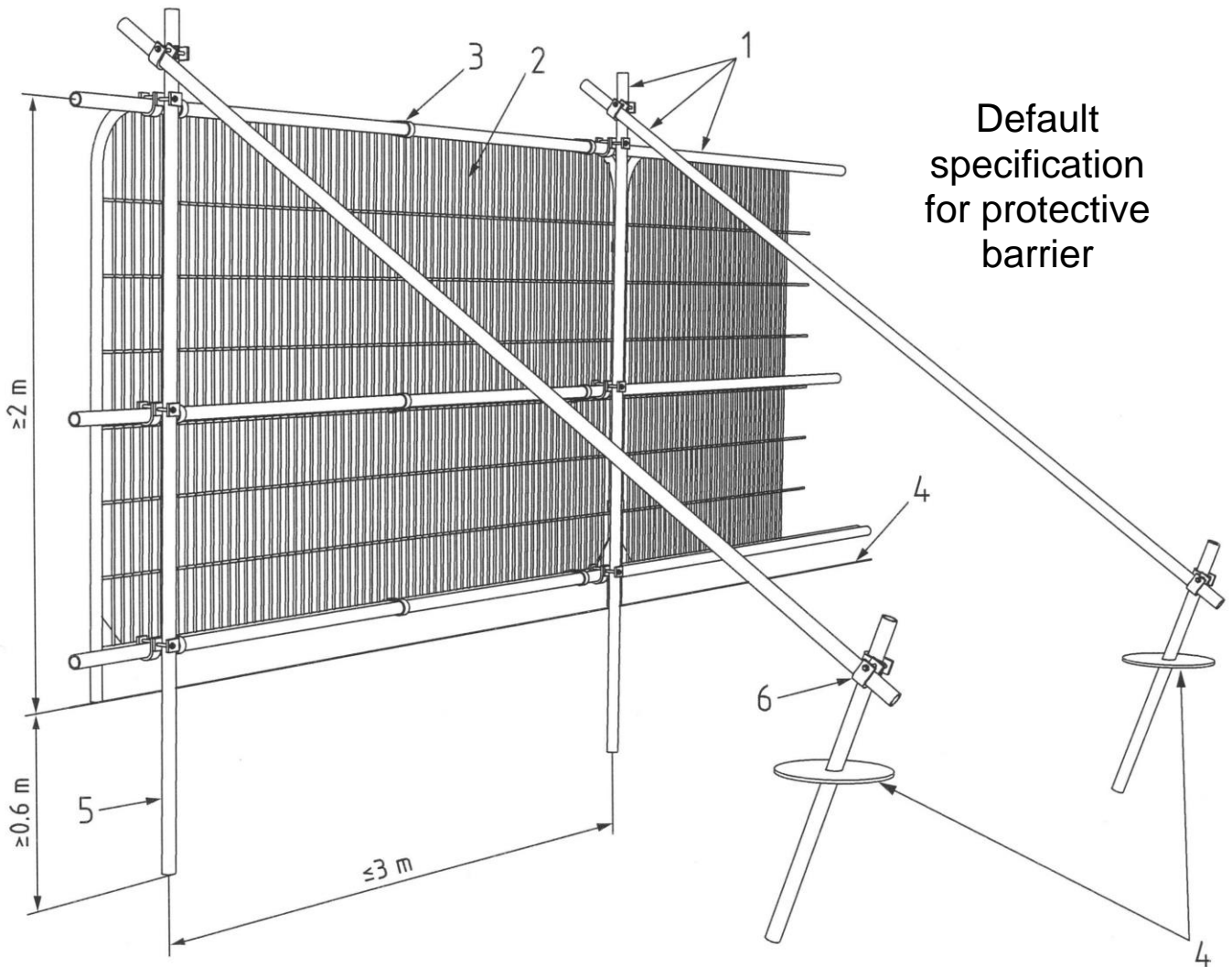
A licence is not required but continue to sections 6 and 7 below

You will need to obtain a licence BEFORE carrying out the work (see EPS Licence Application Forms and Notes)

You may commit an offence if you do not tell your operators about the protected species in your wood.

You may commit an offence if you do not take steps to ensure that your operators comply with the Good Practice guidance.

3. BS 5837:2012 Figure 2: Default specification for protective barrier

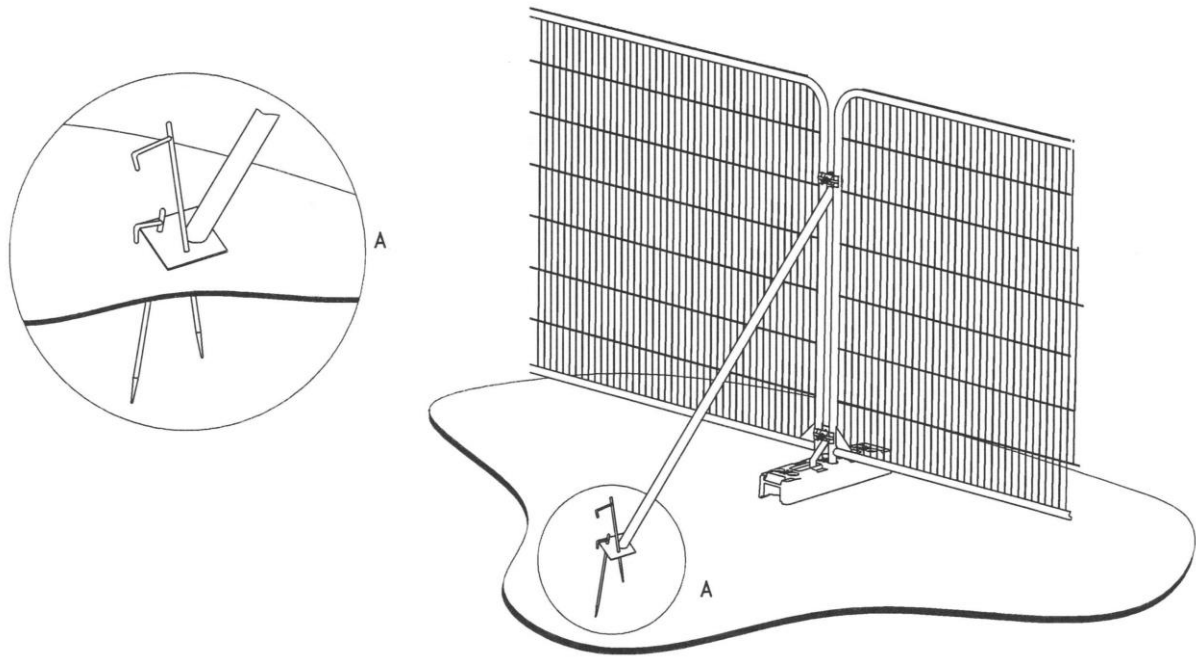


Key

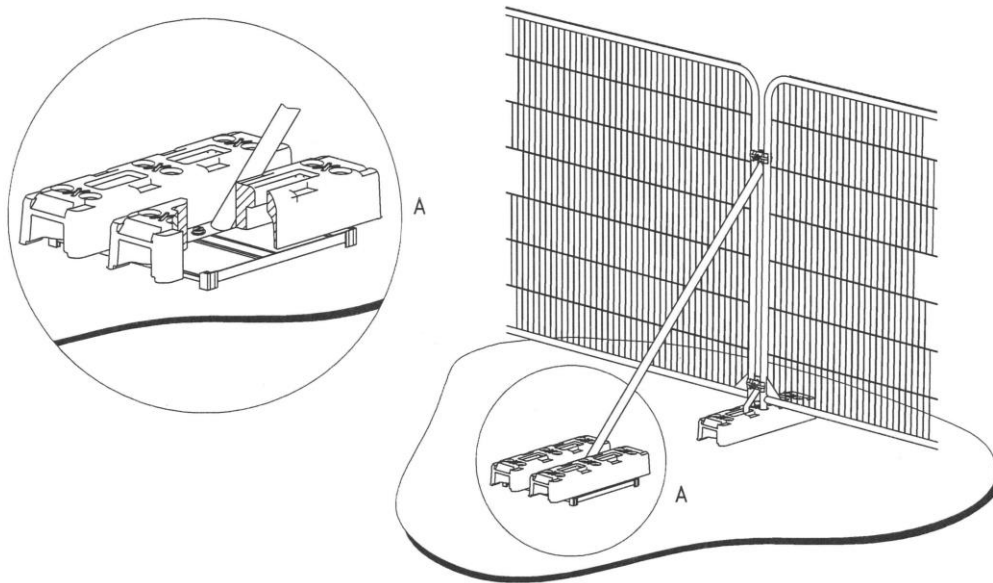
- 1 Standard scaffold pole
- 2 Heavy gauge 2m tall galvanised tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6m)
- 6 Standard scaffold clamps



