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Arboricultural Impact Assessment

in Relation to Proposed Construction of Three Chalets at



**Keepers Cottage, Northcote Road,
Old Langho, Lancashire, BB6 8BD**

Prepared by:

Bowland 
Tree Consultancy Ltd

February 2017

**ARBORICULTURAL IMPACT ASSESSMENT
KEEPERS COTTAGE, OLD LANGHO**

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**ARBORICULTURAL IMPACT ASSESSMENT
KEEPERS COTTAGE, OLD LANGHO**

Control sheet

Project No.: BTC1265

Site: Keepers Cottage, Northcote Road, Old Langho, BB6 8BD

Agent for Client: Peter Hitchen Design

Council: Ribble Valley Borough Council

Survey Date: 27 January 2017

Prepared by: Jennie Keighley MSc MArborA

Checked by: Phill Harris MSc BSc(Hons) HND MArborA CEnv MGCFor

Date of Issue: 9 February 2017

Version No: 1

ARBORICULTURAL IMPACT ASSESSMENT	
Site:	Keepers Cottage, Northcote Road, Old Langho, Lancashire, BB6 8BD
Proposal:	Construction of three chalets with car parking and vehicular access
Survey Date:	27 January 2017
Report Date:	9 February 2017
Surveyor:	Phill Harris MSc BSc(Hons) HND MArborA CEnv MICFor
Report Prepared by:	Jennie Keighley MSc MArborA
Report Checked by:	Phill Harris MSc BSc(Hons) HND MArborA CEnv MICFor
Report Ref:	BTC1265
Agent for Client:	Peter Hitchen Design

Introduction and Rationale. Bowland Tree Consultancy Ltd was instructed to carry out an appraisal of the potential for a proposed development at the above site, to impact upon trees and, in turn, to advise on appropriate protective measures for retained trees during development and on facilitation pruning and/or felling works, where identified as necessary. Further to this instruction we confirm that Phill Harris visited the site on 27 January 2017 and carried out a survey of trees in accordance with BS5837:2012 - Trees in Relation to Design, Demolition and Construction – Recommendations, and our disclaimer at page 5.

In this respect we set out a brief overview of our observations, findings and recommendations below, along with comments on any issues raised. We also enclose a Tree Survey Schedule (TSS) detailing specific tree related information, and a Tree Impact Plan (TIP) showing the site under consideration with pertinent tree constraints detailed, along with an overlay of the proposal, and any necessary tree removals indicated. The TIP is based on the topographical survey based site proposal plan, as prepared by the project agents, Peter Hitchen Design Ltd, and, for the purpose of this report, we presume the details of the plan supplied to be accurate.

The Site and the Proposal. The site under consideration is located within a rural area on the south-eastern outskirts of the village of Old Langho, within the administrative boundaries of Ribble Valley Borough Council (RVBC). It is currently part of a garden area to the east of Keepers Cottage, and is bordered by an existing detached property to the north-west, pastureland to the north-east, Northcote Road to the south and Keepers Cottage to the west. There is currently vehicular access onto the site from Old Langho Road to the west. According to the topographical survey plan the ground levels within the site are relatively constant, with only a small increase evident from east to west.

We are informed, by Peter Hitchen Design, that the proposal is for the construction of three chalets with car parking and a new vehicular access point from Northcote Road, as detailed on the attached TIP.

The Trees. Three individual trees (prefixed 'T'), four groups of trees (prefixed 'G'), and four hedges (prefixed 'H') were surveyed in respect of the proposals and their associated potential to impact upon said vegetation, and the respective constraints of these items are plotted on the appended TIP.

According to the RVBC website the site does not stand within a Conservation Area. However, I have not been informed if any of the surveyed trees are the subject of a TPO and, as such, it is therefore essential to contact the planning office at RVBC in order to check for the presence of any such statutory tree protection prior to carrying out any tree works that are not related directly to the implementation of a detailed planning approval.

The surveyed vegetation consists of Hawthorn, Ash, Alder, Goat Willow, Sycamore, Elder, Hazel, Privet and Leyland Cypress. The trees range from young to mature in age, stand at heights of up to 14.5 metres, have maximum diametrical crown spreads of up to 10 metres, and stem diameters of up to approximately 570 millimetres. Tree dimensions and other pertinent information such as structural defects and physiological deficiencies, along with recommendations for remedial management works, are included in the TSS attached.

The trees were appraised in accordance with BS5837:2012 Table 1 (appended) and, as detailed in Table A, overleaf, two trees and one group were allocated moderate retention values of 'B', and one tree, one group, and four hedges were allocated low retention values of 'C'. Additionally, two groups were considered unsuitable for retention ('U' Category). With regard to Table A, it should be noted that tree quality and value is categorised within the existing context without taking into account any site development related issues, but

that the recommendations for works take the proposal into consideration where there are clearly definable potential impacts upon trees.

Table A: BS5837:2012 Retention Categories of the Surveyed Vegetation

	Ret. Cats.	Tree, Group & Hedge Numbers	Totals
Those of a high quality that should be afforded appropriate consideration in the context of development	'A'	-	-
Those of a moderate quality that should be afforded appropriate consideration in the context of development	'B'	T1, T2 G3	2 Trees 1 Group
Those of a low quality that should be afforded appropriate consideration in the context of development	'C'	T3 G4 H1, H2, H3, H4	1 Tree 1 Group 4 Hedges
Those considered unsuitable for retention	'U'	G1, G2	2 Groups
			= 3 Trees, 4 Groups and 4 Hedges in Total

The Proposal's Projected Impacts on Trees. As detailed in Table B, below, construction of the development as proposed is projected to require the removal of one low value hedge. In addition, two groups categorised as unsuitable for retention are recommended for removal for reasons unrelated to the proposed development.

Table B: Arboricultural Impacts of Proposed Development & Other Tree Removal Proposals

	Ret. Cats.	Removals necessary to implement development	Removals recommended regardless of development	Total no. of tree removals
Those of a high quality that should be afforded appropriate consideration in the context of development	'A'	-	-	-
Those of a moderate quality that should be afforded appropriate consideration in the context of development	'B'	-	-	-
Those of a low quality that should be afforded appropriate consideration in the context of development	'C'	H2	-	1 Hedge
Those that should be removed for sound management reasons regardless of site plans	'U'	-	G1, G2	2 Groups
Totals		1 Hedge	2 Groups	= 1 Hedge & 2 Groups In Total

Mitigation for Projected Tree Losses. It is projected that the site can accommodate new hedge planting as part of its landscaping. In this respect we would anticipate that the existing hedge requiring removal at the road frontage, which is predominantly Leyland Cypress, can be replaced post-development with a better quality and, in turn, more sustainable native hedge comprised of species such as Hawthorn, Blackthorn, and Holly, etc.

