



Sylva Consultancy
expert arboricultural advice

Arboricultural Impact Assessment

South Barn
Street from Wigginton to Swerford
Wigginton
Oxfordshire
OX15 4LG

June 2019

Ref: 19083

Prepared by Fiona Bradshaw MICFor; Dip. Arb (RFS); F.Arbor.A; Tech Arbor.A

Issued: 5th June 2019



Fiona Bradshaw
MICFor (Arb); Dip. Arb (RFS); F.Arbor.A; Tech Arbor.A
Mobile: 07976 596517



Sylva Consultancy is a trading name of Sylva Trees Ltd.
Registered in England, Company No. 06787424.
Registered Office: The Oxford Boaters Box, Woodstock Road, Oxford, OX2 7AH.

PHONE 01865 872945
EMAIL mail@sylvaconsultancy.co.uk
WEBSITE www.sylvaconsultancy.co.uk

CONTENTS

1. Introduction	Page 3
2. Arboricultural Survey	4
3. Principle arboricultural Implications	5
4. Summary	7

APPENDICES

1. Site Location Plan	Page 9
2. Tree Survey Data	10
3. Root Protection Area	11
4. Tree Constraints Plan	12
5. Arboricultural Impact Plan	13
6. Cell Web installation Guide	14
7. Qualifications	15

1. INTRODUCTION

1.1 Instructions

1.1.1 Instructions were received to carry out an Arboricultural Implication Assessment on the likely impact and effect with regard to the proposal to re-develop land at South Barn, Wigginton (Appendix 1).

1.1.2 This appraisal assesses the impact of the proposal in relation to trees and discusses mitigation measures that may have to be adopted.

1.2. Arboricultural Survey

1.2.1 During August 2017 a tree survey was undertaken out with a follow up survey carried out in May 2019. The surveys are in accordance with British Standard 5837:2012 'Trees in relation to Design, Demolition and Construction-Recommendations' and good arboricultural practice This is a basic data collection exercise and a record of the trees condition at the time of surveying. The tree survey data can be viewed at Appendix 2, root protection area data at Appendix 3 with the tree constraints plan listed at Appendix 4.

1.2.2 A desk top study of information posted on Cherwell District Council's website (CDC) details that the site is not located within a Conservation Area. No information is currently available from the website to determine the presence of any Tree Preservation Orders (TPO's). However it is understood that no TPO's are present on trees located within influencing distance of the proposal. Notwithstanding this it is advisable to contact CDC direct in order to determine what tree constraints are present at South Barn.

1.3 Site Description

1.3.1 The site is located on the eastern side of the adopted highway that connects the villages of Swerford and Wigginton. The trees subject of this report are predominantly located towards the western boundary of the site, with the site roughly rectangular in shape.

1.3.2 A desk top soil assessment has been undertaken (BS5837:2012 Section 4.3). Information available on Cranfield University Soilscales website (<http://www.landis.org.uk/soilscales/#>) details that the soil type for the site is 'Freely draining slightly acid but base-rich soils'.

1.4 Proposed Development

1.4.1 Planning permission has been granted (CDC ref 17/00664/F) for alterations and for an extension to South Barn. This arboricultural impact assessment includes the above approved proposals and incorporates the proposed addition of a rear bedroom wing and new access. The purpose of this report is to assist with the design process.

1.4.2 Please note all tree numbers referred to in this document relate to the tree numbers annotated on the tree constraints plan (Appendix 4) and arboricultural impact plan (Appendix 5).

2. ARBORICULTURAL SURVEY

2.1 The Arboricultural Survey recorded a total of 22 trees, 1 group and 1 hedge. The tree quality is assessed as follows:

U: Trees that are considered to be of such condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboriculture management. However, if category 'U' trees are placed in an inaccessible location such that concerns over public safety are reduced to an acceptable level, it may be preferable or possible to defer this recommendation.

A: Trees of the highest quality and value and are considered to be of such a condition as to be able to make a substantial contribution (e.g. 40 years +).

B: Trees of moderate to high value and are considered to be of such a condition as to be able to make a significant contribution (e.g. 20 years +).

C: Trees of low quality with an estimated life expectancy of at least 10 years. Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories. Young trees with a stem diameter of less than 150mm should be considered for relocation or replacement through mitigation (e.g. 10 years).

Category A, B & C trees are further divided into sub-categories. These sub-categories carry equal weight and are selected for either arboricultural values, landscape values or cultural values, including conservation. Within the British Standard 5837:2012 it is recommended to record hedge and shrub masses, however in the context of the standard it is not necessary to assess the quality of these or to provide a category classification.

The numbers of trees falling under each classification within the arboricultural survey are as follows:

U: 3 trees

A: 0 trees

B: 6 trees

C: 13 trees, 1 group & 1 hedge

3. PRINCIPLE ARBORICULTURAL IMPLICATIONS

3.1 Introduction

- 3.1.1 It is proposed to undertake redevelopment works at the above property. Consideration is given to the significance of the trees identified in the arboricultural tree survey, the constraints that they are likely to pose to any development that may occur, post development implications (if any) and work requirements to trees for reasons of sound arboricultural management in order to facilitate the development (BS5837:2012 Section 5.4).
- 3.1.2 This appraisal assesses the impact of the potential to re-develop the site in relation to the trees and discusses mitigation measures that may have to be adopted. The following documents have been provided by Charlie Luxton Design:
- Existing Site Plan
 - Proposed Site Layout Plan

3.2 Trees

- 3.2.1 The tree stock is mainly confined towards the western area of the site. The survey ceases at the eastern boundary where an existing ha-ha is present.
- 3.2.2 The Wildlife & Countryside Act 1981, as amended by the Countryside Rights of Way Act 2000, provides statutory protection to birds, bats and other species that inhabit trees. These have the potential to pose additional constraints on the use and timings of works that may occur to trees located at South Barn. These issues are beyond my expertise and it is recommended that appropriate advice is sought prior to the implementation of any works considered within this report.

3.3 Overview

- 3.3.1 The most noteworthy trees within influencing distance of the potentially developable area are the category 'B' trees. As such the report recommends that due consideration to retain these trees in the event of any re-development is given.
- 3.3.2 The appended arboricultural implications plan illustrates the proposals in relation to the tree stock. In addition to pre-development concerns, post development concerns such as shading, debris and concerns of the trees proximity and juxtaposition to the proposal have also be considered during the design process.
- 3.3.3 An assessment of the impacts of the proposed development on the tree stock reveal that for development 7 category 'C' trees and 1 category 'C' group require removal. No category 'B' trees will be removed. In addition it is proposed to retain the tree and hedge screen that is adjacent to the front boundary.
- 3.3.4 On the bases of the appraisal it is considered that the arboricultural impact of the scheme on the tree stock will result in a negligible impact on the character and appearance of the site or wider landscape.