4. BS 5837:2012 Figure 3: Examples of above-ground stabilizing systems

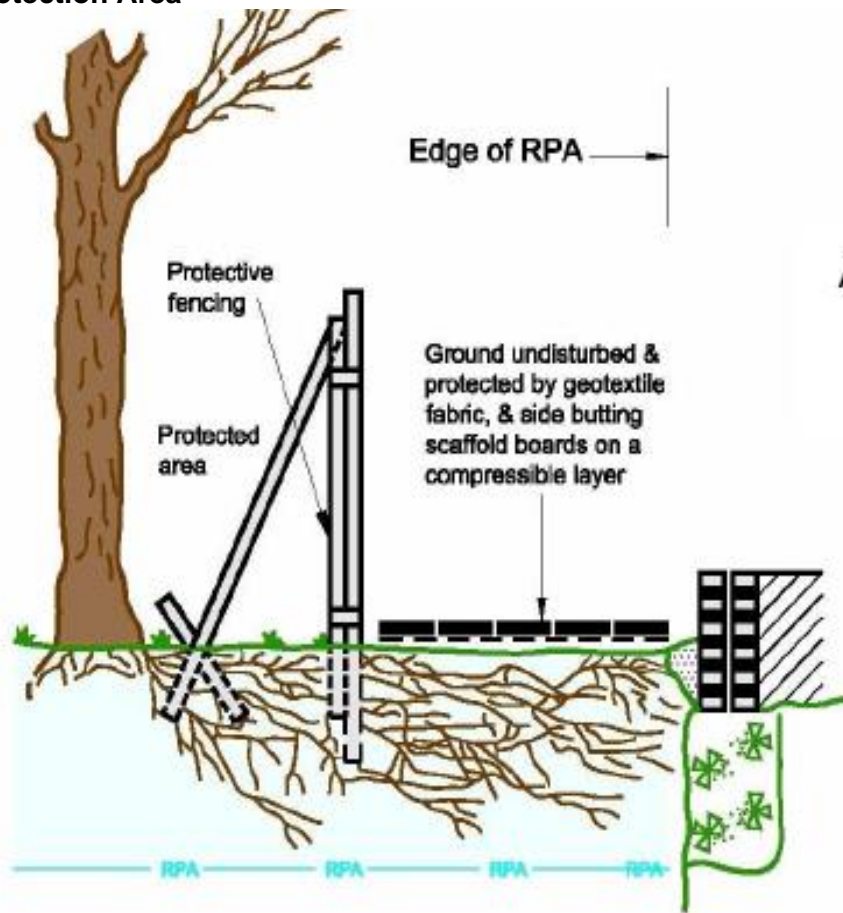


a) Stabilizer strut with base plate secured with ground pins



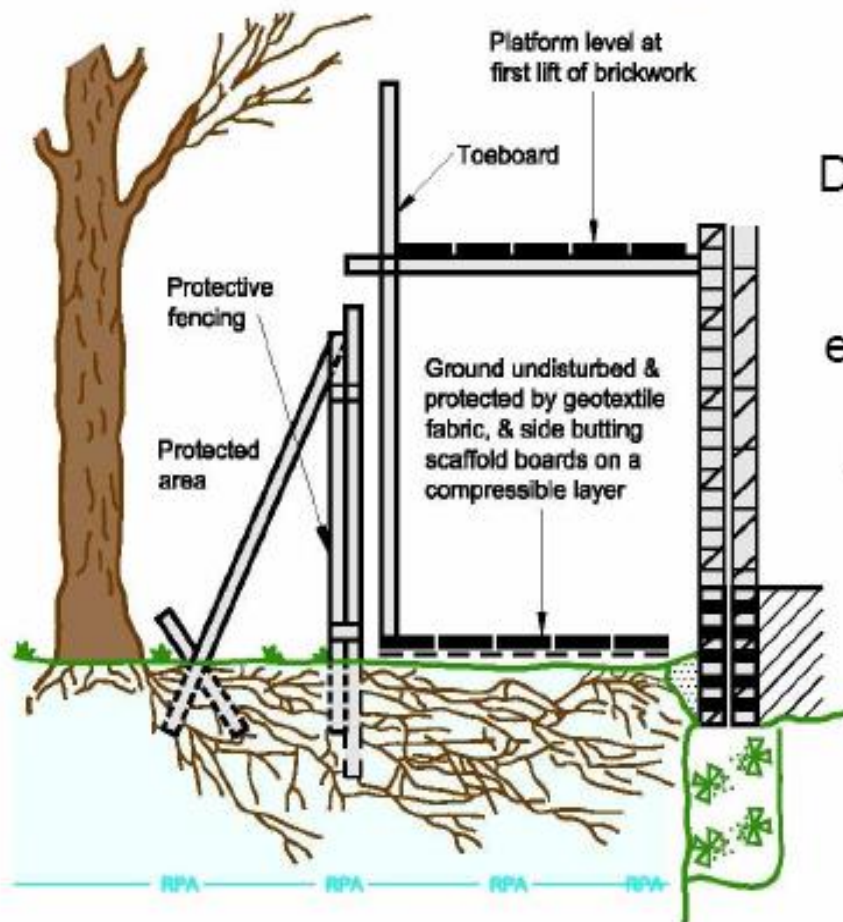
b) Stabilizer strut mounted on block tray

5. Figure 4 Detail of protective barrier where construction encroaches within BS5837:2012 Root Protection Area



Appendix No 2.1

Figure 4 –



Detail of protective barrier where construction encroaches within BS 5837:2012 Root Protection Area (RPA)

**6. METHOD STATEMENT FOR “NO-DIG” CONSTRUCTION IN LINE WITH ARBORICULTURAL PRACTICE NOTE 12  
“Through the Trees to Development”**

Prior to commencing any demolition or construction on site, erect protective fencing around trees to form an exclusion zone (see attached plan).

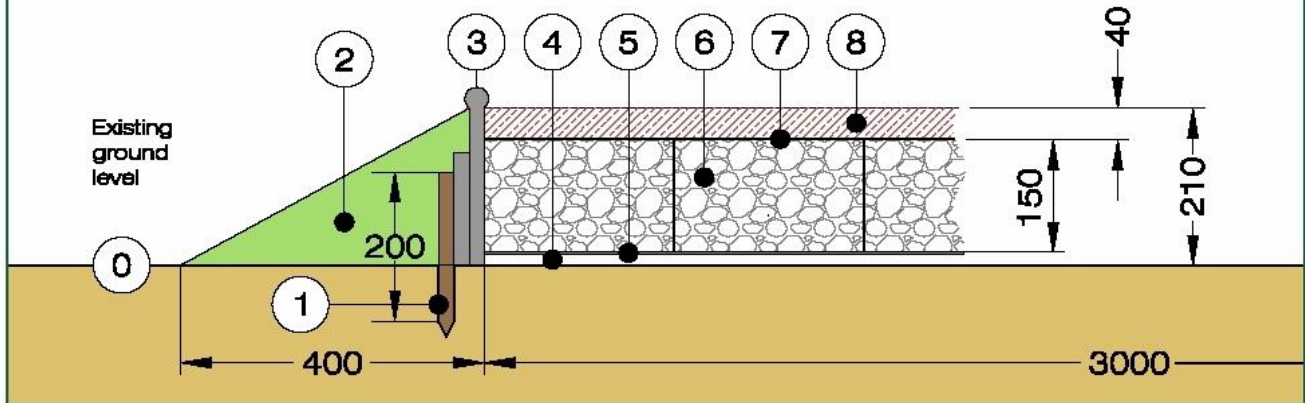
This will ensure that roots will not be severed during the construction work and the soil in the area of the exclusion zone will not be compacted thus enabling oxygen to continue to diffuse into the soil beneath.

Construction of the driveway, path or other hard surface should be undertaken in dry weather between May and October when the ground is driest and least prone to compaction.