As such, it is anticipated that the provision of a new length of hedge at the road frontage, planted as part of the proposed development's landscaping, would sufficiently mitigate for the necessary losses. In this respect the provision of specific species, plant numbers, planting locations and post-planting management, in the form of a landscape plan, can be conditioned to a planning approval.

Tree Protection Recommendations. Adequate protection of retained tree RPAs during construction is essential if their long-term viability is to be assured. RPAs, which are calculated through a method provided in BS5837:2012, are ground areas around trees that are to be kept free from major disturbance throughout development, normally through the installation of temporary protective fencing to form a Construction Exclusion Zone. The TSS lists the RPAs of the surveyed trees as areas in square metres and as radial distances in metres from stem centres, whilst the RPAs are indicated in magenta on the TIP. Trees with RPAs requiring protection from the development works are indicated in the TSS. A Temporary Protective Fencing Specification is appended which gives details of the purpose and the type and construction of the default temporary protective fencing that should normally be used.

In addition to the points raised above we would also emphasise the importance of ensuring that all relevant recommendations included under the General Recommendations section at page 4 be followed accordingly.

Special Design, Construction and Protection Considerations in Relation to Retained Trees. As shown on the TIP, proposed car parking encroaches 11% and 13% into the RPAs of retained trees T1 and T2, respectively. Whilst encroachments into less than 20% of the unsurfaced area of RPA are acceptable under the BS5837:2012 guidance, we would note that Section 7.4 of BS5837: 2012 recommends that, where the construction of hard surfaces cannot be avoided within RPAs, then a 'no-dig' design, such as a three-

dimensional cellular confinement system, should be used to avoid root loss and damage due to ground excavation and/or compaction. A manufacturer's brochure detailing the design and construction of a typical 'no-dig' hard surface is included at Appendix Three.

In respect of these matters, the guidance recommends that the associated working methods and procedures be detailed in an Arboricultural Method Statement and on a Tree Protection Plan, which describe the timing, procedures, working methods and protective measures to be used in relation to retained trees in order to ensure that they are adequately protected during the construction process. The production of and adherence to an Arboricultural Method Statement and Tree Protection Plan should therefore be conditioned as part of a planning approval.

In addition to the points raised herein we would also emphasise the importance of ensuring that all relevant recommendations included under the General Recommendations section at page 4 be followed accordingly.

Summary and Conclusions. The construction of three chalets with car parking and a new vehicular access point from Northcote Road is proposed at the site under consideration.

As such, three individual trees, four groups of trees, and four hedges were surveyed in respect of the proposals and their associated potential to impact upon said vegetation.

Two trees and one group have moderate retention values, one tree, one group and four hedges have low retention values, and two groups are considered unsuitable for retention regardless of the development proposals.

From the information provided our appraisal determined that construction of the development as proposed will require the removal of one low quality hedge.

It is also anticipated that the site can accommodate a replacement length of hedge at the road frontage, which is projected to adequately mitigate for the necessary development related loss. The provision of this can be conditioned to a planning approval.

Where proposed car parking encroaches into the RPAs of trees T1 and T2, it will be necessary to construct the hard-surface using 'no-dig' methods and materials in accordance with BS5837: 2012, the details of which should be included in an Arboricultural Method Statement and on a Tree Protection Plan, the provision of which can be conditioned to a planning approval.

I also conclude that the existing trees that are to be retained can be adequately protected throughout the development in accordance with BS5837:2012, provided that various recommendations made herein are followed, in particular the provision of adequate protection of the trees' Root Protection Areas.

Jennie Keighley MSc MArborA
Consulting Arboriculturist



GENERAL RECOMMENDATIONS

Non-Development Related Tree Works and Recommendations. Any general management pruning works for retained trees that are stated to be non-development related, as detailed in the TSS, are recommended in accordance with prudent arboricultural management and should therefore be carried out regardless of any site plans and potential changes in land usage. All tree works should be carried out in accordance with BS3998:2010 - Tree Work – Recommendations.

Tree Work Related Consents. No tree pruning or removal works should commence on site until necessary consents have been obtained from the LPA as part of a planning approval or in respect of any statutory tree protection.

Protected Species. Hedges, climbing plants, shrubs and trees should be inspected for birds' nests prior to any clipping, pruning or removal works, and any work likely to destroy or disturb active nests should be avoided until the young have fledged. All personnel carrying out tree works should also be vigilant of the possibility that roosting bats may be present in trees and, if any bat roosts are identified, then it is essential that works are halted immediately and that a suitably qualified and experienced ecologist investigate prior to works continuing.

Arboricultural Contractors. All tree works should be carried out by suitably qualified and experienced arboricultural contractors carrying appropriate public liability insurance cover and be implemented to the minimum current CE and UK industry standards and in accordance with industry codes of practice. Only certificated personnel should, in accordance with The Control of Pesticides Regulations, apply any pesticides.

Contractors and Subsequently Identified Tree Defects. Contractors should be made aware that, should any significant tree defects become apparent during operations that would not have been immediately obvious to the surveyor, then such defects should be notified immediately to the client and subsequently confirmed to the consultant within five working days.

New Tree Planting. Where trees are removed in order to facilitate construction then new tree planting proposals should be included as part of the landscape design plan for the site. All tree planting should be carried out in accordance with BS 8545:2014 Trees: from Nursery to Independence in the Landscape – Recommendations.

Retained Tree Management. Any tree risk management appraisal and subsequent recommendations made in this report were based on observations and site circumstances at the time of our survey. Trees are dynamic living organisms whose structure is constantly changing and even those evidently in good condition can succumb to damage and/or stress. In this respect we would note that, under the Occupiers' Liability Act (1957 & 1984), site occupants have a duty of care to take reasonable steps to prevent or minimise the risk of personal injury and/or damage to property from any tree located within the curtilage of the land they occupy. It is accepted that these steps should normally include commissioning a qualified and experienced arboriculturist to survey their trees in order to identify any risk of harm to persons or damage to property that they may present and, where unacceptable risks are identified, taking suitable remedial action to negate those risks.

