



Arboricultural Method Statement & Tree Protection Scheme

in Relation to Proposed Construction of Children's Nursery at



**Land off Barrow Brook Close,
Barrow, Lancashire, BB7 9UQ**

Prepared by:

Bowland 
Tree Consultancy Ltd

February 2017

**TREE PROTECTION SCHEME
LAND OFF BARROW BROOK CLOSE, BARROW**

CONTENTS

1. DRAFT ARBORICULTURAL METHOD STATEMENT
2. TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL & BS5837:2012 – TABLE 1
3. TEMPORARY PROTECTIVE FENCING SPECIFICATION
4. MANUFACTURER'S BROCHURE FOR 3D CELLULAR CONFINEMENT SYSTEM
5. DRAFT TREE PROTECTION PLAN

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**TREE PROTECTION SCHEME
LAND OFF BARROW BROOK CLOSE, BARROW**

Control sheet

Project No.: BTC1266

Site: Land off Barrow Brook Close, Barrow, Lancashire, BB7 9UQ

Agent for Client: Lea Hough & Co.

Council: Ribble Valley Borough Council

Survey Date: 27 January 2017

Prepared by: Phill Harris MSc BSc(Hons) HND MArborA CEnv MICFor

Checked by: Jennie Keighley MSc MArborA

Date of Issue: 2 February 2017

Version No: 1

DRAFT ARBORICULTURAL METHOD STATEMENT

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Page:	1 of 4
--------------	--------

Scope of Arboricultural Method Statement

- This draft Arboricultural Method Statement (AMS) relates specifically to the proposed construction works at the existing site above, including the associated proposed construction of the car-parking and outdoor play areas area to the south, which encroach partially within the Root Protection Areas (RPAs) of several of the trees, as detailed on the draft Tree Protection Plan (TPP) BTC1266-TPP.
- The AMS and TPP should be read in conjunction with the appended Temporary Protective Fencing Specification.
- The purpose of the AMS is to consider the potential effects of the development work operations on the retained trees, and sets out how any identified adverse impacts are, as far as is practicable, to be avoided.
- From commencement of the development, and throughout the site works until completion, the methodology shall be implemented in the sequence and manner detailed in the Sequence of Works.
- As part of the tendering process, the client/client's agent shall provide the building contractor(s) with the AMS, the TPP, and the Temporary Protective Fencing Specification.
- In turn, the appointed building contractor shall be required to review the documents in detail, and shall take the requirements of the AMS into consideration when pricing for the works.
- It shall be the contractor's responsibility to ensure that the works are carried out in strict accordance with the obligations and responsibilities of the AMS and, in turn, they will be accountable for any breaches of the obligations and responsibilities.
- Immediately following the granting of planning permission at the site, the AMS and TPP shall be reviewed and updated by the Project Arboriculturist, in accordance with any changes in the development design that may have occurred subsequent to this draft AMS and TPP being issued – note: it shall be the client's/client's agent's responsibility to arrange this review with the Project Arboriculturist immediately following the granting of planning permission.

Site Inspections & Reporting by Project Arboriculturist

- Prior to the commencement of the development, all personnel who might be charged with overseeing development related works shall be provided with the contact details of the Project Arboriculturist.
- In turn, it is the responsibility of the building contractor/site manager to report any tree related issues, including deviations from the AMS, directly to the Project Arboriculturist, who will then visit the site and make recommendations to the building contractor/site manager on how best to rectify the situation.
- The Project Arboriculturist shall be engaged to carry out site inspections for the duration of the works, at intervals agreed with the Local Planning Authority (LPA) (note: no more than 31 days shall elapse between site inspections) and in accordance with the appended Tree Protection Monitoring Schedule, in order to ensure compliance with the AMS and any planning conditions pertaining to tree issues.
- Subsequent to each site inspection the Project Arboriculturist shall complete a monitoring report detailing any problems encountered and breaches of the agreed working methods or tree related planning conditions, and any measures required to rectify such problems or breaches.
- The report shall be forwarded to the LPA's Tree Officer, the building contractor/site manager, and the client or client's agent, by email. In the event of the client terminating the contract with the Project Arboriculturist, the Project Arboriculturist shall notify the LPA before the end of the next working day following termination.
- The Project Arboriculturist shall report any tree related issues and/or breaches of the AMS that they consider to be significant in relation to retained tree health and/or structural stability directly to the Tree Officer.
- In the event that the Project Arboriculturist's site monitoring contract is terminated, then the client/client's representative shall issue a written notice to all relevant parties to this effect, inclusive of the project engineer, the building contractor/site manager, and the LPA Tree Officer.