- 1 Kill ground vegetation using a translocated herbicide (glyphosate), ensuring that the selected herbicide doesn't damage the root of the tree(s) below the surface of the path.
- 2 Remove the dead or organic material from the site and ensure that large stones and shrub stumps are removed from the proposed route.
- 3 Any tree stumps should be ground out rather than excavated to minimize soil disturbance.
- 4 The resulting hollows and any other holes along the route driveway, path or other hard surface should be filled with sharp sand.
- 5 Lay *Terram Geotextile* matting across the full width of the driveway, path or other hard surface. This will prevent the intrusion of roots into the sub-base whilst still allowing nutrients and gaseous exchange.
- 6 Lay *Terram 150 Geocell* (cellular confinement system). (This is available from the Terram Ltd, tel: 01495 757722, fax: 01495 762393, and can be cut with a Stanley knife on site to the length, width and profile of the path required).
- 7 The driveway, path or other hard surface is to be supported against 150 x 20mm tanalised softwood boarding and 200mm long tanalised soft wood pegs driven into the ground at 1500mm centres.
- 8 Carefully push 20mm – 40mm gravel chippings (no fines) into the *Geo 150 Geocell* matting to form an aggregate sub-base.
- 9 The chippings should be placed at one end of the matting and pushed/spread across the matt to prevent compaction of the soil, working on either side of the driveway, path or other hard surface.
- 10 Compact the sub base to ensure binding with the *Geocell* and to minimise future wheel rutting.
- 11 Lay second layer of *Terram Geotextile* matting across the full width of the driveway, path or other hard surface. This will prevent the intrusion of fines into the gravel chippings.
- 12 Add layer of 'no fines, sharp sand and compact if using pavers as surface treatment.
- 13 Place proposed surface treatment (e.g. Pavers) on top of the compacted sub-base to form the finished surface to the path and 'bank up' the edging with topsoil, which is to be grass seeded in spring/autumn. This will form a gentle slope from the edging to the existing ground level.

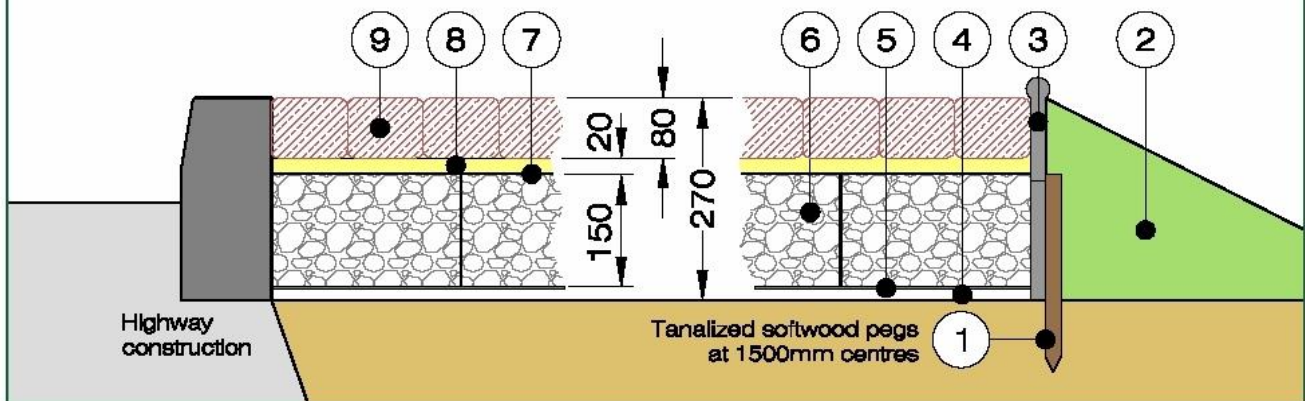
- 1) Tanalised softwood pegs at 1500mm centres
- 2) Top soil banked up to edging
- 3) Softwood boards / Concrete edging 'tiles'
- 4) Existing surface to be cleared of ground vegetation using a translocated herbicide such as glyphosate

- 5) Geo-textile matting "Terram" laid on top of footpath
- 6) "Geocell" Cellular Confinement System (150mm deep) with gravel chippings
- 7) Geo-textile matting "Terram" laid on top of cellular confinement system
- 8) Gravel or paving laid on top of permeable sub-base



- 2) Top soil banked up to edging
- 3) Softwood boards / Concrete edging 'tiles'
- 4) Existing surface to be cleared of ground vegetation using a translocated herbicide such as "glyphosate"
- 5) Geo-textile matting "Terram" laid on top of footpath

- 6) "Geocell" Cellular Confinement System (150mm deep) with gravel chippings
- 7) Geo-textile matting "Terram" laid on top of cellular confinement system
- 8) 'No fines' sand laid on top of geo-textile matting
- 9) Aquaflo permeable paving laid on top of no fines sharp sand and permeable sub-base



5 Moseley' Farm  
Business Centre  
Fornham All Saints  
Bury St Edmunds  
Suffolk IP28 6JY

Tel: 01284 765391  
Fax: 01284 765181  
Mob: 07850167400  
[info@treesurveys.co.uk](mailto:info@treesurveys.co.uk)  
[www.treesurveys.co.uk](http://www.treesurveys.co.uk)

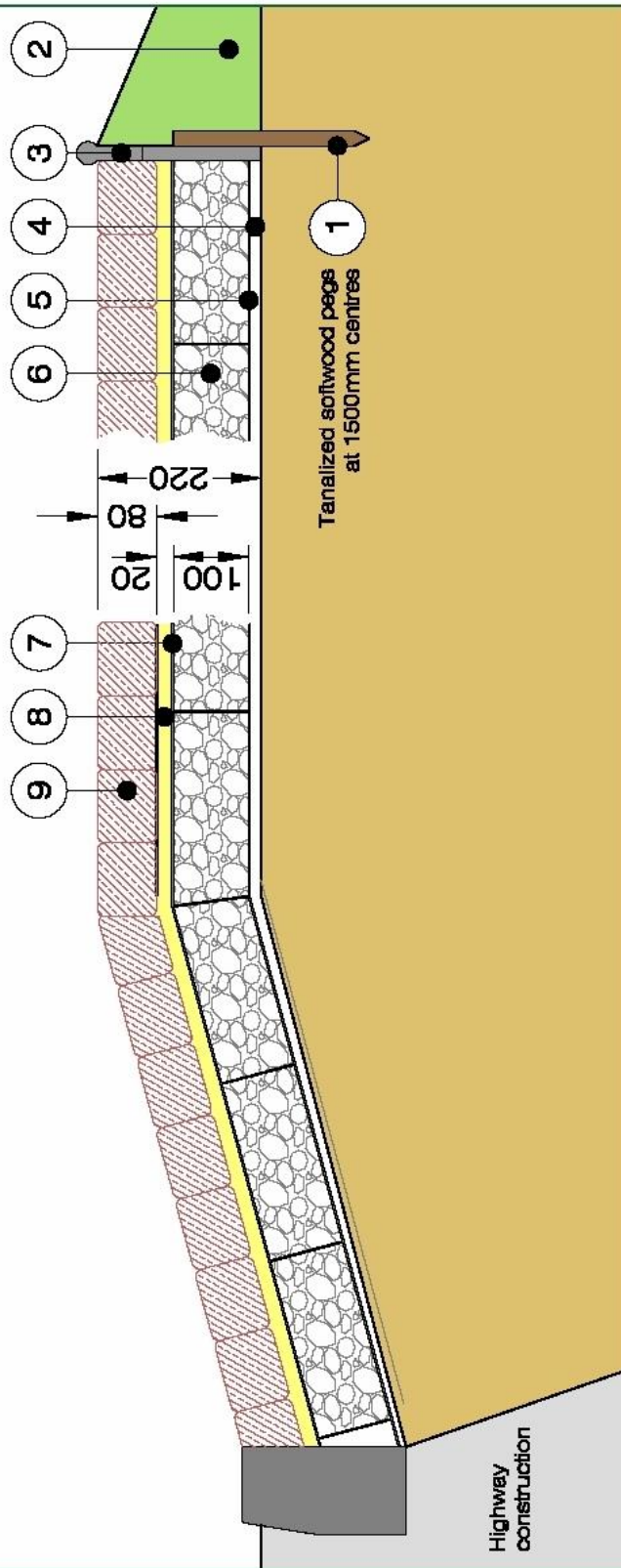
© Hayden's 2011

## 'No Dig' Driveway & Parking Specification

Scale  
1:10 (A4)

Drg No.  
Hayden's.ND

- 2) Top soil banked up to edging
- 3) Softwood boards / Concrete edging 'tiles'
- 4) Existing surface to be cleared of ground vegetation using a translocated herbicide such as glyphosate
- 5) Geo-textile matting "Terram" laid on top of footpath
- 6) "Geocell" Cellular Confinement System (150mm deep) with gravel chippings
- 7) Geo-textile matting "Terram" laid on top of cellular confinement system
- 8) 'No fines' sand laid on top of geo-textile matting
- 9) Gravel or paving laid on top of permeable sub-base