DISCLAIMER

Survey Limitations: Unless otherwise stated all trees are surveyed from ground level using non-invasive techniques, in sufficient detail to gather data for and inform the design of the current project only. The disclosure of hidden crown and stem defects, in particular where they may be above a reachable height or where trees are ivy clad or located in areas of restrictive ground vegetation, cannot therefore be expected. Detailed tree safety appraisals are only carried out under specific written instructions. Comments upon evident tree safety relate to the condition of said tree at the time of the survey only. Unless otherwise stated all trees should be re-inspected annually in order to appraise their on-going mechanical integrity and physiological condition. It should, however, be recognised that tree condition is subject to change, for example due to the effects of disease, decay, high winds, development works, etc. Changes in land use or site conditions (e.g. development that increases access frequency) and the occurrence of severe weather incidents are also significant considerations with regard to tree structural integrity, and trees should therefore be re-assessed in the context of such changes and/or incidents and inspected at intervals relative to identified and varying site conditions and associated risks.

Where trees are located wholly or partially on neighbouring private third-party land then said land is not accessed and our inspection is therefore restricted to what can reasonably be seen from within the site. Stem diameters and other measurements of trees located on such land are estimated. Any subsequent comments and judgments made in respect of such trees are based on these restrictions and are our preliminary opinion only. Recommendations for works to neighbouring third-party trees are only made where a potential risk to persons and/or property has been identified during our survey or, if applicable, where permissible works are required to implement a proposed development. Where significant structural defects of third-party trees are identified and associated management works are considered essential to negate any risk of harm and/or damage then we will inform the relevant Council of the matter. Where a more detailed assessment is considered necessary then appropriate recommendations are set out in the Tree Survey Schedule.

Where tree stem locations are not included on the plan(s) provided then they are plotted by the arboriculturist at the time of the survey using, where appropriate and/or practicable, a combination of measurement triangulation and GPS co-ordination. Where this is not possible then locations are estimated. Restrictions in these respects are detailed in the report.

This document is intended as a guide to identify key tree related constraints to site development only, and the potential influence of trees upon existing or proposed buildings or other structures resulting from the effects of their roots abstracting water from shrinkable load-bearing soils is not considered herein. The tree survey information in its current form should not therefore be considered sufficient to determine appropriate foundation depths for new buildings. Accordingly, an updated survey, with reference to the current NHBC Standards Chapter 4.2 - Building Near Trees, must therefore be prepared for the specific purpose of informing suitable foundation depths subsequent to planning approval being granted. The advice of a structural engineer must also be sought with regard to appropriate foundation depths for new buildings.

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TREE SURVEY SCHEDULE & BS5837:2012 'TABLE 1'

TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL		Surveyor: Phill Harris – Chartered Arboriculturist
Site:	Keepers Cottage, Northcote Road, Old Langthorpe, Lancashire, BB6 8BD	Survey Date: 27 January 2017
Agent for Client:	Peter Hitchen Design	Job Ref: BTC1265

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No.	Species	Height	Stem Diam.	Branch Spread	Branch & Canopy Clearances	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m ²)	RPA Radius (m)
T1	Common Alder	10.5	290	N 4 E 2 S 3 W 4	5-W 4	SM	M	- Ivy up stem. - Crown suppressed to north-west due to presence of neighbouring tree.	- Retain in context of proposed development. - Protect Root Protection Area (RPA) during main construction phase using Temporary Protective Fencing (specification appended) to form a Construction Exclusion Zone (CEZ). - Construct car parking, where within RPA, using 'no-dig' methods and materials in accordance with BS5837: 2012 – see Arboricultural Impact Assessment report (AIA). - Sever ivy at base of stem.	20+	B2	38	3.48
T2	Ash	14.5	570	N 5 E 5 S 5 W 5	2.5-E 2	EM	G	- Stem bifurcates at a height of 2.5m. - Light epicormic growth throughout mid crown region.	- Retain in context of proposed development. - Protect RPA during main construction phase using Temporary Protective Fencing to form a CEZ. - Construct car parking, where within RPA, using 'no-dig' methods and materials in accordance with BS5837: 2012 – see AIA.	20+	B2	147	6.84
T3	Ash	9	160	N 3 E 2 S 3 W 2	2-S 3	Y	G	No visible structural defects.	- Retain in context of proposed development. - Ensure protection throughout development.	20+	C1	12	1.92
G1	3no. Leyland Cypress	≤ 12	≤ 290	N ≤ 2 E ≤ 2 S ≤ 2 W ≤ 2	0.1-SE ≥ 0	SM-EM	G	- Closely spaced group. - South tree has a partially failed root plate and moderately severe stem lean to east, although stem corrects and becomes upright at a height of approximately 3m. - All three have been planted in 2 x 1m x 225mm deep metal containers and, as such, have only limited future growth potential.	Remove and replace with better quality tree planting as part of site landscaping.	<10	U	≤ 38	≤ 3.48

Headlines and Abbreviations:

No. Allocated sequential reference number - Tree (T), Group (G), Woodland (W) or Hedge (H) reference number - refer to plan and to numbered bags where applicable

Species: Common name

Height: In metres, to nearest half metre - where possible approximately 80% are measured using an electronic clinometer and the remainder estimated against the measured trees. In the case of Groups and Woodlands the measurement used is that of the highest tree

Stem Diam.: In millimetres, to nearest 10mm - measured and calculated as per Annex C of BS5837:2012. MS = multi-stemmed, TS = thin-stemmed

Branch Spread: Crown radius measured (or estimated where considered appropriate) from the four cardinal points (north, east, south and west) to give an accurate visual representation of the crown

Branch & Canopy Clearances: Existing height above ground level, in metres, of first significant branch and direction of growth (e.g. 2.5-M) and of canopy at lowest point - to inform on crown to height ratio, potential for shading, etc.

Life Stage: Estimated age class - Y = young, SM = semi-mature, EM = early-mature, M = mature, PM = post-mature

PC: Physiological Condition - a measure of the tree's overall vitality. Ls. D = Dead, MD = Moderately, P = Poor, M = Moderate, G = Good

General Observations and Comments: Comments relating to the tree's overall condition and any other pertinent factors including structural defects, current and potential direct structural damage, physiological decline, poor form, etc.