3.4 Impact of the proposal on the tree stock

- 3.4.1 A total of 22 trees, 1 group and 1 hedge have been surveyed for the purposes of this report. Trees T7, T13 & T17 have landscape values of less than 10 years in accordance with BS5837:2012 and as such the removal of these trees, regardless of any development should be considered.
- 3.4.2 Whilst trees in categories 'A', 'B' and 'C' are all a material consideration in the development process, the retention of category 'C' trees, being of low quality or of only limited or short-term potential, will not normally be considered necessary where they impose a significant constraint on development. Furthermore, BS 5837:2012 makes it clear that young trees, even those of good form and vitality, which have the potential to develop into quality specimens when mature "*need not necessarily be a significant constraint on the site's potential*".
- 3.4.3 It is proposed to construct the rear bedroom wing to the north of the existing dwelling. The trees within this area are of an even age (young semi mature) which have not been thinned since planting. As a result a number of trees are of poor quality due to tree competition with the survey further recording a number of trees suffering from extensive mammal and squirrel damage. The report concluded that these trees will have a limited safe useful life expectancy as a result.
- 3.4.4 In order to implement the scheme it is proposed to remove 7 category 'C' trees (T4, T5, T6, T8, T9, T10 & T16) and 1 category 'C' group (G1). Category 'C' trees/groups are assessed as being either of low quality, limited merit, low landscape benefits, no material cultural or conservation value, or only limited or short-term potential; or young trees with trunk diameter below 150mm; or a combination of these.
- 3.4.5 The trees proposed to be removed are set back into the site and are currently screened by the mature trees and hedgerow adjacent to the lane. As such it is regarded that the trees have a reduced public visual amenity. As it is the intention to retain the majority of the tree stock, including high quality trees adjacent to the western boundary it is judged that the tree removal is warranted. It is further considered that the constraint these trees place on the proposal is unreasonable given their age and location within the site and in the context of the retention and proposed improvement of the landscaping site wide. Therefore, it is proposed to remove these trees and undertake appropriate tree planting mitigation that will complement the both the development and wider environment.
- 3.4.6 The proposal seeks construct a new access into the site. As a result, the new driveway will fall within the root protection area of the boundary trees. To ensure that the trees are not adversely affect the new driveway will be constructed using a no dig design (Appendix 6).
- 3.4.7 Fence protection is required for retained trees and will comprise of Heras fencing and will be based on Figure 2 'Default Specification for Protective Barrier' as recommended within the British Standard 5837:2012. Where appropriate the fencing will be braced to withstand impacts.
- 3.4.8 A tree works schedule to facilitate the proposal has not yet been finalised. Where pruning works are required it is judged that the trees can be pruned to acceptable standards in accordance with British Standard 3998:2010 'Tree Works - Recommendations'.

3.4.9 New service runs have not yet been finalised however it is anticipated all new services will be connected to existing or routed away from the retained trees.

4. SUMMARY

4.1 Conclusions

4.1.1 The British Standard 5837:2012 states that there is the need to avoid misplaced tree retention; for example, to attempt to retain too many unsuitable trees on a site may result in excessive pressure on the trees during the development work and subsequent demands for their removal post development. However, where design permits, the retention of lower category trees can be beneficial providing screening and softening to a development and a sense of maturity to a scheme.

4.1.2 Careful planning of site operations will be carried out so as to avoid any adverse impact to the retained trees. In order to safeguard the trees through the development a site specific Arboricultural Method Statement will be drawn up and implemented.

4.1.3 It is concluded that there is an adequate juxtaposition with the retained tree stock and proposal therefore reducing any post development concerns. As such it is regarded that there will not be any future pressure to significantly prune, or to seek permission to remove trees within the site. With further regard to any concerns of debris and seasonal nuisances it is considered that this can be managed by good design and as part of the overall general maintenance of the site.

4.2 Post development tree management.

4.2.1 Tree owners have a duty of care to maintain and manage their tree stock and it is recommended that regular tree inspections are undertaken by a person competent in arboriculture.

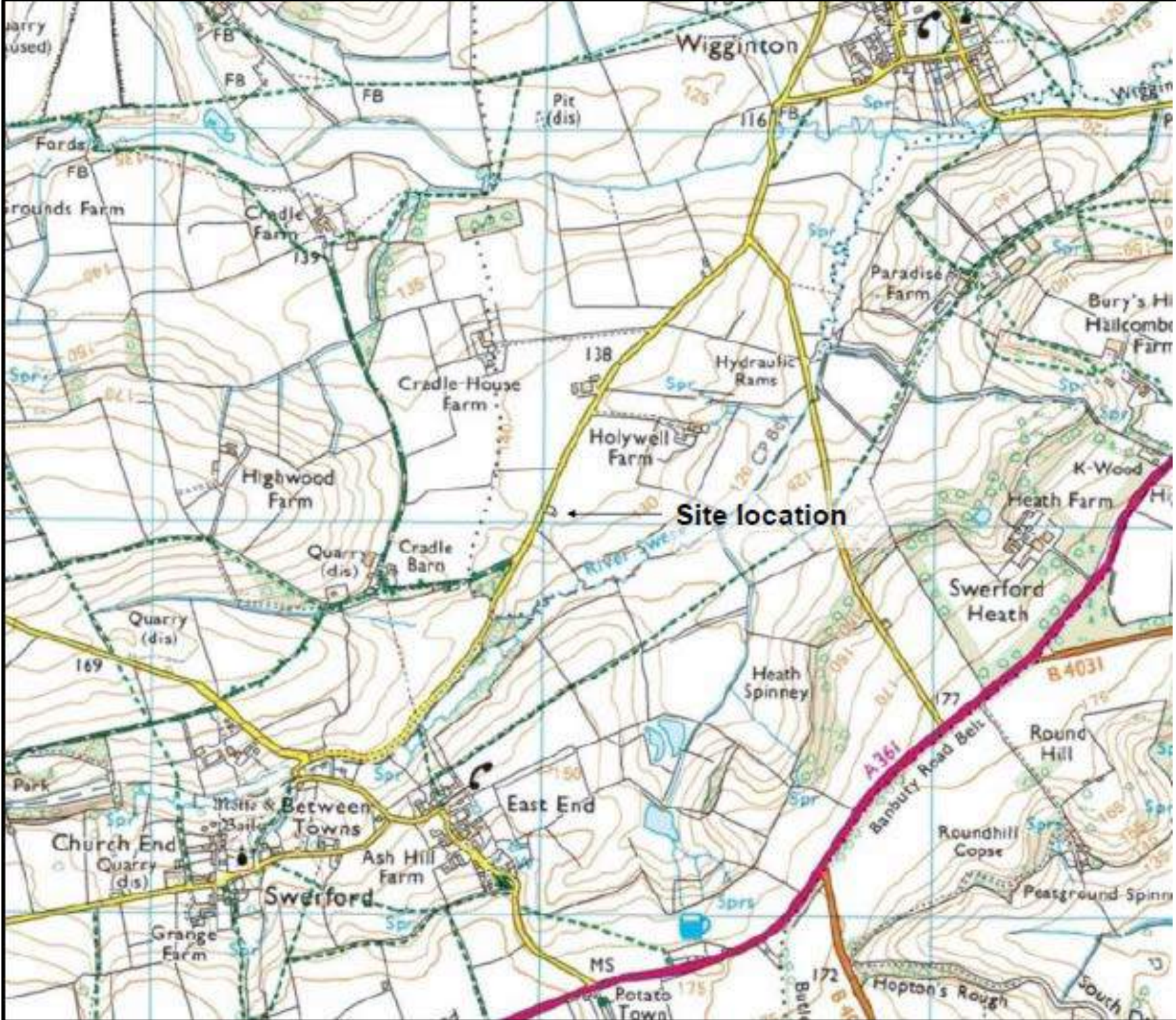
4.2.2 Section 8.8.2 of the British Standard: 2012 recommends post development aftercare of trees following the completion of development works. It is recommended the following is considered with regard to post development inspection of retained trees:

1. Trees that grow on a site prior development may, if adversely affected be in decline over a period of several years before they die. This varies due to age, species, condition prior to development, extent of damage during development, soil conditions and climate. It is recommended that regular inspections are undertaken.
2. Where trees are protected by planning controls, it is recommended that the LPA is informed and necessary agreements obtained prior to any remedial works.
3. Following completion of a development it is recommended that the arboricultural consultant inspects the trees for signs of intolerance to the change of conditions and the effect of the development. There may be a need for additional tree works to those originally specified.
4. Maintenance of newly planted trees is important during the establishment period, of at least two years and it is recommended an appropriate maintenance schedule is included with the Landscaping Scheme.