**HAYDEN'S**  
Arboricultural Consultants

5 Moseley' Farm  
Business Centre  
Fornham All Saints  
Bury St Edmunds  
Suffolk IP28 6JY

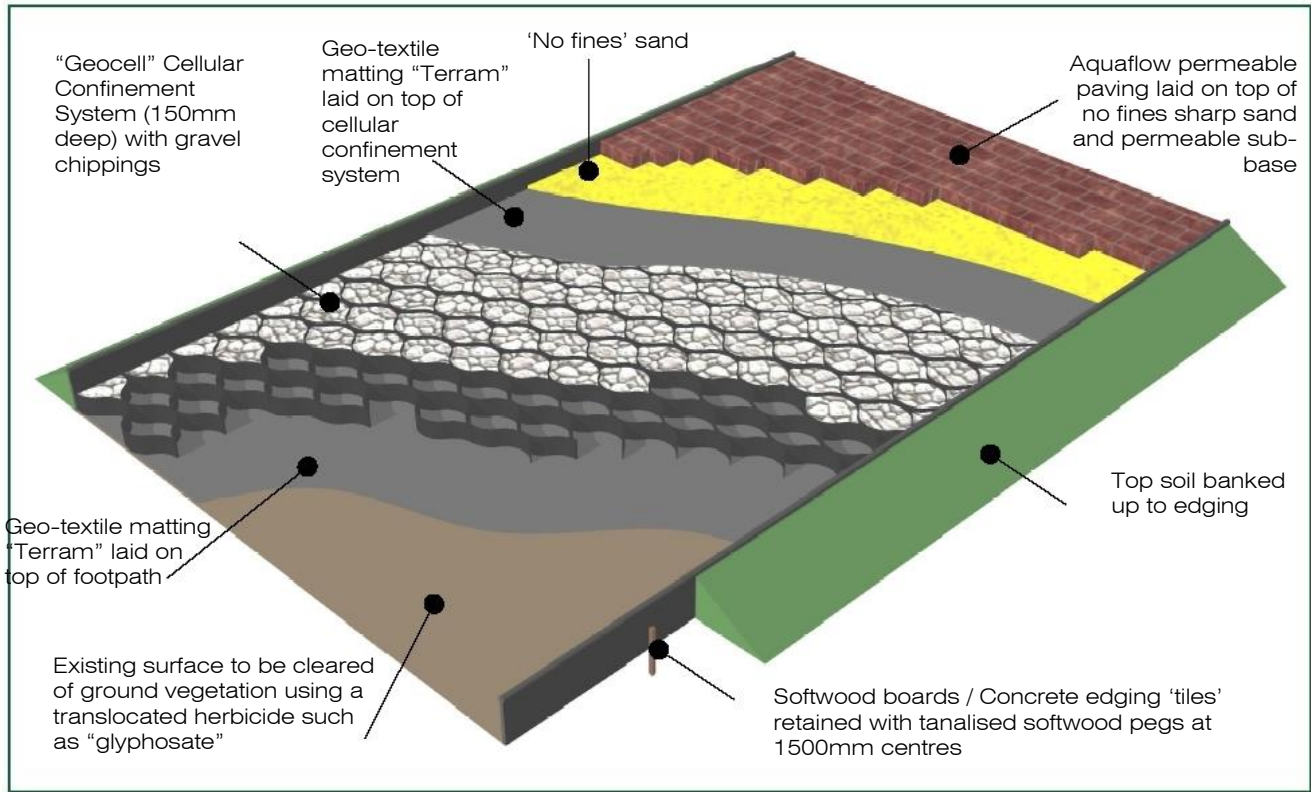
Tel: 01284 765391  
Fax: 01284 765181  
Mob: 07850167400  
[info@treesurveys.co.uk](mailto:info@treesurveys.co.uk)  
[www.treesurveys.co.uk](http://www.treesurveys.co.uk)

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## 'No Dig' Footpath & Driveway Specification

Scale  
1:10 (A4)

Drg No.  
Hayden's.ND



The 3D drawing above may not accurately depict the construction to be carried out and should be taken as indicative only. Use the section drawings on the previous page for full details on the required construction method

'No Dig' system during construction (right)

"Geocell" Cellular Confinement System (100mm deep) with gravel chippings (below)



**HAYDEN'S**  
Arboricultural Consultants

5 Moseley' Farm  
Business Centre  
Fornham All Saints  
Bury St Edmunds  
Suffolk IP28 6JY

Tel: 01284 765391  
Fax: 01284 765181  
Mob: 07850167400  
[info@treesurveys.co.uk](mailto:info@treesurveys.co.uk)  
[www.treesurveys.co.uk](http://www.treesurveys.co.uk)

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# The Aquaflow® range of permeable paving

## Aquaslab®

For use on Pedestrian areas

### Size

300 x 450 x 60mm

### Laying pattern

Staggered stretcher bond

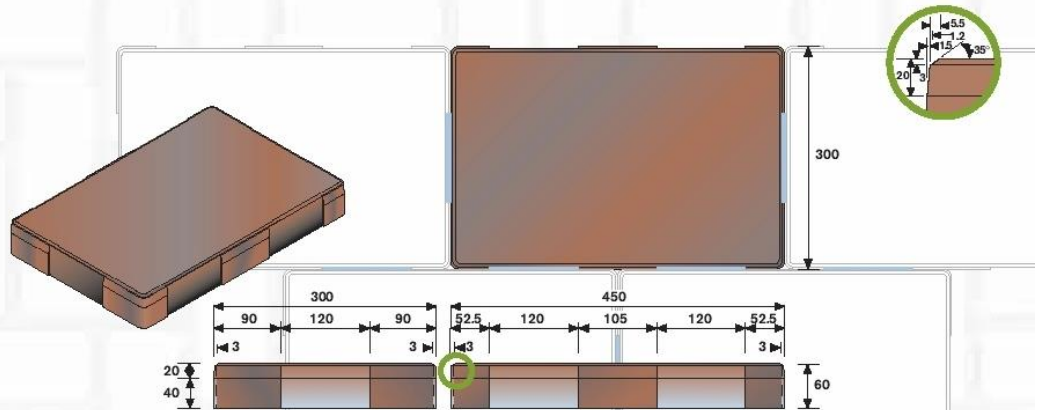
### Colours\*

Natural, Burnt Red, Red brindle, Golden brindle and Charcoal

### Finish

Standard

Bush hammered to special order



## Aquasett®

For use on footpaths, domestic drives and roads (80mm)

*Range of colours and the Olden finish make the Aquasett appropriate for use in conservation areas or on projects where architectural heritage is a major consideration.*

### Sizes

150 x 250 x 60/80mm

### Laying pattern

Staggered stretcher bond or 90° herringbone for trafficked areas.

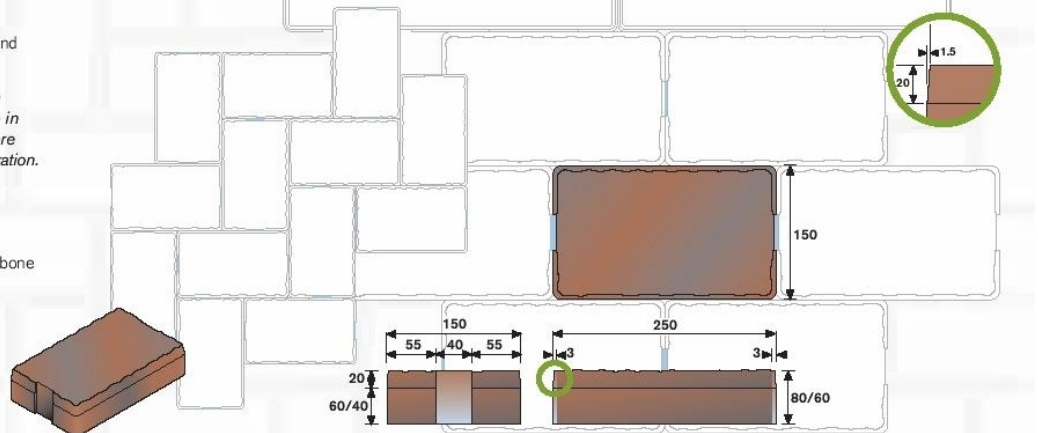
### Colours\*

Traditional, Red Brindle, Vendage and Pennant.

### Finish

Olden

Bush hammered to special order



## Aquasett combined®

For use on footpaths and domestic drives

*Range of colours and the Olden finish make the Aquasett combined appropriate for use in conservation areas or on projects where architectural heritage is a major consideration*

### Sizes

Large 150 x 250 x 60/80mm

Medium 150 x 150 x 60/80mm

Small 100 x 150 x 60/80mm

Ratio of blocks in 0.8 square metre manufactured format: 10 large, 14 medium and 7 small.