Management Recommendations: Surveys take the proposed development into consideration with recommendations made accordingly. More than one option may be given if considered appropriate

ERC: Estimated Remaining Contribution - in years as per BS5837:2012 (i.e. <10, 10+, 20+, 40+)

Cat. Grade: Category Grading - tree retention value listed as U, A, B or C - in accordance with BS5837:2012 Table 1

RPA m²: Root Protection Area in m² - calculated area around the tree that must be appropriately protected throughout the development process in order to avoid root damage

RPA Radius (m): Root Protection Area Radius - in metres measured from the centre of the stem to the line of tree protection

(Estimated Dimensions): Where trees are located off-site, or are inaccessible for any other reason, and accurate measurements or other information cannot be taken then the information provided is estimated and is duly suffixed with a '#' symbol

TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL

Site: Keepers Cottage, Northcote Road, Old Langho, Lancashire, BB6 8BD

Agent for Client: Peter Hitchchen Design

Surveyor: Phil Harris – Chartered Arboriculturist
Survey Date: 27 January 2017
Job Ref: BTC1265

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No.	Species	Height	Stem Diam.	Branch Spread	Branch & Canopy Clearance	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m ²)	RPA Radius (m)
G2	approx. 5no. Goat Willow, Hazel	≤ 6	≤ 75	N ≤ 2 E ≤ 2 S ≤ 2 W ≤ 2	0.1-S ≥ 0	Y	G	- Five small self-set clumps of Goat Willow with Hazel saplings growing amongst the group. - All growing on top of leaf mulch covered hard standing. - Very limited growth potential.	Remove due to very limited growth potential.	<10	U	≤ 3	≤ 0.9
G3	1no. Ash, 1no. Sycamore.	≤ 10	≤ 310	N ≤ 4 E ≤ 4 S ≤ 4 W ≤ 4	1.7-E ≥ 3.5	EM	G	- Closely spaced group. - Part of a larger linear group. - Sycamore bifurcates at a height of 1.7m with a very tight fork.	- Retain in context of proposed development. - Protect RPAs throughout development using Temporary Protective Fencing to form a CEZ.	20+	B2	≤ 43	≤ 3.72
G4	2no. Leyland Cypress	≤ 4	≤ 160	N ≤ 1.5 E ≤ 1.5 S ≤ 1.5 W ≤ 1.5	1.3-E ≥ 2	SM	G	- Closely spaced group. - Part of a larger linear group. - Growing in hedge H4.	- Retain in context of proposed development. - Protect RPAs throughout development using Temporary Protective Fencing to form a CEZ.	10+	C2	≤ 12	≤ 1.92
H1	Leyland Cypress	≤ 8	≤ 300	≤ 6 wide	N/A ≥ 1	EM	M	- Short length of outgrown hedge. - Previously reduced to 3.5m and crown lifted to 2m. - Currently unmanaged.	- Retain in context of proposed development. - Ensure protection throughout development.	10+	C2	N/A	≤ 3.6
H2	Leyland Cypress, Elder, Hazel, Sycamore, Privet	≤ 6	≤ 220	≤ 4 wide	N/A 0	EM	G	- Western end is predominantly Leylandii with increasing broadleaf mix becoming predominantly Sycamore at eastern end. - Roadside of hedge is evidently routinely managed at 3.5m in height.	- Remove in order to construct development as proposed. - Replace with new native hedge post-development.	10+	C2	N/A	≤ 3
H3	Hawthorn, Elder, Hazel, Sycamore	≤ 5	≤ 120	≤ 4 wide	N/A 0	M	G	- Outgrown but previously managed length of hedge. - Growing through fence line. - Ivy throughout the hedge.	- Retain in context of proposed development. - Ensure protection throughout development.	10+	C2	N/A	≤ 1.44
H4	Privet	≤ 1.5	N/A	≤ 1.5 wide	N/A 0	EM	G	Managed boundary hedge.	- Retain in context of proposed development. - Ensure protection throughout development.	10+	C2	N/A	≤ 1

BS5837:2012 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	- 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 <i>Note: Category U trees can have existing or potential conservation value which it might be desirable to preserve; see BS5837:2012 paragraph 4.5.7.</i>			Red
Trees to be considered for retention	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly cultural values, including conservation	
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Green
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution. A minimum of 20 years is suggested.	Trees that might be included in the high category, but are downgraded because of impaired condition. Examples include the presence of remediable defects including unsympathetic past management and minor storm damage	Trees present in numbers, usually as groups or woodlands, so they form distinct landscape features which attract a higher collective rating than they might as individuals. But which are not, individually, essential components of formal or semi-formal arboricultural features. For example, trees of moderate quality within an avenue that includes better, A category specimens. Or trees which are internal to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	Blue
Category C Those trees of low quality and value: currently in adequate condition to remain until new planting could be established - a minimum of 10 years is suggested - or young trees with a stem diameter below 150 mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	Grey
Note – Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation				