APPENDIX 1

Site Location Plan

Site Location Plan



APPENDIX 2

Tree Survey Data

KEY TO TREE SCHEDULE

Tree No: Relates to individual trees identified within the Tree Survey Schedule and Tree Constraints Plan

Species: Common name

Height: Estimated height expressed in meters

ST: Stem diameter of the main trunk taken at 1.5m above ground level or in accordance with Annex C BS5837:2012.

Height in M of Canopy: Information of the first significant branch and direction of growth in order to inform on ground clearance.

Abbreviations: #: Estimated
Ave: Average
A.G.L: Above ground level
SULE: Safe Useful Life Expectancy

Branch Spread: Estimated crown radius expressed in meters, taken for each cardinal compass point.

Age Class: Y Young - Less than one third of natural life expectancy
SM Middle aged - One to two thirds of natural life expectancy
M Mature - More than two thirds of natural life expectancy
OM Over mature
NP Newly Planted

Physiological Condition: G Good
F Fair
P Poor
D Dead

Notes:

Root Protection Area: This is a layout 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 (detailed in paragraph 3.7 British Standard 5837:2012 'Trees in relation to Construction-Recommendations').

Young trees with a stem diameter of less than 150mm: Whilst the presence of young trees of good form and vitality is generally desirable (i.e those which have the potential to develop into quality mature specimens), they need not necessarily be a significant constraint on the site's potential (detailed in paragraph 4.5.10 British Standard 5837:2012 'Trees in relation to Construction-Recommendations').

Table 1 Cascade chart for tree quality assessment

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

TREE SURVEY BS5837:2012

TREE NO.	SPECIES	HT (M)	CALCULATED STEM DIA (MM)	BRANCH SPREAD				HEIGHT IN M OF CANOPY	AGE CLASS	PHYS. COND	COMMENTS	REMAINING CONTRIBUTION (EST YEARS)	CATEGORY GRADING
				N	E	S	W						
T1	Sycamore	11	500#	5.5	4.5	5.5	5	2e	SM	F	Growing adjacent to the boundary. Pleasant feature. Provides useful screening. Ivy. No access. Dimensions estimated.	20-40	B2
T2	Sycamore	14	450#	5	5	5	5	2.5e	M	F	Growing adjacent to the boundary. Pleasant feature. Provides useful screening. Ivy. No access. Dimensions estimated.	20-40	B2
T3	Sycamore	12	450#	5	5	5	5	2.5e	M	F	Growing adjacent to the boundary. Pleasant feature. Provides useful screening. Ivy.	20-40	B2
T4	Field Maple	7	190	3	2	2.5	2	1e	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Squirrel/mammal damage -will reduce the safe useful life expectancy. Lower end of category 'C'. Not regarded as a constraint.	10-20	C2
T5	Oak	4	95	2	1	0	1	N/A	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned.	10-20	C2
T6	Field Maple	8	220	2	2	2.5	1.8	1.5n	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Extensive mammal & squirrel damage. Will lower the safe useful life expectancy. Lower end of category 'C'.	10-20	C2
T7	Field Maple	6.5	204	3.5	3	2	1.5	1n	SM	P	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Extensive mammal & squirrel damage. Will lower the safe useful life expectancy. Lower end of category 'C'. Dieback in the upper canopy.	<10	U
T8	Apple	2.5	98	1	1	0.5	1	N/A	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Becoming shaded out. Lower end of 'C' category.	10-20	C2
T9	Apple	4.5	140	2.5	2.5	3.5	2.5	1e	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Mammal damage on main stem. Lower end of 'C' category.	10-20	C2
T10	Pear	6	183	2.8	3	3	2	1.5e	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned.	10-20	C2
T11	Pear	7	250	4	3	3.5	3	1.8e	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Better specimen out of the group. Potential to further develop.	10-20	C2

TREE SURVEY BS5837:2012

TREE NO.	SPECIES	HT (M)	CALCULATED STEM DIA (MM)	BRANCH SPREAD				HEIGHT IN M OF CANOPY	AGE CLASS	PHYS. COND	COMMENTS	REMAINING CONTRIBUTION (EST YEARS)	CATEGORY GRADING
				N	E	S	W						
T12	Oak	7	200	3.5	2	2	3	1.8n	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Potential to develop. Shaded out on south side.	10-20	C2
T13	Field Maple	4.5	175	3	3	2	3	1n	SM	P	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Extensive mammal and squirrel damage. Dieback in the upper canopy.	<10	U
T14	Pear	3	90	1.7	1.8	1.5	2	N/A	SM	F	Growing within rear garden adjacent to existing barn.	10-20	C2
T15	Plum										Removed since 2017 Survey		
T16	Plum	4.5	240	3.6	3.3	3	3.5	N/A	M	F	Growing within rear garden adjacent to existing barn.	10-20	C2
T17	Apple	2	100	0	3	0	0	N/A	SM	P	Growing at the front of the site. Has partially failed. Mammal damage on the main stem.	<10	U
T18	Cherry	10	300#	2	4	4	0	GL	SM	F	Growing adjacent to the boundary. Component of the hedgerow growing adjacent to the road. Provides useful screening to the site. Ivy. Basal suckers. Low over gate.	10-20	C2
T19	Cherry	10	450#	4.5	4	4	4	3n	M	G	Growing adjacent to the boundary. Component of the hedgerow growing adjacent to the road. Provides useful screening to the site. Noteworthy specimen compared to adjacent trees. Ivy.	20-40	B2
T20	Cherry x2	9	354#	3.5	3.5	3.5	3.5	N/A	SM	F	Growing adjacent to the boundary. Component of the hedgerow growing adjacent to the road. Provides useful screening to the site. Ivy. Not regarded as a constraint.	10-20	C2
T21	Crab Apple	10	480#	3	4	3	3	2e	M	G	Growing adjacent to the boundary. Component of the hedgerow growing adjacent to the road. Provides useful screening to the site. Adjacent to existing access. Noteworthy specimen.	20-40	B2
T22	Ash	5	130	1.5	1.5	1.5	1.5	N/A	Y	F	Self seeded Ash adjacent to the existing access. Component of the hedge. Not regarded as a constraint.	10-20	C2
T23	Sycamore	12	450#	4.5	4.5	4.5	4.5	GL	M	F	Growing adjacent to the boundary. Component of the hedgerow growing adjacent to the road. Provides useful screening to the site. Ivy. Basal epicormics on lane side.	20-40	B2
G1	Holly x3	3	80	0.5	1	1.5	1.5	N/A	SM	F	Component of a group of young planting to the south of the main dwelling. Area of trees has not been thinned. Average dimensions recorded.	10-20	C2
H1	Hawthorn	4	100	1.5	1.5	1.5	1.5	GL	SM	G	Boundary hedge. Pleasant feature.	10-20	C2