### Laying pattern

Staggered stretcher bond

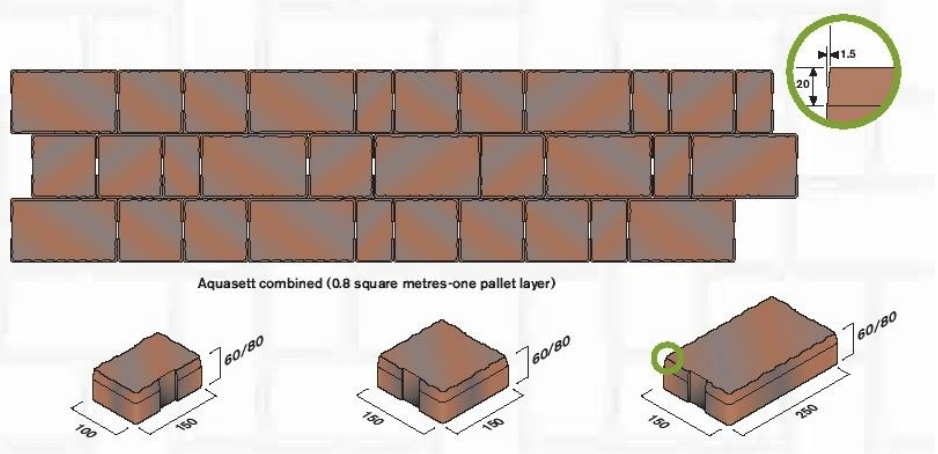
### Colours\*

Traditional, Red Brindle, Vendage and Pennant.

### Finish

Olden

Bush hammered to special order



Formpave have designed a range of Aquaflow paving blocks to be used in conjunction with either tanked or infiltration systems.

The range consists of six blocks manufactured from concrete with a tensile splitting strength in accordance with BS EN 1338:2003.

Included within the range is the Aquaslab which has been designed for use on non-trafficked pedestrian areas.

All of the blocks and slabs provide drainage through vertical channels and will allow water through the surface at a rate of approximately 9000mm per hour (9000 litres per m<sup>2</sup> per hour). The Inbitex geotextile beneath the laying course will allow approximately 4500 litres per m<sup>2</sup> per hour through and this figure should be used for design purposes.

The Aquaflow ML block system consists of an interlocking block with specialist top, bottom and edge blocks and has been specifically designed for heavy duty applications.

The ML blocks can be laid by hand or by machine. Where the blocks are machine laid modules of .65m<sup>2</sup> are laid in one pass. Laying rates of over 600m<sup>2</sup> per day have been readily achieved with a three man crew.

\* Other colours and finishes such as EcoGranite are available to special order.

### Aquaflow block<sup>®</sup>

For use on car parks, drives and moderately trafficked areas

#### Sizes

100 x 200 x 60/80mm

#### Laying pattern

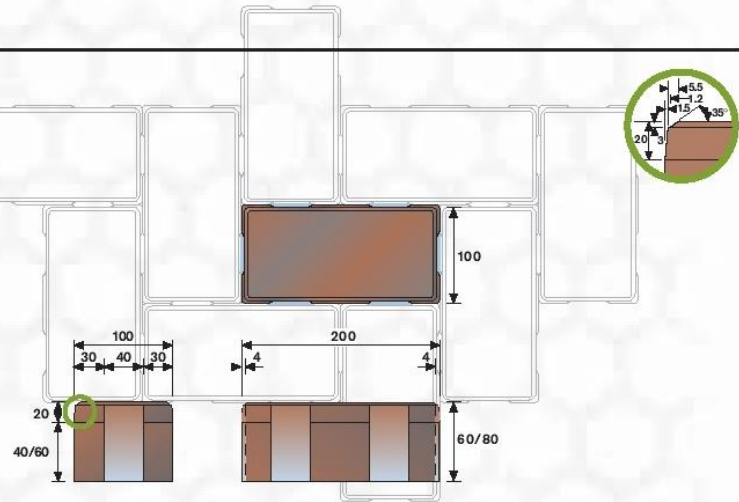
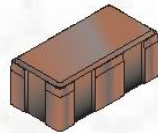
Must be laid in 90° herringbone

#### Colours\*

Natural, Burnt Red, Red brindle, Golden brindle and Charcoal.

#### Finish

Standard  
Bush hammered to special order



### Aquaflow ML block<sup>®</sup>

For Roads and heavy duty use

#### Size

80mm

#### Laying pattern

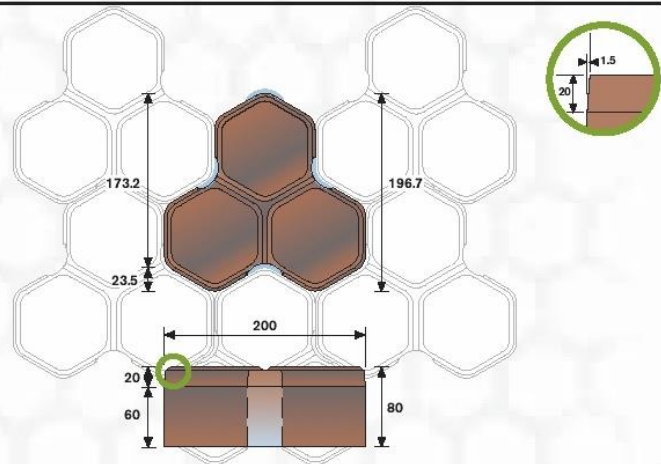
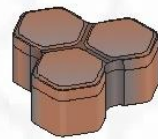
Include stretcher course around edge in conjunction with MLE and MLTB

#### Colours\*

Natural, Burnt Red, Red brindle, Golden brindle and Charcoal.

#### Finish

Standard



Not available in EcoGranite

### Aquaflow MLE<sup>®</sup> top drawing

End block

For use with Aquaflow ML blocks

### Aquaflow MLTB<sup>®</sup> bottom drawing

Top and bottom block

For use with Aquaflow ML blocks

#### Size

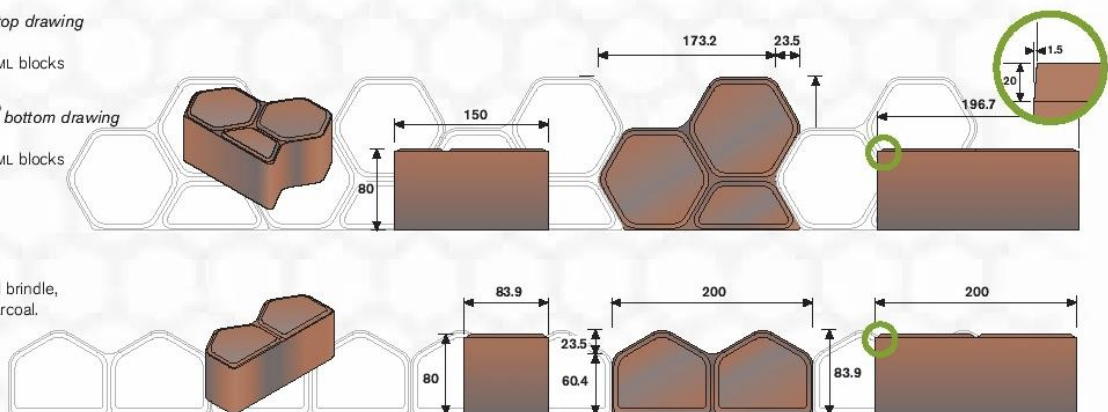
80mm

#### Colours\*

Natural, Burnt Red, Red brindle, Golden brindle and Charcoal.

#### Finish

Standard



Not available in EcoGranite



The logo for TERRAM, featuring the word "TERRAM" in a bold, white, sans-serif font on a dark blue rectangular background. The background of the entire page is a photograph of a tree-lined road, with a large, light blue, curved graphic overlaying the right side.

Terram Cellular Confinement System  
For the protection  
of tree roots

# Cellular Confinement Systems

The perfect no-dig ground reinforcement system.  
Provides above-ground load bearing for paths and driveways  
whilst preventing soil compaction and protecting tree roots.

## Damage to tree roots during driveway construction

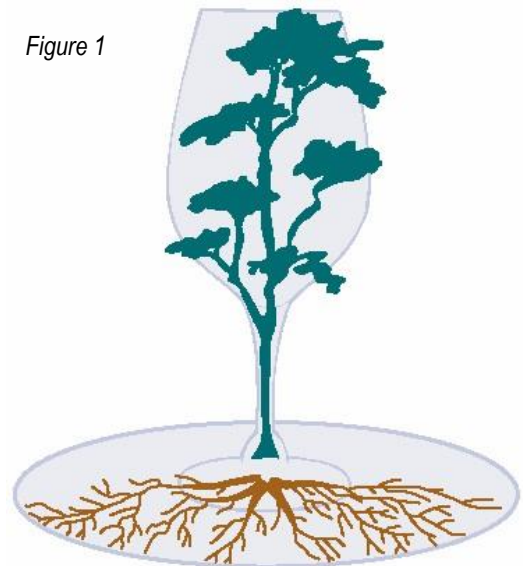
The conventional method for constructing paths, drives and roads involves excavating soil to enable the installation of a sub-base that will adequately support traffic loads. Unfortunately this method of construction can badly damage trees since a by-product of the excavation is root severance. Most people don't realise that trees are very sensitive to disturbances in the soil around them. The reason for this is that, contrary to popular belief, trees do not have massive roots that go deep down into the soil but rather have lots of relatively small roots (frequently only a few centimetres in diameter) which spread out from the tree very close to the soil surface for quite large distances (often equal to the height of the tree).