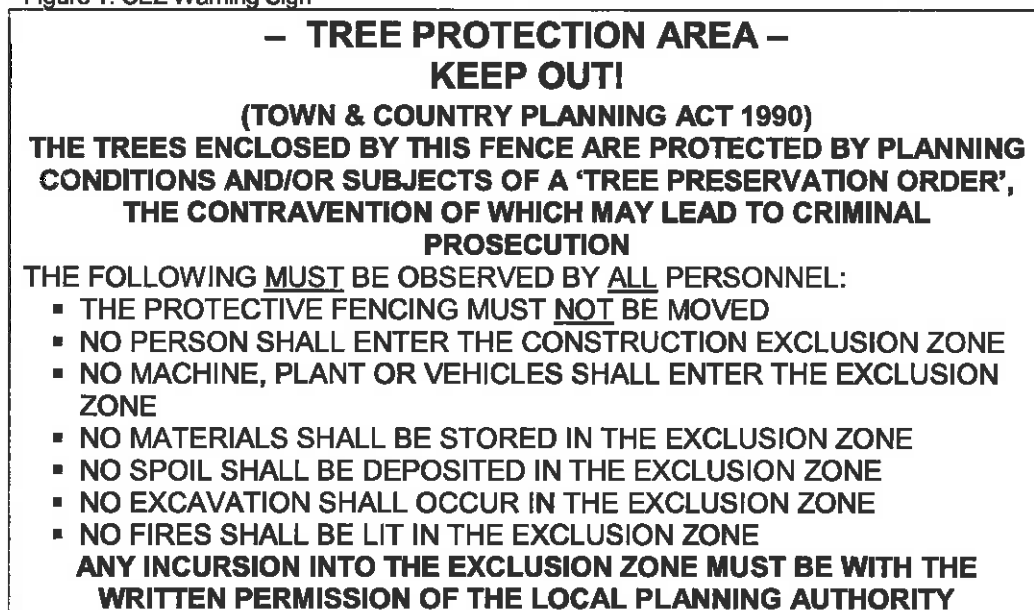
- TEMPORARY PROTECTIVE FENCING & GROUND PROTECTION SPECIFICATION -

Construction Exclusion Zones (CEZs), shall be enclosed by **Temporary Protective Fencing** and/or, where necessary, **Temporary Ground Protection Measures**. The fencing/ground protection Type(s), locations, and extents shall be agreed, in writing, with the Local Planning Authority (LPA). In turn, the **Temporary Protective Fencing** and/or **Temporary Ground Protection Measures** shall:

1. be constructed as in accordance with the Type 1, Type 2 or Type 3 'Temporary Protective Fencing Construction' sections and, where applicable the 'Temporary Ground Protection Measures' section, as detailed herein and agreed, in advance with the LPA;
1. be retained in place throughout the development process until completion of the project, and only removed following receipt of written permission from the LPA;
2. be sited in the area(s) defined by the Root Protection Areas on the associated Tree Impact Plan, or as the CEZs on the Tree Protection Plan;
3. be erected prior to any construction, demolition or excavation works and remain in place for the duration of the project;
4. preclude any delivery of site accommodation and/or materials and/or plant machinery;
5. preclude all construction related activity, with the sole exception of specified arboricultural works and any other works to be carried out under supervision that have been agreed by all parties;
6. preclude the storage of all development related materials and substances including fuels, oils, additives, cement and/or any other deleterious substance; and
7. be affixed with a 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1, below), at every 10.0 metre length of protective fencing.

Important: Any incursion into CEZs must be by prior arrangement, following consultation with the LPA.

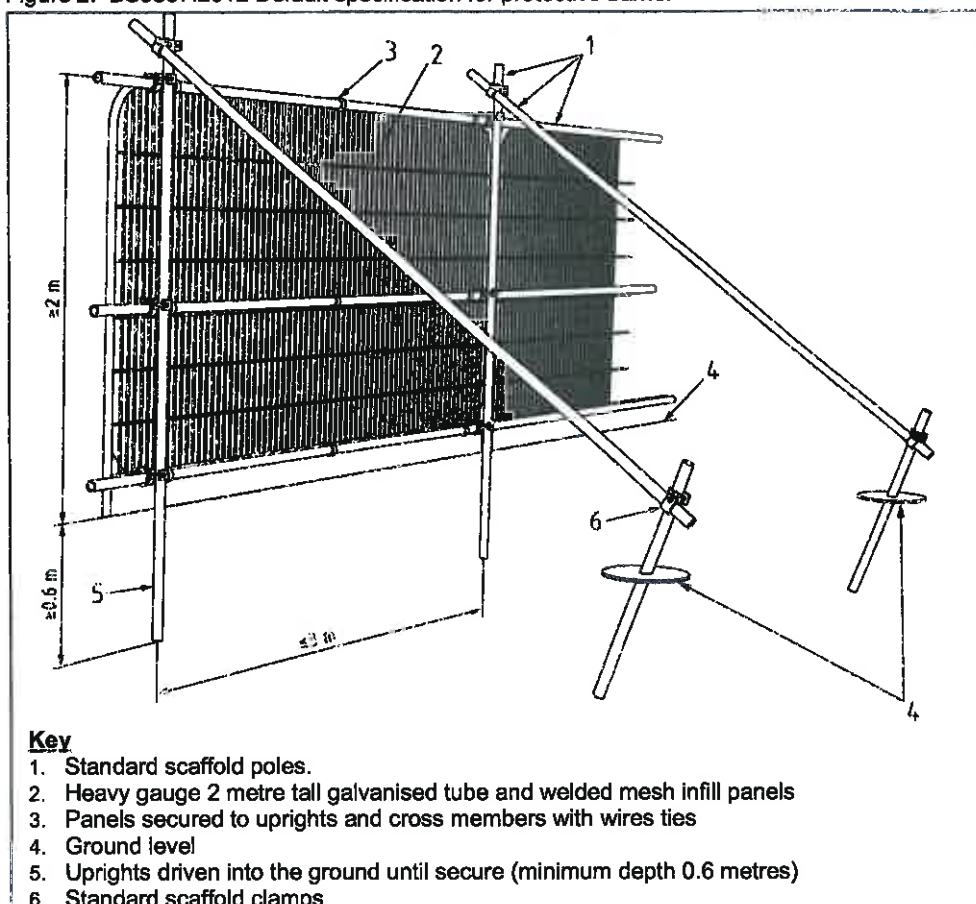
Figure 1: CEZ Warning Sign



Type 1 (i.e. 'Default') Temporary Protective Fencing Construction (see Figure 2, below)

1. Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height.
2. The panels shall butt together and be securely fixed to a scaffold framework, as per points 3 to 5 of Figure 2, overleaf.
3. The scaffold framework shall comprise of upright poles of at least 3.0 metres in length driven no less than 0.6 metres into the ground at maximum 3.0 metre centres with horizontal and diagonal poles fixed to the uprights, as per points 4 to 5.
4. The two horizontal rail poles shall be attached to the uprights at heights of 0.6 and 1.8 metres with 3 no. clamps to each joint.
5. The diagonal scaffold pole struts be clamped to the top rail of the scaffold framework at a 45° angle and extend back into the CEZ and clamped to a 0.7 metre length of scaffold tube that shall be driven no less than 0.5m into the ground.
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1) shall be fixed to every 10.0 metre length of protective fencing.
8. On completion of erection, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Protective Fencing.