LPA Tree Officer

- The LPA's Tree Officer shall have free access to the site and, should they visit the site and note any tree related issues, they will then report any problems directly to the Project Arboriculturist, who will then visit the site and make recommendations to the building contractor/site agent on how best to rectify the situation.

Site Personnel

- All personnel engaged in the execution of the development works shall be provided with a copy of the AMS and the TPP.
- In turn, all such personnel shall be instructed in the protection of trees, as set out in this AMS.

Sequence of Works & Revisions

- The development works shall be carried out in strict accordance with the 'Sequence of Works' detailed in the table overleaf.
- Any proposed deviations from the 'Sequence of Works' shall be reported to the Project Arboriculturist, who will then review and comment on the modifications accordingly.
- Where the amendments are considered acceptable in relation to retained trees, then the Project Arboriculturist shall prepare and issue a revised version of the AMS to the LPA Tree Officer for comment.
- Should the Tree Officer consider the revised AMS to be acceptable, then the Project Arboriculturist shall issue the report to all pertinent persons, inclusive of the building contractor/site manager, the client/client's agent, the project engineer, and the building contractor/site manager.

Acknowledgment of Obligations and Responsibilities of Arboricultural Method Statement

- The building contractor/site manager, shall provide a written acknowledgement, to the client/client's agent, the Project Arboriculturist, and the Tree Officer, that they shall abide by the obligations and responsibilities of the AMS, and that they will be accountable for any breaches of the obligations and responsibilities.

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Page:	2 of 4
--------------	--------

Table of Sequence of Works:

No.	Operation*	Timing	Arboricultural Supervision	Specific Tree Protection Measures During Operation#
i	Carry out tree works, in accordance with the management recommendations column of the Tree Survey Schedule, following provision of written agreement from LPA	To be completed prior to any other works, including deliveries	Project Arboriculturist to verbally brief tree contractor regarding tree works	No vehicular or plant access within retained trees' RPAs under soft surfaces
ii	Mark up, on site, the locations and extents of the temporary protective fencing, to protect retained trees' RPAs during the construction works, as indicated on BTC1266-TPP (exact locations to be agreed on site with LPA Tree Officer)	To commence on completion of Item i	Project Arboriculturist to verbally brief fencing contractor regarding temporary protective fencing prior to its erection	No vehicular or plant access within retained trees' RPAs under soft surfaces
iii	Erect Type 1 temporary protective fencing ^o in locations indicated on BTC1266-TPP (see ii, above), in order to protect retained trees	To commence on completion of Item ii	Project Arboriculturist to appraise temporary fencing on site prior to commencement of any construction works	No vehicular or plant access within retained trees' RPAs under soft surfaces
iv	Commence main phase of construction (to include all works <u>except</u> the construction of the hard-surfaces for the car parking and play area)	To commence on completion of Item iii	Project Arboriculturist to carry out monthly site visits and provide subsequent monitoring reports	No vehicular or plant access within retained trees' RPAs under soft surfaces
v	Complete main phase of construction works and remove all associated operational materials except the temporary protective fencing around the trees	To commence on completion of Item iv	Project Arboriculturist to carry out site visit following completion of main phase of construction works, but prior to removal of temporary fencing, and advise main contractor on timing of fencing removal	No vehicular or plant access within retained trees' RPAs under soft surfaces
vi	Remove temporary protective fencing around the trees, in order to mark up the locations and extents of the proposed new hard-surfaces for the car parking and play area, where they encroach within to the RPAs of retained trees and constructed using 'no-dig' methods (i.e. a cellular confinement system in accordance with BS5837: 2012)	To commence on completion of Item v	Project Arboriculturist to verbally brief main contractor regarding construction of hard-surfaces using cellular confinement system immediately following removal of fencing, and prior to any other subsequent works	No vehicular or plant access within retained trees' RPAs under soft surfaces
vii	Commence construction of new car parking and play areas using 'no-dig' methods (i.e. a cellular confinement system in accordance with BS5837: 2012) where they encroach into the RPAs of retained trees, in accordance with manufacturer's Method Statement	To commence on completion of Item vii	Project Arboriculturist to supervise construction of hard-surfaces where they encroach within RPAs of retained trees, as indicated on TPP, and provide subsequent monitoring report	New hard surfaces, which encroach into RPAs of retained trees are to be constructed in accordance with s7 of BS5837:2012, including: <ul style="list-style-type: none"> Cellular confinement system (e.g. Geoweb or similar) infilled with clean stone to sit atop geotextile base installed above existing ground level; and New hard surface edging to be set above existing ground level