If you imagine a tree system as a wine glass standing on a dinner plate you will have a roughly accurate idea of the above and below ground proportions of a tree (Figure 1). It may come as a surprise to learn that about 80-90% of all tree's roots are in the upper metre of soil (Figure 2). These roots serve two purposes: anchorage and absorption of moisture. If even relatively small roots are severed, for example by digging a trench, the tree can begin to suffer symptoms of drought stress as it is no longer able to obtain all its water needs. In addition the tree may become unstable as cutting the roots is a bit like cutting the guy roots on a tent.

It is not only root severance that may harm trees but also compaction of the soil. If the root zone of a tree is not protected during development then the soil may become compacted by vehicles or heavy machinery moving repeatedly over the ground (Figure 3). The effect of compaction is to close up pores in the soil which contain air and water. The tree's roots then suffer from both a lack of oxygen and a lack of moisture, and, as the soil becomes denser, roots find it hard to penetrate the soil. All this can lead to a dieback of the root system and frequently dieback of the tree. Raising of soil levels has a similar damaging effect as it deprives roots of oxygen and creates a build up of harmful carbon dioxide around the roots.

Figure 1



## So, How Do Tree Roots Grow?

People often wrongly assume that tree roots are thick and grow down into the soil for many metres (Figure A). In reality tree roots:

- Are usually only large near to the trunk and get thinner the deeper and further from the tree they go. At a distance of just 3-4 metres from the trunk most roots are no bigger than a few centimetres in diameter.
- Spread outwards from the trunk, more or less parallel with the soil rather than growing downwards (Figure B).
- Can spread horizontally in any direction for a distance equivalent to at least the tree's height.
- Are usually relatively shallow; 80-90% of a tree's roots are in the Upper metre of soil. Few roots reach depths of more than about 2-3 metres and at this depth they are only a few millimetres in diameter.

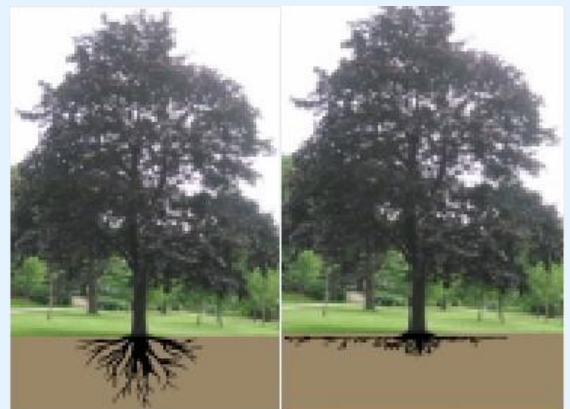


Figure A: Incorrect

Figure B: Correct

## British standard for trees in relation to construction and APN1

In recognition of the fact that trees are sensitive to disturbance the British Standards Institution has published recommendations on how to protect trees during development. In line with the earlier British Standard (BS 5837: 1991) the most recent guide, published in September 2005 (see further reading), recommends that there should be a 'root protection area' in which development should not be permitted.

In most case this are has a radius equal to twelve times the trunk diameter and forms a exclusive zone around the tree protected by means of robust fencing. This guidance had the effect of prohibiting the installation of roads, driveways and parking areas near to trees. But in 1996 the Arboricultural Advisory and Information Service published Arboricultural Practice Note 1 Driveways Close to Trees (APN1) which suggested that driveways could be installed within the root protection area provided roots and soil were not damaged.

The conditions set out for a suitable system were as follows:

- Roots must not be severed
- Soil should not be compacted
- Free movement of oxygen and carbon dioxide into and out of the soil should be maintained
- Water infiltration into the soil should not be impeded

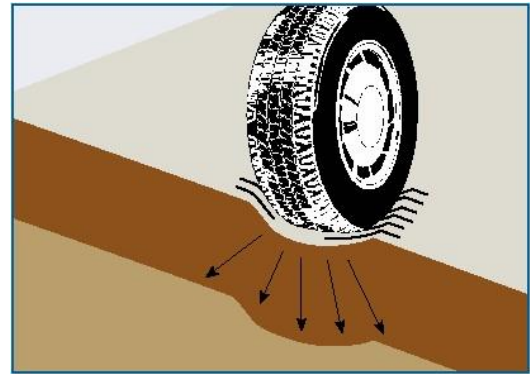
The, APN1 advised that driveways could be installed within the root protection zone provided that an above-ground, no-dig construction was used. This advice was incorporated into the recent British Standard which recommended that the most effective means of achieving this was through the use of a three-dimensional cellular confinement system.

## Terram Geocell ground protection

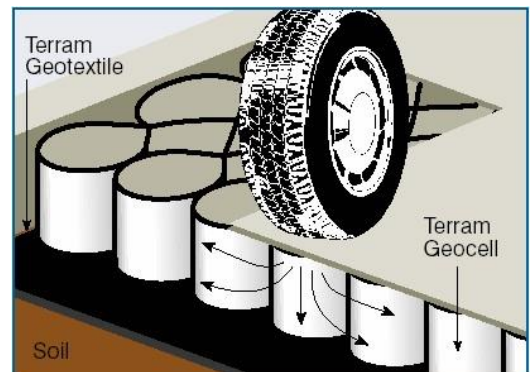
Terram Geocell is an ideal solution for providing ground reinforcement with tree protection areas. It confines fill material within its strong flexible cell structure in order to provide a stable base for traffic and an even load distribution (Figure 3 and 4). A big advantage of Terram Geocell over other products is that the geotextile material is permeable and allows lateral movement of air and water.

Terram Geocell is suitable for permanent woodland trails, paths, driveways, roads and parking areas.

It may also be used as temporary ground reinforcement where access to a site is limited by the presence of trees. Once operations on site are completed the temporary surface can easily be removed and the ground left undamaged.

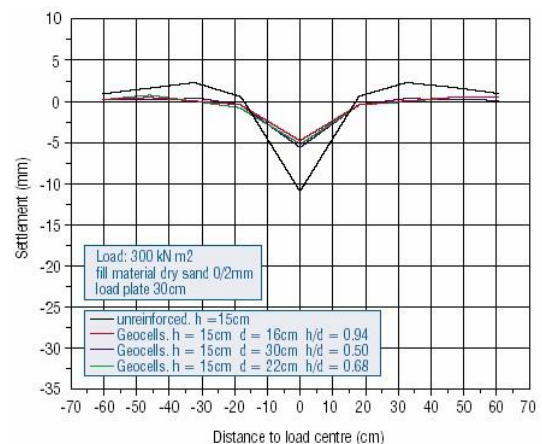


*No ground reinforcement: Unreinforced soil becomes compacted and rutted by vehicle loads*



*Geocell ground reinforcement: Forces are spread laterally reducing loads on the underlying soil*

*Figure 3. The Geocell Distributes loads evenly in order to prevent rutting*



*Figure 4. Static loading tests of up to 300kN/m2 revealed only minimal deflection (<5mm) of the surface of filled Geocell*



## Getting the design right

Every application will be slightly different so it is important to have the input of an engineer and arboriculturist together in order to design the right solution for an installation near to trees. The Arboriculturist will be able to advise on tree protection issues and the engineer will be able to specify details such as cell depth, fill type (Figure 5) and load bearing capacity.

For example, the design of a pedestrian footpath may be less rigorous than that of an access road that may have to withstand the load of a heavy crane or lorry.

But there are some principles that should be considered in every application (see Figure 6):

- The ground must be protected at all stages during installation – there is no point in installing a ground protection system where soil or roots have already been damaged by other site activities
- Terram Geotextile should be used underneath the Geocell to prevent fill materials penetrating the soil
- The fill material should be granular and should permit water and air flow
- Any edgings should be carefully designed to avoid excavation and root severance
- A permeable and gas-porous wearing course should be installed above the Geocell
- In most cases the driveway or parking area should not exceed 20% of the root protection area.

If correctly designed and installed the Geocell cellular confinement system should allow paths, drives and parking areas to be located within a tree's protection zone, thus enabling development that might not otherwise be permitted by local authorities.