APPENDIX 3

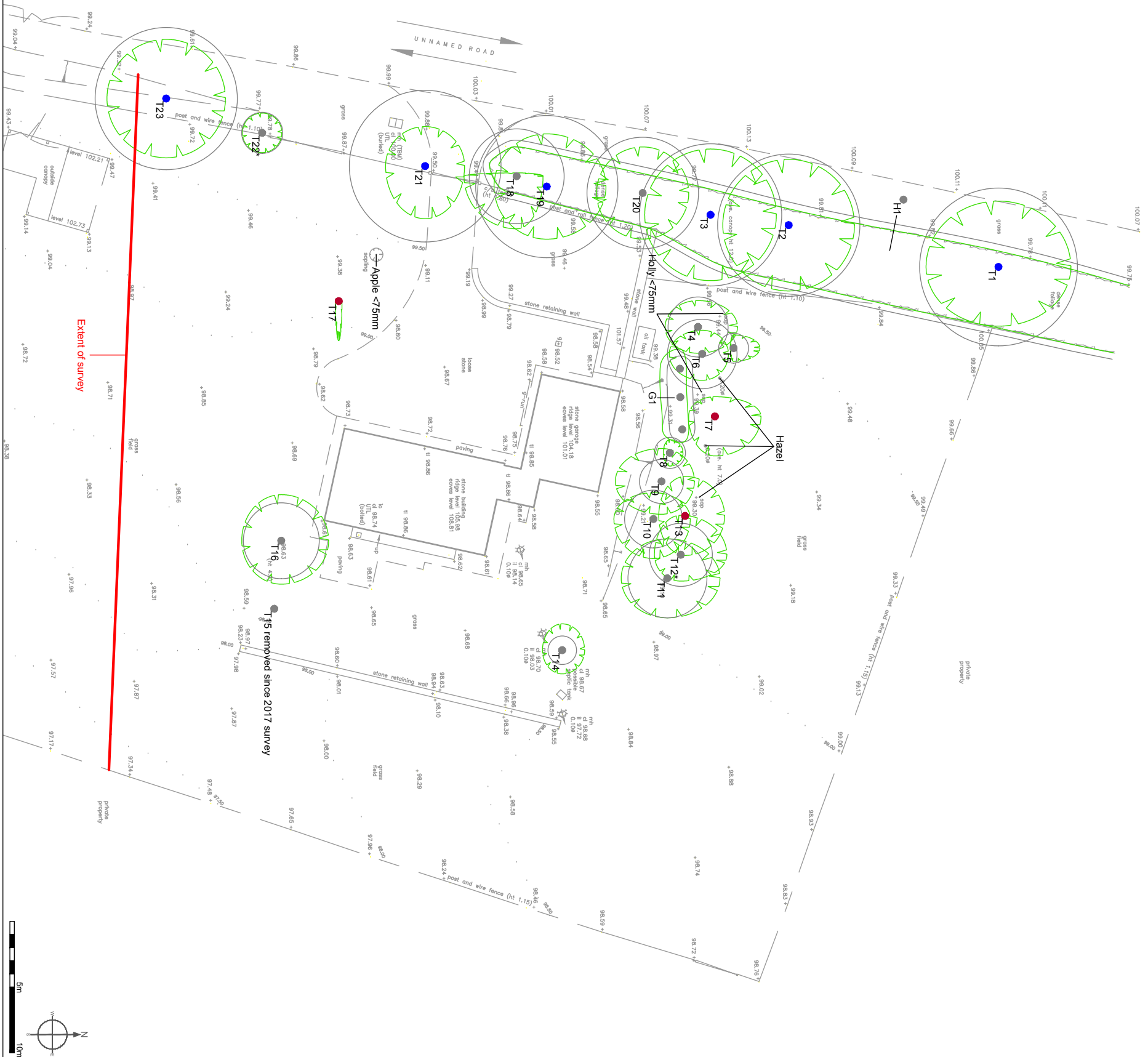
Root Protection Area

ROOT PROTECTION AREA

TREE NO.	SPECIES	NO. OF STEMS	SINGLE STEM DIA (mm)	2-5 STEMS					> 5 STEMS	ROOT PROTECTION AREA - RPA (RADIUS IN M)	RPA (M ²)	REMAINING CONTRIBUTION (EST YEARS)	CATEGORY GRADING
				STEM 1 (mm)	STEM 2 (mm)	STEM 3 (mm)	STEM 4 (mm)	STEM 5 (mm)	MEAN STEM DIA (mm)				
T1	Sycamore	1	500							6.00	113	20-40	B2
T2	Sycamore	1	450							5.40	92	20-40	B2
T3	Sycamore	1	450							5.40	92	20-40	B2
T4	Field Maple	1	190							2.28	18	10-20	C2
T5	Oak	1	95							1.14	5	10-20	C2
T6	Field Maple	1	220							2.64	23	10-20	C2
T7	Field Maple	1	204							2.45	18	<10	U
T8	Apple	1	98							1.18	5	10-20	C2
T9	Apple	1	140							1.68	10	10-20	C2
T10	Pear	1	183							2.20	18	10-20	C2
T11	Pear	1	250							3.00	28	10-20	C2
T12	Oak	1	200							2.40	18	10-20	C2
T13	Field Maple	1	175							2.10	14	<10	U
T14	Pear	1	90							1.08	5	10-20	C2
T15	Plum												
T16	Plum	1	240							2.88	28	10-20	C2
T17	Apple	1	100							1.20	5	<10	U
T18	Cherry	1	300							3.60	41	10-20	C2
T19	Cherry	1	450							5.40	92	20-40	B2
T20	Cherry x2	2		250	250					4.24	55	10-20	C2
T21	Crab Apple	1	480							5.76	102	20-40	B2
T22	Ash	1	130							1.56	7	10-20	C2
T23	Sycamore	1	450							5.40	92	20-40	B2
G1	Holly x3	1	80							0.96	3	10-20	C2
H1	Hawthorn	1	100							1.20	5	10-20	C2

APPENDIX 4

Tree Constraints Plan



Sylva Consultancy
 Agricultural Consultants
 FES93

Tel: 01866 872 945 Mobile: 07976 596 517
 e-mail: mail@sylvaconsultancy.co.uk

The Oxford Boaters Box, Woodstock Road, Oxford, OX2 7AH

Site: South Barn

Drawing Title: Tree Constraints Plan

1-250@A2
 Aug 2017

- Key:**
- Category A
 - Category B
 - Category C
 - Category U
- Category Crown Spread
 Root Tree Number
 Protection Area

NOTE: Tree/group numbers marked with an * have approximate locations. The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

APPENDIX 5

Arboricultural Impact Plan



Sylva Consultancy
 Agricultural
 Association
 FE593

Tel: 01865 872 945 Mobile: 07976 596 517
 e-mail: mail@sylvaconsultancy.co.uk
 The Oxford Boaters Box, Woodstock Road, Oxford, OX2 7AH

Site: South Barn
 Drawing Title: Arboricultural Impact Assessment
 1-250@A2
 Rev A,
 June 2019

- Key:
- Category A
 - Category B
 - Category C
 - Category U
- Category: Crown Spread
 Root Protection Area
 Tree Number

NOTE: Tree/group numbers marked with an * have approximate locations. The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

APPENDIX 6

Cellweb Installation Guide

www.geosyn.co.uk



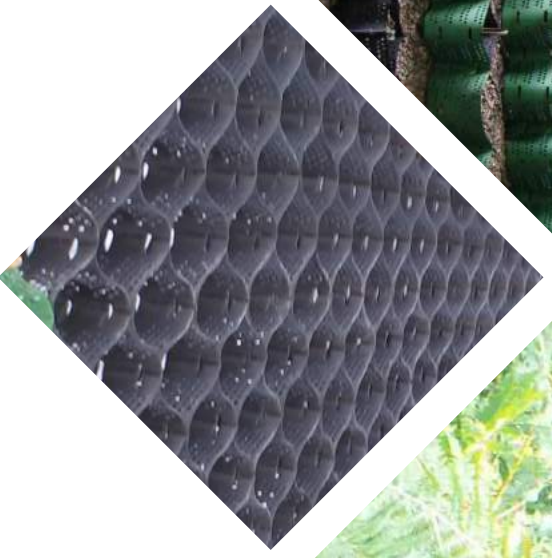
Geosynthetics

Cellweb[®] TRP

Technical Support Package

“Creating Innovative Solutions with Outstanding Products”

What is Cellweb® TRP



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 of the soil.

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

Cellweb® TRP is a no dig solution that ensures that the load placed upon it is laterally dissipated rather than transferring 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 an infill of clean angular stone this enables free movement of water and oxygen ensuring that supplies to the tree roots are maintained.

What makes Cellweb® TRP different?