*Note 1: All operations to be subject to risk assessments and method statements to be provided by applicable contractor(s)

#Note 2: The General Recommendations in Respect of Works, detailed at page 4, shall also be adhered to by all site operatives during all work operations

^oNote 3: Refer to appended Temporary Protective Fencing Specification – Figure 2

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Page:	3 of 4
--------------	--------

Table of Sequence of Works (cont.):

No.	Operation*	Timing	Arboricultural Supervision	Specific Tree Protection Measures During Operation#
viii	Complete hard-surface construction works and remove all associated operational materials	To commence on completion of Item viii	LPA Tree Officer to visit site following completion of construction works (note: it shall be the client's/client's agent's responsibility to arrange the Tree Officer's site visit/inspection)	No vehicular or plant access within retained trees' RPAs under soft surfaces
ix	Carry out soft landscaping, including new tree planting where purposed, in accordance with Section 8 of BS5837: 2012	To commence on completion of Item xi	Project Arboriculturist to verbally brief landscaping contractor regarding the specifics of the landscaping works where they are close to and/or within retained tree RPAs	No vehicular or plant access within retained trees' RPAs under soft surfaces

*Note 1: All operations to be subject to risk assessments and method statements to be provided by applicable contractor(s)

#Note 2: The General Recommendations in Respect of Works, detailed at page 4, shall also be adhered to by all site operatives during all work operations

°Note 3: Refer to appended Temporary Protective Fencing Specification

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Page:
4 of 4

General Recommendations in Respect of Works:

- Where applicable, all tree works should be implemented by suitably qualified and experienced arboricultural contractors in accordance with the tree works detailed in the Tree Survey Schedule, prior to the erection of the Temporary Protective Fencing and/or the installation of Temporary Ground Protection.
- All tree works should conform to British Standard BS3998:2010 Tree Work - Recommendations.
- Performance of all arboricultural operations and use of equipment should be in accordance with current directives of the Health and Safety Executive (HSE) and industry codes of practice.
- All operatives should be equipped with and use Personal Protective Equipment (PPE) in accordance with current directives of the HSE and industry codes of practice.
- All tree stumps scheduled for removal that are located within a distance of 6.0 metres of any retained tree should be removed by mechanical stump grinder and not by mechanical excavator.
- All possible efforts should be made by the tree contractor and any other site operatives to prevent damage to retained trees.
- There shall be no vehicular or plant (e.g. wood chipper) access within the RPAs of retained trees that are not under hard surfaced areas, as detailed on the TPP.
- All tree works arising should be removed from the site.
- No services are to be installed below ground level within RPAs.
- No construction related operations should occur within RPAs, unless specifically detailed in the Arboricultural Method Statement.
- No concrete should be mixed within RPAs.
- No excavation or any other operations should occur within the RPAs, other than as detailed in the Arboricultural Method Statement.
- All construction equipment and materials should be stored outside RPAs.
- No fires should be lit within 15.0m of any tree crown.
- Deliveries by crane should be supervised by the Site Agent, positioning the vehicle in such a manner that retained trees are not put at risk of damage.
- No substances with potential to contaminate the soil (e.g. chemicals, concrete washings, diesel, vehicle washings, etc.) should be discharged within 10.0m of any tree crown. This should take into consideration the topography of the site in order to avoid materials running towards trees.
- No notice boards, phone cables or services should be attached to any part of any tree.
- A log should be kept of any activity or incident with an impact or potential impact on protected trees and made available at all times for review by the Project Arboriculturist and the tree officer.

TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT & PROTECTION APPRAISAL								Surveyor:	Phill Harris – Chartered Arboriculturist	Page: 1 of 1
Site: Land off Barrow Brook Close, Barrow, Lancashire, BB7 9UQ								Survey Date:	27 January 2017	
Agent for Client: Lea Hough & Co.								Job Ref:	BTC1266	

No.	Species	Height	Stem Diam.	Branch Spread		Branch & Canopy Clearances	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m²)	RPA Radius (m)
G1	10no. Common Oak	≤ 7.5	≤ 240	N	≤ 4	1.5-N ≥ 1.5	Y	G	<ul style="list-style-type: none">▪ Moderately closely spaced linear group.▪ Five trees at the eastern end of the group are growing in a narrow mown grass strip.▪ Stems of eastern trees between 1.5m and 0.5m from metal stock fence, which terminates towards centre of group.▪ Proposed hard-surface for car-parking and play area partially encroaches within the Root Protection Areas (RPAs) of the seven trees to the east of the group, and, in accordance with Section 7 of BS5837:2012, it will therefore be necessary to construct the hard-surface using a Cellular Confinement System.	<ul style="list-style-type: none">▪ Retain in context of proposed development.▪ Prune all trees to lift crowns to obtain a 3m ground clearance from underside of canopies.▪ Protect RPA throughout main construction phase using Temporary Protective Fencing (specification appended) to produce a Construction Exclusion Zone (CEZ), as indicated on the draft Tree Protection Plan (TPP) – see Arboricultural Method Statement (AMS) for phasing of works.▪ Construct proposed new hard surfaces, where within trees' RPAs, in accordance with Section 7 of BS5837:2012 and Arboricultural Method Statement (AMS) – see AMS for phasing of works.	40+	B1/2	≤ 26	≤ 2.88
E	≤ 4													
S	≤ 4													
W	≤ 4													

Headings and Abbreviations:

No.	Allocated sequential reference number - Tree ('T'), Group ('G'), Woodland ('W') or Hedge ('H') reference number - refer to plan and to numbered tags 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 listed is that of the highest tree
Stem Diam.:	Stem diameter in millimetres, to nearest 10mm - measured and calculated as per Annex C of BS5837:2012. MS = multi-stemmed, TS = twin-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-N) 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, i.e. D = Dead, MD = Moribund, 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:	Either Preliminary or In Consideration of the Proposal - In the case of Arboricultural Constraints Surveys the recommended management works only take existing site and tree circumstances and conditions into account and not proposed developments. Arboricultural Impact Assessment and Method Statement related 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 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

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	<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 declineTrees 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
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly cultural values, including conservation	
Trees to be considered for retention				
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			

DISCLAIMER

Survey Limitations: Unless otherwise stated all trees are surveyed from ground level using non-invasive techniques. 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 in areas of ground vegetation, cannot therefore be expected. All obvious defects, however, are reported. 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 regards 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 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 potentially unacceptable risk to persons and/or property has been identified during our survey. 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 first attempt to inform the site occupier of the issues and, if not possible, then inform the relevant Council. 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 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.

The tree survey and any report information provided is intended as a guide to identify key tree related constraints to site development only. As such, 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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- 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

**– TREE PROTECTION AREA –
KEEP OUT!**

(TOWN & COUNTRY PLANNING ACT 1990)

**THE TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING
CONDITIONS AND/OR SUBJECTS OF A 'TREE PRESERVATION ORDER',
THE CONTRAVENTION OF WHICH MAY LEAD TO CRIMINAL
PROSECUTION**

THE FOLLOWING MUST BE OBSERVED BY ALL PERSONNEL:

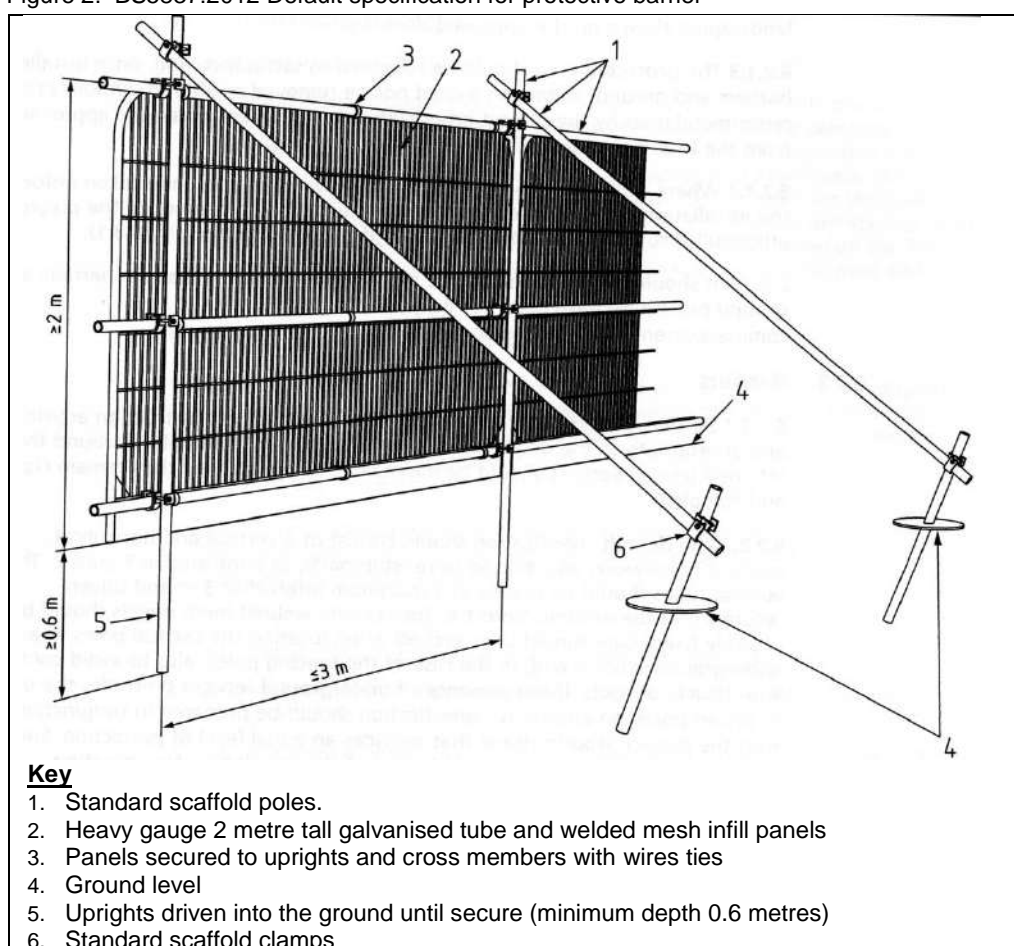
- THE PROTECTIVE FENCING MUST NOT BE MOVED
- NO PERSON SHALL ENTER THE CONSTRUCTION EXCLUSION ZONE
- NO MACHINE, PLANT OR VEHICLES SHALL ENTER THE EXCLUSION ZONE
- NO MATERIALS SHALL BE STORED IN THE EXCLUSION ZONE
- NO SPOIL SHALL BE DEPOSITED IN THE EXCLUSION ZONE
- NO EXCAVATION SHALL OCCUR IN THE EXCLUSION ZONE
- NO FIRES SHALL BE LIT IN THE EXCLUSION ZONE

**ANY INCURSION INTO THE EXCLUSION ZONE MUST BE WITH THE
WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY**

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.