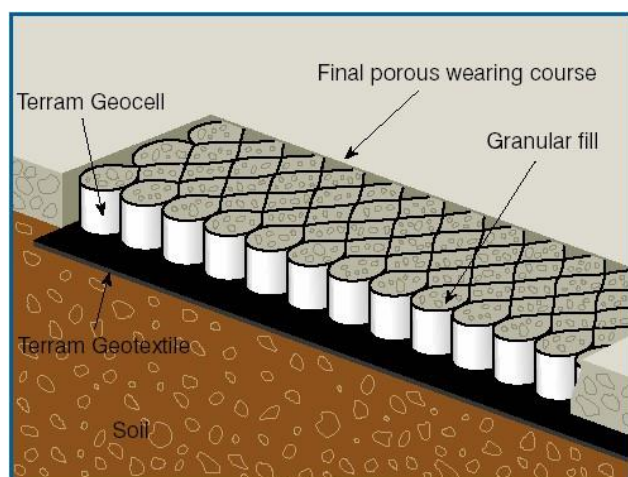


Figure 6. Components of an above-ground load bearing platform suitable for vehicles

## Example installation Driveway construction

- 1 Remove grass and other vegetation and the upper organic layer of soil by hand digging. Arisings should be wheel-barrowed out of the tree protection area. Machinery (even low ground pressure tracked vehicles) should not be used due to the danger of soil compaction
- 2 Small depressions may be filled with sharp sand
- 3 Lay out Terram Geotextile over the driveway area
- 4 Lay out Terram Geocell and carefully peg in place
- 5 Fill the cells working from the area furthest from the trees first. Further filling should be carried out using the filled Geocell as a platform
- 6 Install a permeable wearing course, e.g. porous tarmac, block pavements on a sharp sand base (a further layer of Terram above the filled Geocell will be needed in this case to prevent the sand mixing with the granular fill below).

## Conclusion

BS5837 Trees in Relation to Construction and APN1 allow the careful development of paths, drives and roads within the root protection area of trees provided an above-ground, no-dig construction is used.

The use of Terram Geocell as a ground reinforcement Platform is therefore an ideal solution that can facilitate such development near to trees which might not otherwise be permitted due to fears of damage to soil structure and tree roots.

## Further reading

BS 583: 2005 *Trees in relation to construction – Recommendations*. British Standards Institution.

Dobson, M. (1995): *Tree Root Systems*. Arboriculture Research and Information Note 130/ARB/95. Arboricultural Advisory and Information Service, Farnham.

Patch, D. and Dobson, M. (1996). *Driveways Close to Trees*. Arboricultural Practice Note 1. Arboricultural Advisory and Information Service, Farnham.

Nicholson, R. (2001). APN1, BS5837 & PPG 3, *Guidance for Trees: Conflict or Complement?* Arboricultural Journal 25, 361-376.

Products Available	Panel size	Depth	Cell Diameter
Erocell 22/20	5.0m x 10.1m	200mm	220mm
Erocell 25/15	7.0m x 10.0m	150mm	250mm
Erocell 25/10	7.0m x 10.0m	100mm	250mm

The cell depth and diameter is dependent upon specific site conditions

Cellular Confinement Systems 1 June 2006

Terram Ltd, Mamhilad, Pontypool, Gwent NP4 0YR, United Kingdom  
Tel: +44 (0) 1495 757 722 Fax: +44 (0) 1495 762393  
Email: [info@terram.co.uk](mailto:info@terram.co.uk) Web: [www.terram.com](http://www.terram.com)

Recommendations for use are a guide and purchasers must determine the suitability of the product for their intended use. Terram Ltd assumes no liability for claims beyond the replacement value of the product.

The instructions contained here are a general guide only and therefore cannot cover all aspects involved or all possible uses of Terram Cellular System. If you are not experienced in carrying out projects of the type Terram Cellular System is designed for, you should seek advice from someone appropriately qualified. Any recommendations or suggestions (including design guidance) given by or on behalf of Terram on the use of its products for particular applications are given in good faith and (unless otherwise agreed) free of charge, but it remains your responsibility to ensure the use is appropriate and the product correctly installed. Terram, its agents and employees, accept no responsibility for guidance or advice given. Terram guarantees that this product is in accordance with its specification and if not Terram will at its option supply replacement product or reimburse the price paid for it. This states Terram's entire liability, all other liability and responsibility is excluded. THIS DOES NOT AFFECT THE STATUTORY RIGHTS OF A CONSUMER.

7. MultiTrack Ground Guards Specification



# MultiTrack

THE UNBREAKABLE ORIGINAL



**RAPID INSTALLATION**

Lay approximately 50 mats per hour.\*

**TOUGH**

Virtually indestructible HDPE polymer supports all vehicle types.

**EASY TO HANDLE**

Lightweight 39kg mats easily handleable with two workers.

**MULTI-TREAD**

Roadway, Walkway and Smooth tread options cater for various vehicular and pedestrian needs.

**ENVIRONMENTALLY FRIENDLY**

Made from 100% recycled plastic and fully recyclable.

**GUARANTEED UNBREAKABLE**

Lifetime guarantee against breakage by vehicles up to 120 tonnes (T&Cs apply).

**NO CRANES OR  
SPECIALIST  
LIFTING  
EQUIPMENT  
NEEDED!**

***\*FAST, EASY, ECONOMICAL***  
***Install approximately 50 mats***  
***per hour with a team of***  
***3 plus forklift driver.***

[www.ground-guards.co.uk](http://www.ground-guards.co.uk)

**+44 (0) 113 267 6000**

[info@ground-guards.co.uk](mailto:info@ground-guards.co.uk)

**Ground-Guards®**



# MultiTrack

THE UNBREAKABLE ORIGINAL



Watch this short video to see MultiTrack in action.



MultiTrack mats are the strongest in their category



Mats are easily moved using a HandiHook



Standard no-tools joiners quickly clip the mats together



Low profile joiners for walkways plus bolted joiners



SafeStore stillages hold 25 mats

**Material:** Special blend of HDPE recycled plastic, fully recyclable

**Overall Size:** 2435 x 1215 x 13mm (plus treads)

**Surface Area:** 2.95m<sup>2</sup>

**Weight:** 39kg

**Tread Options:** Roadway, Walkway and Smooth, or a combination

**Connectors:** 10 joining points. A choice of standard clip joiners, low profile joiners or bolted joiners, plus anchor pins

**Packed in:** Stillage of 25 mats

**Stillage Pack:** **Weight:** 1105kg  
**Dimensions:** 2550 x 1260 x 900mm

**Fire Rating:** UL94 HB

**Slip Testing:** BS7976 part 2

**Deflection:** Tested on varying CBR ground conditions using a 300mm diameter steel platen with 6 tonnes load to simulate the pressure of an HGV wheel

- Ground CBR 11.35% :** Deflection 17.68mm
- Ground CBR 8.58% :** Deflection 20.41mm
- Ground CBR 4% :** Deflection 22.00mm



**Guarantee:** MultiTrack temporary roadway mats are guaranteed for life against breakage up to 120 Tonnes UDL (Uniformly Distributed Load).

It is the user's responsibility to assess the load-bearing capacity of the ground, and to only operate vehicles within the weight that the ground is capable of safely supporting. Ground-Guards Ltd accepts no liability whatsoever for any damage, loss or injury arising from the ground conditions on which these products are used.

MultiTrack mats are not suitable to use for bridging purposes. Damage caused by mechanical equipment (e.g. cuts by digger buckets) or sharp protrusions beneath the mats is not covered by this guarantee.



**Ground-Guards®**

[www.ground-guards.co.uk](http://www.ground-guards.co.uk)  
**+44 (0) 113 267 6000**  
[info@ground-guards.co.uk](mailto:info@ground-guards.co.uk)

## 8. Air Spade/Air Excavation Specification

The largest specialist Arboricultural suppliers in the North of England.

UK Distributors to the Tree Care Industry of the AIR-SPADE®

**AIR EXCAVATION TOOL**

Industrial / Construction Applications

### Industrial / Construction Applications

**AIR-SPADE®** is the ideal tool for contractors, utility companies and everyone practicing safe excavation. Common uses include:

- Pot holing
- Utility line Locating
- Crack Cleaning
- Valve box cleaning
- Utility Installation
- Line spotting for backhoe
- Vacuum excavation
- Trench rescue
- Meter locating

### Full Range of Parts Available

AIR-SPADE® Series 2000 tool \*

2 ft. 3 ft, 4 ft or 5 ft. extensions

Custom length barrel  
 Extra 15, 25, or 60 scfm nozzle  
 Extra 105 or 150 scfm nozzle  
 Extra 225 scfm nozzle  
 45o Angled Adapter  
 Arboricultural Applications Benefits  
 AIR-SPADE® Handle

10 Ft. Lightweight Hose  
 25 Ft. Lightweight Hose  
 50 Ft. Lightweight Hose

Scratch Proof Face Shield

Spare Parts Kit  
 Storage Case with lock  
 \* includes handle, 150 cfm / 90 psi nozzle, and 4 foot barrel.