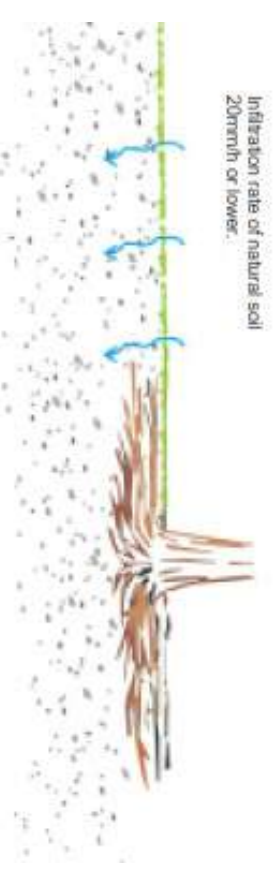
From the drawing board to installation, we are here to help.

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.

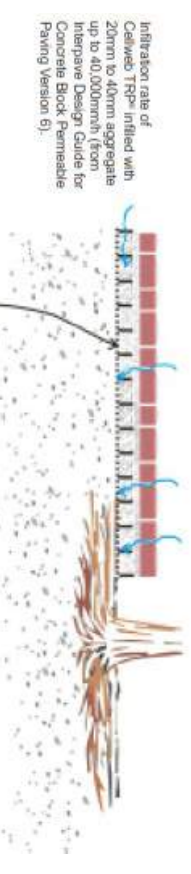
Delivering complete peace of mind to customers is our number one priority. As part of this customer care package we offer free on site consultations, technical recommendations and on site installation guidance on all projects.

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.

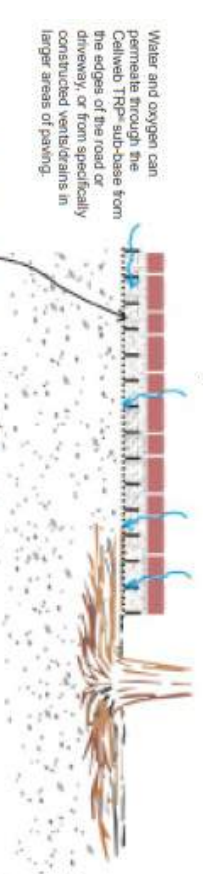


Infiltration rate of permeable pavement 4000mm/h or higher (from Interpave Design Guide for Concrete Block Permeable Paving Version 6).



Treetex® geotextile at base of construction allows tree drainage and oxygen transfer in all conditions.

Water and air can easily diffuse through the permeable pavement and Cellweb TRP®. Permeability and infiltration rate is much greater than natural soil.



Treetex® geotextile at base of construction allows free drainage and oxygen transfer in all conditions.

Cellweb TRP® minimises compaction of natural soil and water and air can still permeate to the tree roots.

Benefits Of Our Guarantee

NBS Specification Clause

Tried and tested

Cellweb® TRP is the only guaranteed system available today which has also been independently tested and proven to prevent over compaction of the sub-soils and roots. Customers have been using the system since its inception without failure.

Full tree root protection services

Combining Cellweb® TRP with our in-house arboriculturalists and design engineers gives our customer the assurance that all their specific requirements will be met.

Peace of mind

The guarantee covers the replacement of not only the Cellweb® TRP system but also the tree(s), giving the customer complete peace of mind.

Helping to build the right solution

Our in-house engineers will provide free site specific technical recommendations to value engineer the project.

Obtaining a Guarantee

Provide a copy of the Arb Report

If an arb report hasn't already been produced, we would advise approaching an Arboricultural Association registered consultant to have a full survey completed.

Complementary Technical Recommendation (TR)

We offer all our customers full use of our engineering services free of charge. For all guaranteed projects, we provide a full technical recommendation and calculations which ensure the optimum solution is provided.

Scope Agreement

Once we have received the arb report and technical recommendation, we will work with our customer to specify which trees can be covered under the guarantee using a scoping agreement.

Installation

All we ask is that our customers follow our installation guide alongside the technical recommendation provided. Once completed we will ask for a customer signature agreeing to the terms and conditions of the guarantee.

Certification

Upon your agreement with the terms and conditions, we will send out a guarantee certificate alongside a copy of all of the details of the project.



NBS Specification Clause

- I. The Tree Root Protection System shall be Cellweb® TRP by Geosynthetics Ltd 01455 617139
- II. The Tree Root Protection System shall include Cellweb® TRP 3 dimensional cellular confinement panels measuring 8.1m in length x 2.56m wide. The system also includes a Treetex™ Pollution Control Geotextile.
- III. The Cellweb® TRP shall incorporate perforated cell walls to provide lateral flow and frictional interaction between infill material and adjacent cells. Perforations shall be 11% of the cell wall surface area for Cell height of 100mm and 200mm and 16% for Cell height of 75mm and 150mm.
- IV. The Cellweb® TRP shall incorporate a green identification strip along the length of the panel.
- V. The seam peel strength of the cells shall be as shown in the following table:

Cell Height (mm)	75	100	150	200
Seam Peel Strength (N)	1065	1420	2130	2840

U.S.Army Corps of Engineers. Technical report GI.86-19, Appendix A

- VI. The expanded cell size (width x length) shall be 259mm x 224mm.
- VII. The infill material shall be a clean angular stone typically 40mm to 20mm or 20mm to 4mm.
- VIII. The system shall be installed strictly in accordance with the manufacturers installation instructions.
- IX. Fact Sheets 1,2,3,4, and 5 provide factual evidence of the Cellweb® TRP and Treetex™ systems performance in the application of Tree Root Protection.
- X. The system shall incorporate a 10 year guarantee which covers the replacement of any dead tree(s) up to a value of £10,000 per tree, as well as a replacement of the system which has failed up to the value of £50,000.



Product Data

Weight Capabilities

- 75mm Cellweb® TRP confinement system
- For foot and cycle traffic. This also provides a control measure for crust compaction
- 100mm Cellweb® TRP confinement system
- For domestic traffic, such as cars and transit vans up applicable up to a 6t gross weight
- 150mm Cellweb® TRP confinement system
- For emergency access and refuse collection applicable up to a 30t gross weight
- 200mm Cellweb® TRP confinement system
- For H.G.V and construction traffic applicable up to a 60t gross weight

Note: This is a general guidance for the depth of Cellweb® TRP according to Gross Vehicle Weight for a firm and stable subgrade (CBR>3%). If the ground conditions are poor and/or unstable please contact Geosynthetics Ltd to provide a site specific design.

Treetex™

Treetex™ is a heavy duty needle punched geotextile fleece. Manufactured from polypropylene, Treetex™ is ideal for use in a Tree Root Protection system as it is easily moulded to the shape of the aggregate and has been proven to absorb 1.7 litres of oil per m2 ensuring that the roots are not damaged by pollutants from the surface.

Clean Angular Stone

We recommend using a 4/20 mm clean angular stone type 4/20 mm (preferred) or 4/40mm to allow water permeation and gaseous exchange within the rooting environment.

(*) Please contact Geosynthetics Ltd for further information on clean angular stone.

Aggregate gradings for sub-base materials to BS EN 12620

Sieve Size (mm)	Percentage Passing (%)	
	Coarse aggregate	Coarse aggregate
4/40	4/40	4/20
80	100	-
63	98-100	-
40	90-99	100
31.5	-	98-100
20	25-70	90-99
10	-	25-70
4	0-15	0-15
2	0-5	0-5
1	-	-

Ancillary Products - Fixing Pin

Fixing Pins

Cellweb® Pins

Geosynthetic Cellweb® pins are specifically manufactured to pin the Cellweb® system in place prior to fill. They are a 700mm long 12mm profiled bar with a 100mm return. Due to the heavy duty application they are the largest and strongest pins we manufacture.