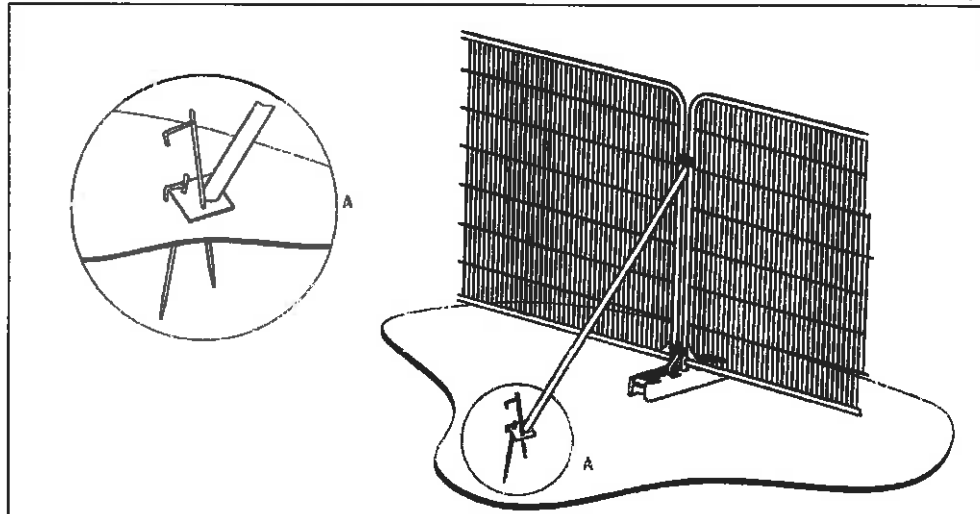
Figure 2: BS5837:2012 Default specification for protective barrier



Type 2 Temporary Protective Fencing Construction (see Figure 3(a), below)

1. Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height.
2. The panels shall stand on rubber or concrete feet.
3. The panels shall butt together, and be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence.
4. The distance between the fence couplers shall be at least 1.0 metre, and shall be uniform throughout the fence.
5. The panels shall be supported on the inner side by stabiliser struts, which shall be clamped to the scaffold framework at a 45° angle and extend back into the CEZ and shall be attached to a base plate, which shall be secured to the ground with pins (Figure 3a).
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1) shall be fixed to every 10.0 metre length of protective fencing.
8. On completion of erection, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Protective Fencing.

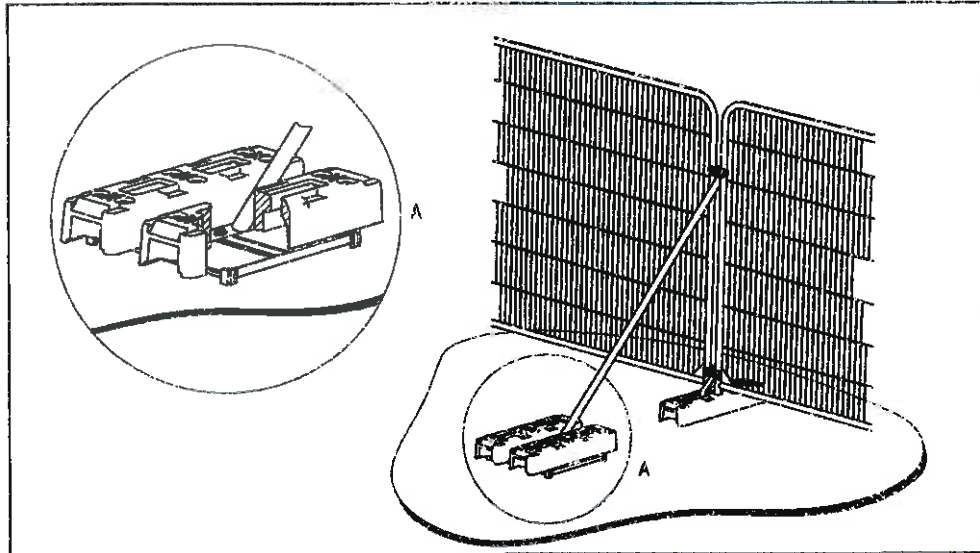
Figure 3(a): Type 2 Fencing (BS5837:2012 above-ground strut stabilising system with ground pins)



Type 3 Temporary Protective Fencing Construction (see Figure 3(b), overleaf)

1. Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height.
2. The panels shall stand on rubber or concrete feet.
3. The panels shall butt together, and be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence.
4. The distance between the fence couplers shall be at least 1.0 metre, and shall be uniform throughout the fence.
5. The panels shall be supported on the inner side by stabiliser struts, which shall be clamped to the scaffold framework at a 45° angle and extend back into the CEZ and shall be attached to a block tray base (Figure 3b).
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1) shall be fixed to every 10.0 metre length of protective fencing.
8. On completion of erection, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Protective Fencing.

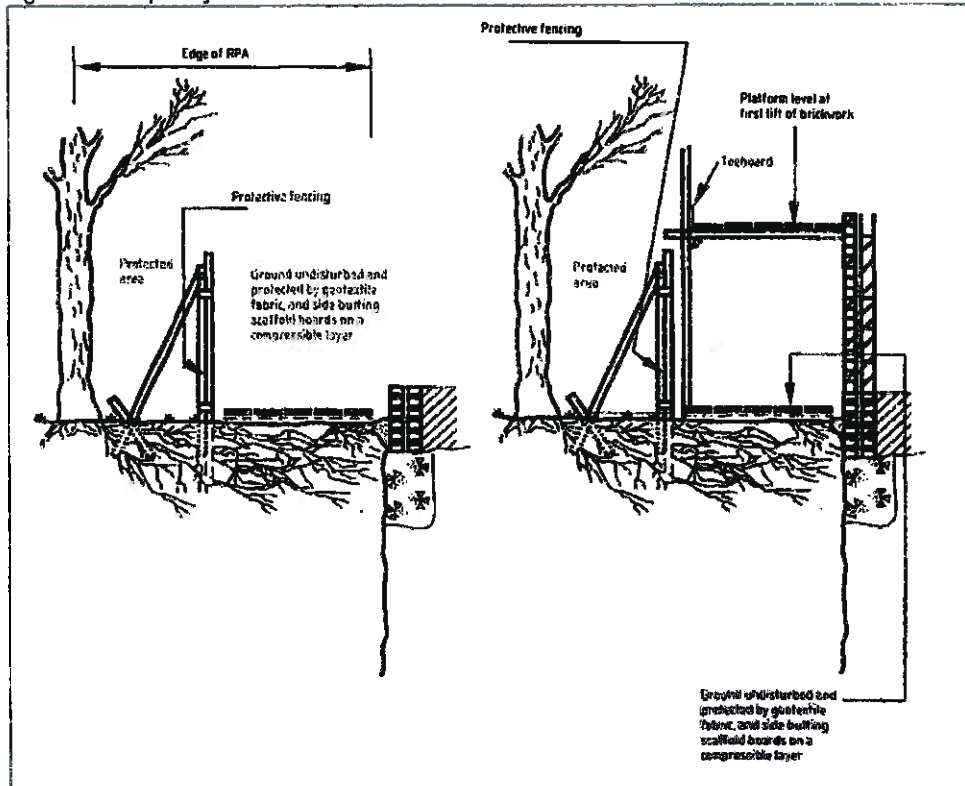
Figure 3(b): Type 3 Fencing (BS5837:2012 above-ground stabilising system with strut on block tray)