### Why does the AIR-SPADE® out perform other air tools?

In head to head tests, the AIR-SPADE® dislodged harder clay soil and dug faster than other air digging tools. Soil fractures from compressive stress, tons per square foot (tsf), exerted on its surface. As shown above for the same pressure and flow, compressed air exiting from a pipe nipple, orifice, or improperly designed nozzle expands outward rapidly to 3 to 4 times the area versus the jet from the patented supersonic nozzle in the AIR-SPADE®. The flow from these competitors can even go sub-sonic as indicated by the presence of a "Mach Disk," which can be seen in the flow if the



### Arboricultural Applications

### Benefits

**AIR-SPADE®** is used by arborists and landscape professionals worldwide for:

Root Collar Excavation

Plant Aeration

Vertical Mulching

Soil Compaction Relief

Disease diagnosis and treatment

Transplanting

Bare rooting

Damage analysis

Locating Roots in New Construction

Root Pruning and Structure Analysis

Running utilities through the root zone

Radial trenching

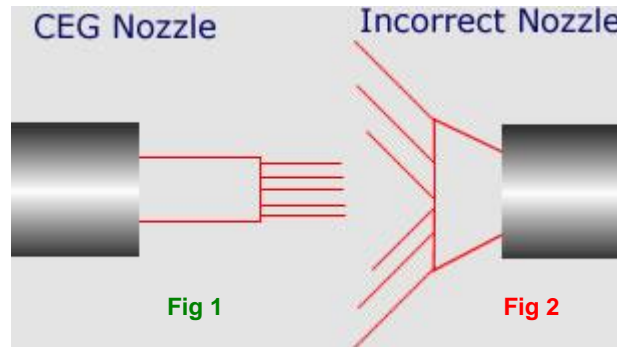
- Digs faster and harder soils than competitive or home made wands
- Less worker fatigue/injuries than a pick or shovel
- Faster and safer than hand digging
- Saves expensive hourly labour costs
- Non-damaging to all kinds of buried utilities or plant roots
- Digs without making mud and does not create "contaminated" spoil like water
- Excavated soil is ideal for recompaction
- Modular design with parts that screw together without tools
- Interchangeable nozzles sized to match air compressors from 15 to 250 scfm
- Interchangeable extensions to 8ft and reducers to 2 ft
- Ergonomic handle with thermal shield and pressure gauge
- Safety "dead Man" trigger with guard
- Electrically insulating barrel
- Hardened wear resistant stainless steel nozzle
- 45 deg adaptor

## Will higher pressure make the AIR-SPADE® work Better?

## How Does it Work?

Increasing the air pressure above 90 psi on a properly designed supersonic nozzle does not lead to a proportional gain in excavation capability. For example, doubling the nozzle pressure to 180 psi increases the air jet force by only 10% and the exit momentum flux (stress seen by the soil) by only 45%. Supplying higher pressure to a nozzle designed to work at 90 psi actually un-focuses the air jet degrading performance and consuming more air.

Patented CEG Supersonic nozzle turns 90 psig compressed air into laser-like Mach 2 jet. Jet penetrates and fractures friable materials like soil but harmlessly goes around buried pipes, cables, fibre optic lines and tree roots.



Jet from CEG nozzle focuses all of its energy and momentum onto concentrated spot on the soil. **Fig 1**

Air from pipe nipple, orifice, or improperly designed nozzle, expands greatly reducing its effectiveness. **Fig 2**

## In what types of soil will an AIR-SPADE® work?

Because of its unique, focused air-jet, the **AIR-SPADE®** works in most soils, even hard clays. Cohesive soils can be classified and described by unconfined compressive strength as shown below. Tests have shown the **AIR-SPADE®** to be effective in compacted soils with unconfined compressive strengths well above the values listed to the right for hard clay.

Watering the work area ahead of time can be helpful sometimes. Watering reduces airborne dust if the soil is extremely dry. It also reduces the soil's strength making the digging easier. Combined use of the **AIR-SPADE®** with a low pressure water jet is effective even with extreme cases of highly compacted or sun-baked soils.

The **AIR-SPADE®** in general will not cut through rock, since its unconfined compressive strength is much greater than for soil. In fact, soil results from the physical and chemical breakup of weathered rock. Shales, however, may be broken apart by the **AIR-SPADE®** if the jet is directed between the laminations of the rock. Similarly, the **AIR-SPADE®** will not dislodge hard frozen soil which may behave like pavement or concrete.

Type	Unconfined Compressive Strength tsf	Description Cohesive soils including:
A	$\geq 1.5$ stiff	Clay, silty clay, sandy clay, clay loam, caliche, hardpan, and sometimes silty clay loam and sandy clay loam.
B	$< 1.5$ and $> 0.5$ med	Granular cohesive soils like angular gravel, silt, silt loam, sandy loam, and sometimes silty clay loam and sandy clay loam.
C	$\leq 0.5$ soft /v.soft	Granular soils such as gravel, sand, loamy sand, submerged soil, or soil from which water is freely seeping.

## What size nozzle should I use?

Nozzles are available that use from 15 to 225 cfm of compressed air. The amount of soil that can be dislodged in a given amount of time is roughly proportional to the amount of air used. The 150 cfm nozzle is the most commonly used size for arboricultural and industrial applications. It has good productivity and is designed to run from the most common size of portable air compressor, a 175 to 185 cfm unit

Pressure Loss (psi) for 50 feet of common air hose						Excavation Rates (cu ft / min)			Recommended Compressor Size	
Hose ID	FLOW 9CFM					Nozzle Air Flow (CFM)	Soil Type A	Soil Type C	Nozzle (cfm)	Flow Rating (cfm) at 100 psi
	25	60	105	150	225					
3/4"	0.3	1.6	5.6	12.3	25.0	25	0.9	0.4	25	25 - 30
1"	0.1	0.4	1.3	2.8	5.5	60	1.1	0.7	60	60 - 70
11/4"	0.0	0.1	0.4	0.8	2.0	105	1.5	0.9	105	125
						150	1.8	1.2	150	175 - 185
						225	2.3		225	250



## How should I dig with the AIR-SPADE® ?

The **AIR-SPADE®** will dislodge up to several inches deep in a medium to stiff soil. High-speed movies show that an air-jet penetrates and dislodges the soil in a fraction of a second. Unless the soil is highly compacted, dwelling on the same spot is unnecessary and tends to increase spray. The **AIR-SPADE®** can be moved over the soil surface at a rate of about 1 to 2 feet per second. When several inches of soil have been loosened, the soil should be removed to expose a fresh working face for the air jet. Vacuum suction, as provided by our AIR-VAC and SAFEX® units, is an excellent companion to the **AIR-SPADE®** since it is likewise non-damaging.

## What size of air hose do I need to use the AIR-SPADE® properly?

Compressed air flowing through a hose experiences a drop in pressure from friction and constrictions. Friction loss is proportional to the length of the hose. The amount of air, its pressure, the hose inner diameter and its smoothness also determine the loss. The table below shows the pressure loss for 50 feet of common air hose with couplings as a function of size and nozzle flow, cfm, for air at a pressure of 90 psi. Generally, a 1-inch air hose is recommended for use with the AIR-SPADE®.

### Arbor Kit complete includes:

AIR-SPADE® Series 2000 tool



45deg Angled Adapter  
10 Ft. Lightweight Hose  
Storage Case with lock

AIR-SPADE® Series 2000 tool



## Who can supply me with it – and How long will it take to arrive?

You can be using this tool within 6 days of ordering it, it will be delivered to your door, carriage paid (Mainland UK).



The largest specialist Arboricultural suppliers in the North of England  
Import the

**AIR-SPADE®**

Air Excavation Tool  
&  
Arbor Kit

**CONTACT US NOW TO DISCUSS THIS INVALUABLE ADDITION TO YOUR WORKING TOOLS DO THE WORK FASTER - GET BETTER RESULTS !**

TELEPHONE 0113 2296006:

EMAIL [info@treesunlimited.co.uk](mailto:info@treesunlimited.co.uk)

FAX 0113 2295171

## **Appendix G**

Haydens Drawing

- Arboricultural Impact Assessments ●
- Arboricultural Method Statements ●
- Tree Constraints Plans ●
- Arboricultural Feasibility Studies ●
- Shade Analysis ●
- Picus Tomography ●
- Arboricultural Consultancy for Local Planning Authority ●
- Quantified Tree Risk Assessment ●
- Health & Safety Audits for Tree Stocks ●
- Tree Stock Survey and Management ●
- Mortgage and Insurance Reports ●
- Subsidence Reports ●
- Woodland Management Plans ●
- Project Management ●
- Ecological Surveys ●



Telephone  
01284 765391  
Email  
[info@treesurveys.co.uk](mailto:info@treesurveys.co.uk)  
Website  
[www.treesurveys.co.uk](http://www.treesurveys.co.uk)

5 Moseley's Farm  
Business Centre  
Fornham All Saints  
Bury St Edmunds  
Suffolk  
IP28 6JY