Cellweb® Stapler

Cellweb® stapler rapid heavy duty 31 stapler:



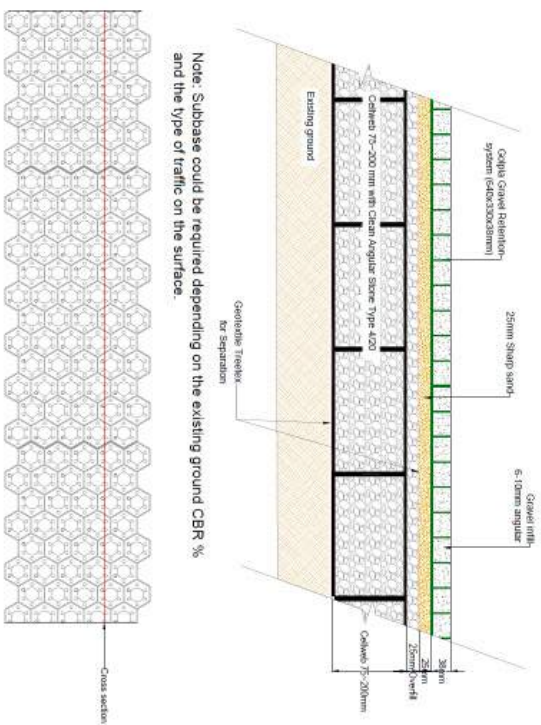
Cellweb® Staples

Cellweb® staples 10mm staples 5000 per box:

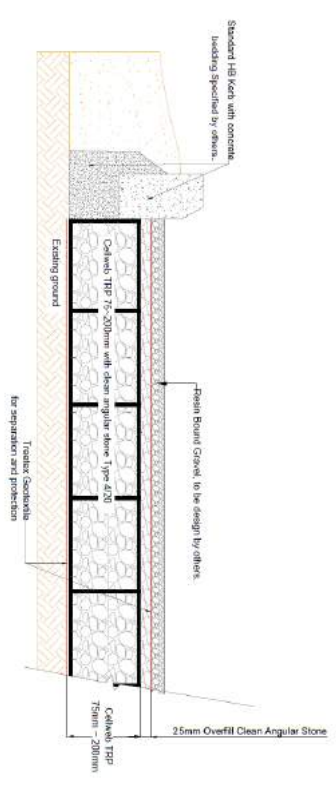


Surfacing Options

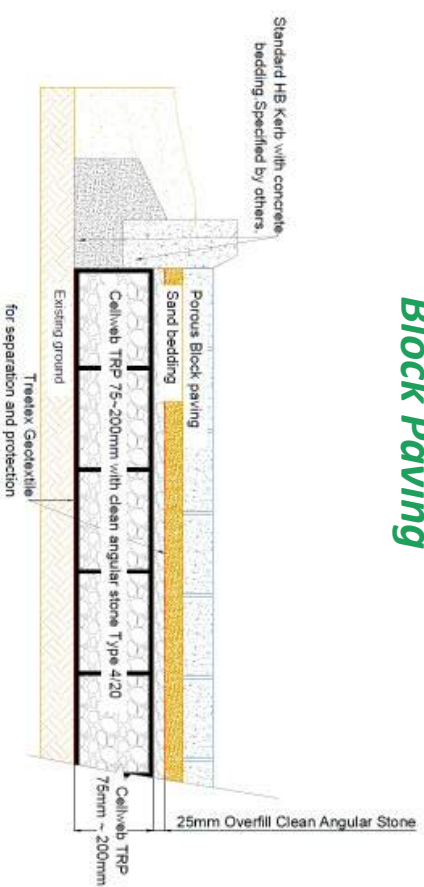
Golpla® Grass & Gravel Pavers



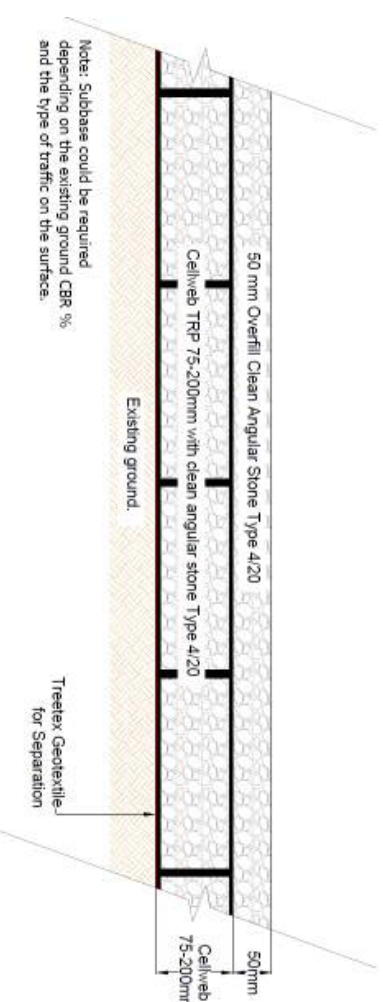
Resin Bound Gravel



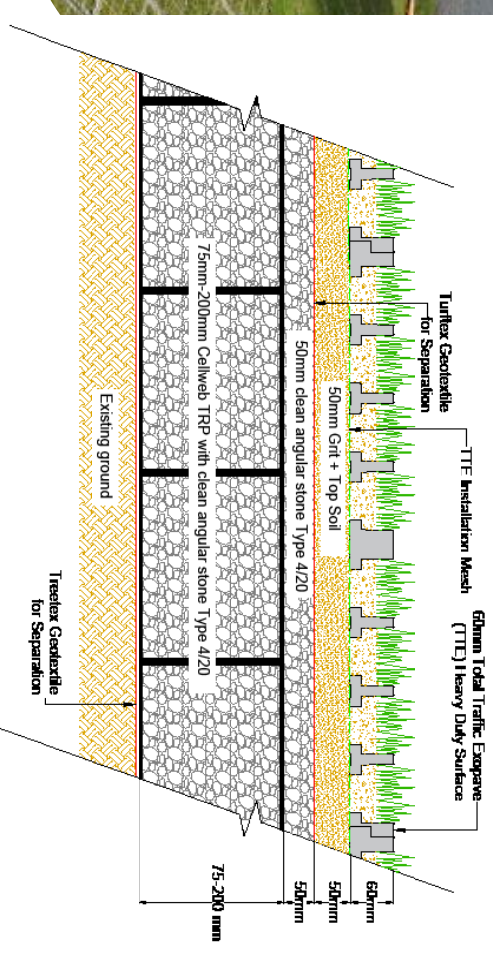
Block Paving



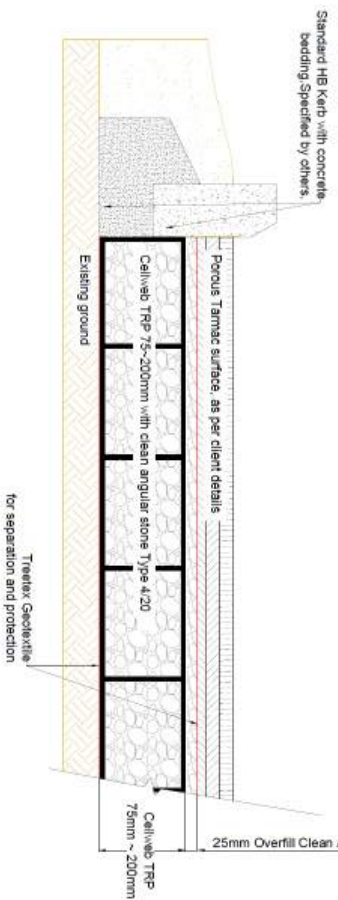
Gravel



TTE® Heavy Duty Pavers

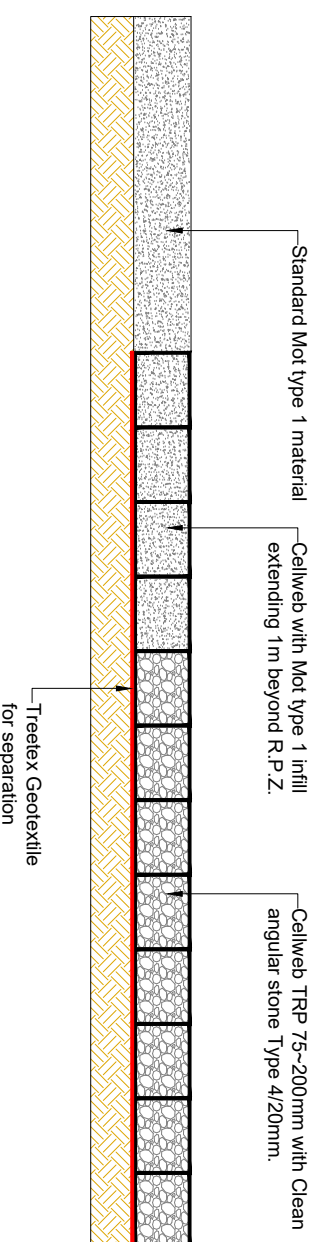


Porous Tarmac

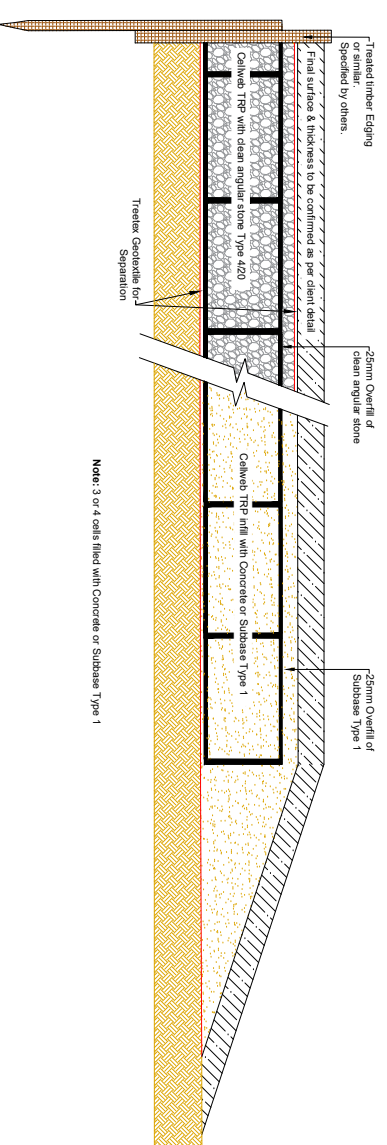


Edging and Transition Details

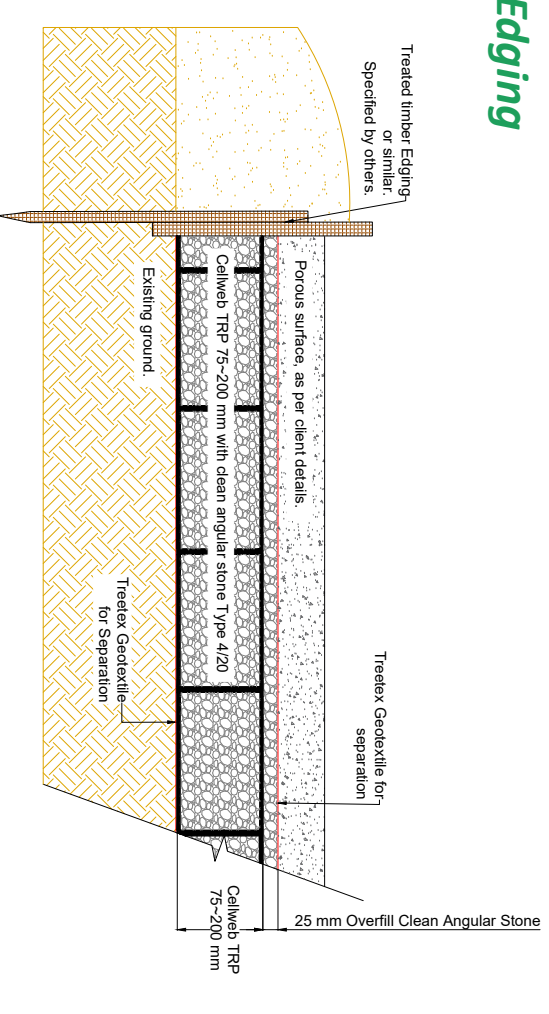
Transition Detail (Flat)



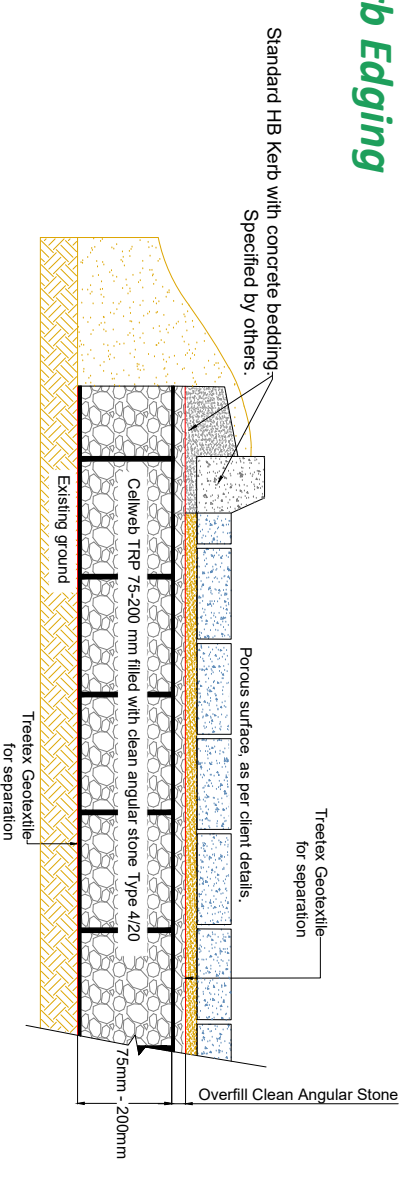
Transition Detail (Ramp)