Temporary Ground Protection

2. Any necessary Temporary Ground Protection areas shall conform to Figure 4, below, unless otherwise agreed with the LPA.
3. The Ground Protection Area shall be left undisturbed and covered by a semi-permeable geotextile membrane which shall, in turn, be covered by a compressible layer consisting of a material such as woodchip.
4. Side-butting scaffold boards shall then be fitted to cover the Ground Protection Area.
5. On completion of installation, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Ground Protection.
6. The Temporary Ground Protection shall remain in place until completion of the project and only removed following receipt of written permission from the LPA.

Figure 4: Temporary Ground Protection – Recommended Construction



CellWeb TRP®



Tree Root Protection Guaranteed

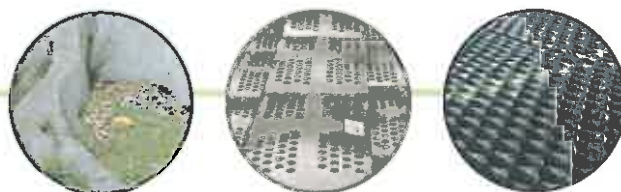


Geosynthetics

www.geosyn.co.uk

CellWeb TRP® System

Tree Root Protection System



The Consequences Of Tree Root Damage During Construction

It is an offence to cut down, lop, uproot, top, wilfully damage or destroy a protected tree without authorisation. Trees can be protected under the Town and Country Planning Act 1990 and the Town and Country Planning (Trees) Regulations 1999. Trees are protected when they are the subject of Tree Preservation Orders (T.P.O) or within Conservation Areas, subject to certain exemptions. Retention and protection of trees on development sites is also secured through the use of planning conditions.

On a construction site all trees with a Tree Preservation Orders need to be managed in accordance with BS5837 2012 (Trees in relation to construction); failure to comply with these orders can be a costly affair as many parties have discovered.



Fishponds, Ketton

There are two offences which apply equally to trees protected by Tree Preservation Orders and those within Conservation Areas:

- Firstly, anyone who cuts down, uproots or wilfully destroys a tree, or who lops, tops or wilfully damages it in a way that is likely to destroy it is liable, if convicted in the Magistrates Court, to pay a fine of up to £20,000. If the person is committed for trial in the Crown Court, they are liable on conviction to an unlimited fine. The Courts have held that it is not necessary for a tree to be obliterated for it to be "destroyed" for the purposes of the legislation. It is sufficient for the tree to have been rendered useless as an amenity.
- Secondly, anyone who carries out works on a tree that are not likely to destroy it is liable, if convicted in the Magistrates Court, to a fine of up to £2,500. In addition to directly carrying out unauthorised works on protected trees, it is an offence to cause or permit such works.

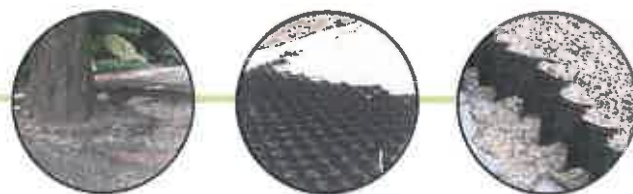
Developers and building contractors are often completely unaware that 'compaction of soils within the Root Protection Area (RPA)' constitutes wilful damage to the tree. When vehicular or pedestrian access within the RPA is necessary, either for the construction operation or final site access, the effects of this activity must be addressed and the ground must be protected. When tracked or wheeled traffic movements are involved, the ground protection system should be designed by an engineer and take into account the loading involved.



Shelton Road, Shewsbury

The Solution:

Geosynthetics CellWeb TRP® System



The Solution According to BS 5837:2012

"Appropriate sub-base options for new hard surfacing include three-dimensional cellular confinement systems"

(BS 5837 2012 section 7.4.2 Note 1)

The CellWeb TRP® Solution

CellWeb TRP® is the market leader in the United Kingdom and Ireland for tree root protection. CellWeb TRP® cellular confinement system protects tree roots from the damaging effects of compaction and desiccation, while creating a stable, load bearing surface for vehicular traffic. CellWeb TRP® complies with BS 5837:2012 and APN 12. It provides a no-dig solution, is tried and tested having been used successfully since 1998. It is the only tree root protection system which has been independently tested and it is the only tree root protection system which is guaranteed for 20 years. See page 6 for the full terms and conditions of the guarantee.



Fishponds, Ketton

Field Trials

Geosynthetics Limited are the only company in the UK and Ireland to carry out live, completely independent field tests on the performance of a 3 dimensional cellular confinement system when used in a no-dig tree root protection system application. The results prove that CellWeb TRP® significantly reduces the compaction of sub-soils within the root growth limiting parameters established by K D Coder, 'Soil damage from compaction'. University of Georgia. July 2000. A copy of the report is available upon request.

CellWeb TRP® Product Guarantee

Geosynthetics Limited prides itself on a providing a reliable, consistent service; including technical advice, on site support and installation guidance. Geosynthetics Limited provides a 20 year guarantee for the CellWeb TRP® tree root protection system. This guarantee gives the client, the tree officer and arboricultural consultant the confidence that the designed system will perform as intended without damaging the health of the tree.

See page 6 for the full terms and conditions of the guarantee.