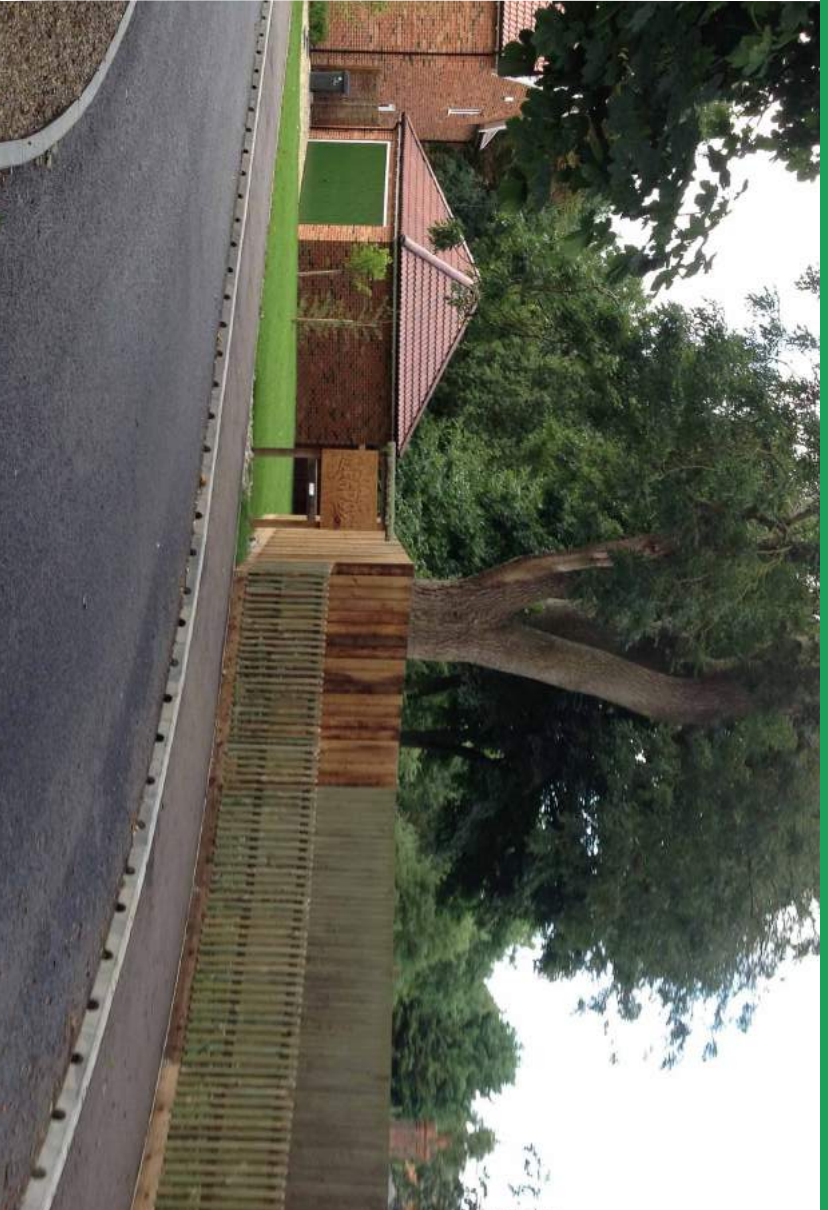
Timber Edging



Kerb Edging



Adopted Roads and Footpaths



Cellweb® Tree Root protection is the UK's market leading tree root protection system and is widely specified for the construction of new hard surfaces within root protection areas in accordance with BS5837.

Difficulties when specifying the system often occur for the construction of public roads, footpaths and carparks where there is a requirement for the local authority to take responsibility for the maintenance of the new structure and formally adopt it.

The following page shows examples of where new hard surfaces constructed using the Cellweb® TRP system have been adopted by local authorities. This document is designed to provide examples to specifiers of the system and local authorities.

This document is designed to be used in conjunction with technical advice and site specific recommendations which are also available free of charge from Geosynthetics Limited.

Adopted Roads and Footpaths



Castle Gardens, Leicester

Location:	Castle Gardens Castle View Leicester
Project details:	This project was undertaken by Leicester City Council in 2015. The aim of the project was to create a new access and footpath from St Nicholas Circle in the centre of Leicester down into the Castle Gardens. This would create improved access to the Castle Gardens and enable the public to pass through the gardens to access other parts of the city. The project required thoughtful design to overcome significant changes in levels within the root protection areas of several mature trees and utilise Cellweb® TRP as a no dig solution. A full case study is available on this project.
Architect:	Levitate Architecture and Design Studio
Council:	Leicester City Council

Stoke Road, Norfolk

Location:	Stoke Road Poringland Norfolk NR14 7JL
Project details:	This no dig access road has been approved for formal adoption by Norfolk County Council. The road currently provides access to a newly constructed doctor's surgery, but will ultimately become the access to approximately 100 new homes to be built by developers David Wilson Homes. The road will be formally adopted on completion of the development.
Architect:	Plandescil Consulting Engineers
Council:	Norfolk County Council

Stanford in the Vale

Location:	Stanford in the Vale Faringdon Oxfordshire
Project details:	This footpath which runs adjacent to the railings was constructed on a David Wilson Homes development, to protect the roots and rooting environment of the Willow seen in the photograph. Both the Cellweb® TRP footpath and the road are surfaced with permeable blocks and has been adopted under a section 38 agreement by Oxfordshire County Council.
Architect:	Infrastruct CS Ltd
Council:	Oxfordshire County Council

Case Study

Cellweb®TRP

Helping to Protect Ancient Trees



Location:	Calke Abbey Ticknall Derby Derbyshire DE73 7LE
------------------	--



Project Description:	Provide a solution to prevent further die back of 'The Old Man of Calke' at Calke Abbey
Technical Requirements:	<ul style="list-style-type: none"> Solution to alleviate existing soil compaction and encourage decomposers To minimise further soil compaction

Installer:	Geosynthetics Limited National Trust
-------------------	---

Geosynthetics
Engineered Solutions
Fleming Road
Harrowbrook Industrial Estate
Hinckley
LE10 3DU
Tel: 01455 617 139
sales@geosyn.co.uk
www.geosyn.co.uk

'The Old Man of Calke' is Calke Abbey's oldest tree and is thought to be up to 1200 years old. With the average age of large oak trees in Britain being 200 years it certainly is the 'Old Man' of oak trees. Put into context, this means that this tree would have been 200 years old when William the Conqueror arrived in Britain.

Many years of heavy footfall had caused a significant increase in soil compaction beneath one side of the tree. This had resulted in reduced water and oxygen availability to roots beneath this compacted ground. This was reflected in the crown, which was displaying accelerated and significant die back on the footpath side. A solution needed to be found to alleviate the existing soil compaction and minimize further future compaction, ultimately preventing further die back.

Geosynthetics' engineering team and in house arboriculturalist worked with Brian Muelaner, the ancient tree advisor at the National Trust, to provide a solution to prevent the further decline of this ancient tree.

A 90mm layer of mulched wood chip was applied to the existing ground surface before the installation of the Cellweb®TRP system. This was used to encourage decomposers such as earth

worms to help alleviate the ground compaction and aerate the soil.

A layer of Treetex geotextile was then laid on top, acting as a separation layer and pollution control measure. Panels of Cellweb®TRP were then laid on top of the Treetex and infilled with a clean angular stone. The Cellweb®TRP would minimise any further compaction within the rooting environment, while decomposers would naturally aerate the ground, reducing soil bulk density. The use of Cellweb®TRP infilled with clean angular stone would also allow the continued permeation of water and gas exchange between rooting environment and atmosphere.

This whole project was designed, supplied and installed courtesy of Geosynthetics. The Geosynthetics Tree Root Protection Team donated their time, knowledge and products to ensure that this tree will survive for generations to come.



"This is an exciting new development in how to reduce compaction damage from vehicles and footfall to an ancient tree's roots, made possible by the generous donation by Geosynthetics in time, expertise and materials."



Geosynthetics

sales@geosyn.co.uk

Tel: 01455 617 139

Fax: 01455 617 140

www.geosyn.co.uk



INVESTORS
IN PEOPLE | Bronze

This brochure is produced to give an example of the products we supply and how, subject to your own testing, our products may be used. Nothing in this brochure shall be construed so as to make any ascertain or give/constitute any warranty as to specification or the fitness for purpose of any of our products in respect of any specific job. You should satisfy yourself through your own testing as to the suitability of our products for any specific purpose and rely solely on such testing and/or the advice of any professional(s) you commission. While we try to ensure as far as possible that all information given in this brochure is accurate at the time of print, information and examples given in this brochure are by way of illustration only and nothing contained in this or any other promotional literature produced by Geosynthetics Limited shall in any way be binding on us or constitute any offer or contract with you or shall be relied upon by you as a statement or representation of fact.

APPENDIX 7

Qualifications

Fiona Bradshaw

MicFor; RFS Dip Arb; F. Arbor.A; Tech Cert (Arbor.A)

I have over 20 years' experience of arboriculture and I am the principal consultant at Sylva Consultancy. I hold the Royal Forestry Society's Professional Diploma in Arboriculture and the Arboricultural Associations Technicians Certificate. I am a Fellow member of the Arboricultural Association and a professional member of the Institute of Chartered Foresters, of which I am also a registered Consultant.

I have the benefit of both a local authority and private practice background and I am frequently instructed to provide advice and assistance relating to trees and the planning process. I am also experienced at compiling expert reports, providing evidence and also appearing as an expert witness at Public Inquires.

I am committed to my continued professional development which is reflected in my regular attendance of seminars and workshops.