CellWeb TRP® System

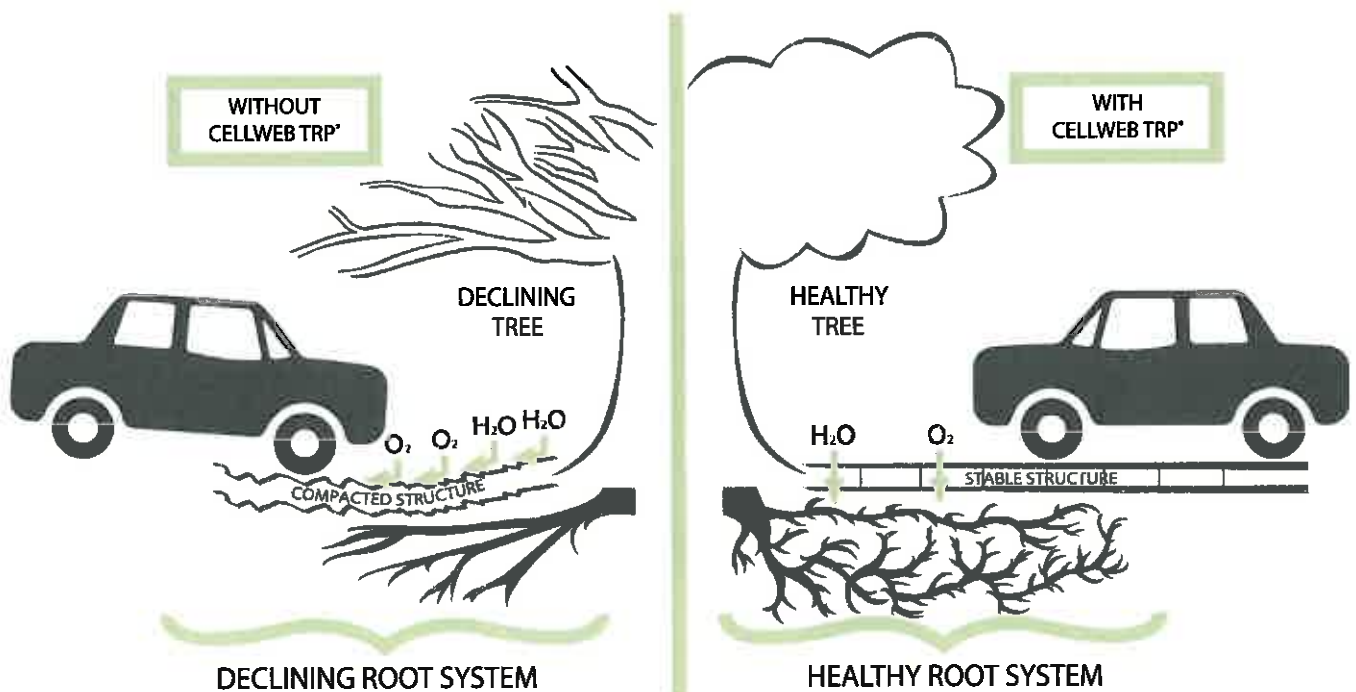
How the System Works



How CellWeb TRP® Works

CellWeb TRP® is a cellular confinement system that confines aggregate materials and makes them stronger, thus increasing the bearing capacity of the sub base materials. Research shows that CellWeb TRP® acts as a stiff raft to distribute wheel loads and reduce their magnitude at the base of the construction, thus maintaining the soil bulk density at levels that are suitable for tree root growth.

CellWeb TRP® is used around the world to provide cost effective hard surface construction over tree roots and is the system of choice for Tree Officers and Arboriculturists. For more information on this subject see CellWeb TRP® Fact Sheet No 1.



Water and Oxygen Transfer Through the CellWeb TRP® System

The CellWeb TRP® system is constructed using open aggregate infill and CellWeb TRP® has perforated cell walls. The pore spaces between the aggregate particles are greater than 0.1mm in diameter. This open structure is far more permeable than typical soils and allows the free movement of water and oxygen so that supplies to trees are maintained.

For more information on this subject see CellWeb TRP® Fact Sheet No 2.

CellWeb TRP® and Pollution

How CellWeb TRP® Deals With Catastrophic Oil Spills



How CellWeb TRP® Deals With Pollution

Where possible a permeable pavement system should always be constructed above the CellWeb TRP® system. The effective removal of pollution from runoff by permeable pavements is well known. Worldwide research has shown runoff that has passed through permeable pavements has low concentrations of pollutants.

Small spills of oil will be dealt with within the joints between the paving blocks and in the aggregate used within the system. However, large catastrophic spills are a different matter.

For more information on this subject see CellWeb TRP® Fact Sheet No 3.



Castle Gardens



Ambleside Lake District



Harcourt Arboretum

The Treetex® geotextile used in the CellWeb TRP® system has two functions. Treetex® separates the sub base aggregates from the soil beneath and it traps oil within its structure and allows it to degrade aerobically within the pavement construction. The structure, thickness and weight of Treetex® creates the perfect environment for this to happen. Most importantly tests prove that Treetex® will absorb 1.7 litres of oil per square metre, this is 4 times more effective than standard geotextiles.

Treetex® is an intrinsic part of the CellWeb TRP® system; and must be in conjunction with the CellWeb TRP® in order to guarantee the success of the system.

Please see page 6 for full details of the guarantee.

Geosynthetics CellWeb TRP® System:

A Proven No Dig Solution



Advice, Design and Product Selection

Geosynthetics Limited has been supplying the CellWeb TRP® system since 1998 and has vast experience in its application. No two contracts are the same and we understand the factors that need to be taken into account to specify the correct CellWeb TRP® product.

We provide a free consultation, design and advisory service to find the solution that is most cost effective and beneficial for your site. Our service includes product selection, engineering calculations, CAD drawings and full instructions to help you from project conception to completion.



*Fallbarrow Park, Windermere:
Prior to CellWeb TRP® Installation*



*Fallbarrow Park, Windermere:
CellWeb TRP® Installation*



*Fallbarrow Park, Windermere:
Completed CellWeb TRP® Installation*

Final Surfacing

The benefits of the CellWeb TRP® system can only be maintained if a suitably porous final surface is selected. An ideal surfacing is the Golpla grass reinforcement and gravel retention system, a visually attractive surface that has the advantage of being fully porous. Alternatives include block paviors, porous asphalts and loose or bonded gravel.

Always Use CellWeb TRP®

The CellWeb TRP® system is the only research backed system of its kind in the UK with a 100% success rate. CellWeb TRP® has been specifically developed for the Tree Root Protection market. The system is supported by 15 years of data and thousands of installations making it the system of choice for the majority of Tree Officers and Arboriculturists in the UK.

CellWeb TRP® is uniquely identifiable. It is manufactured with a bright green panel on each side. When installed the green panels are laid adjacent, creating a green band across the construction.



Woodcock Hall, Yorkshire

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