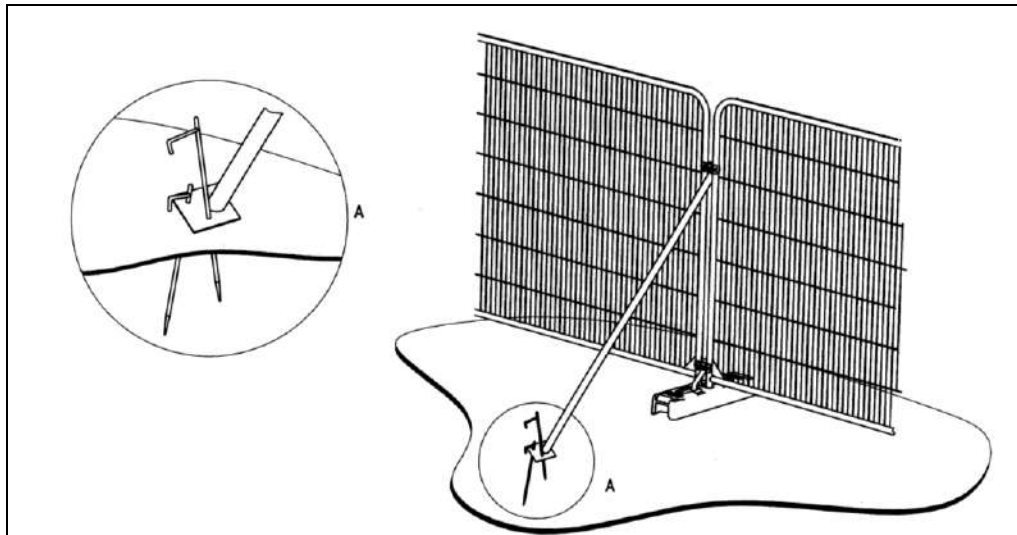
Figure 2: BS5837:2012 Default specification for protective barrier



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)

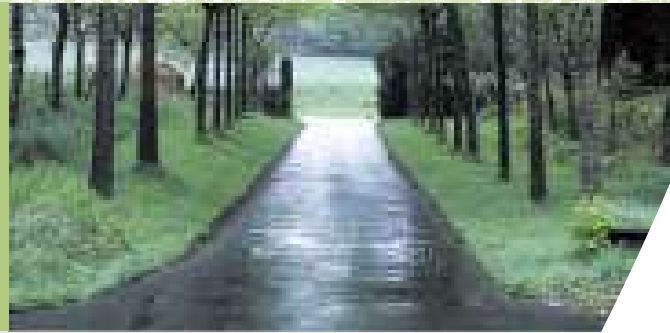


Type 3 Temporary Protective Fencing Construction (see Figure 3(b), overleaf)

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.



CellWeb TRP®



Tree Root Protection Guaranteed

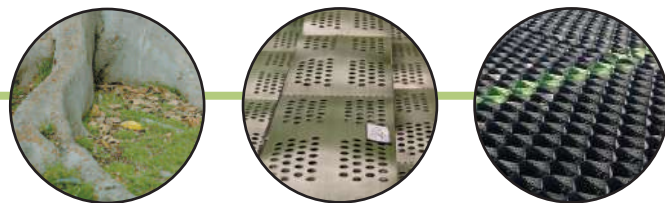


Geosynthetic

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CellWeb TRP® System

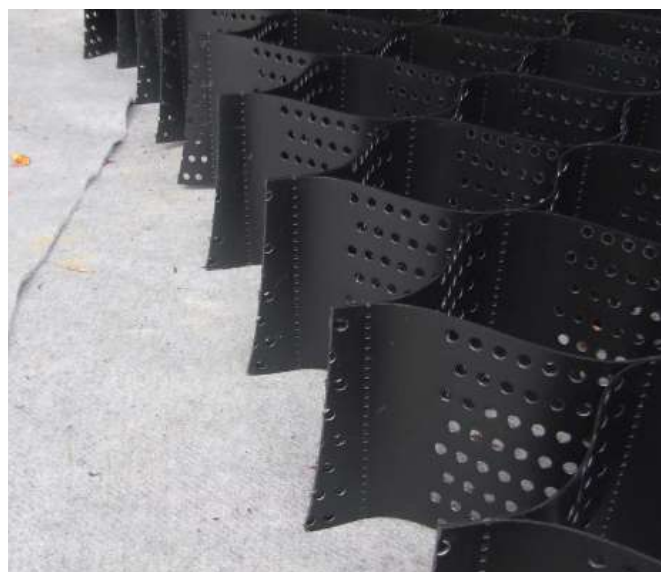
Tree Root Protection System



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

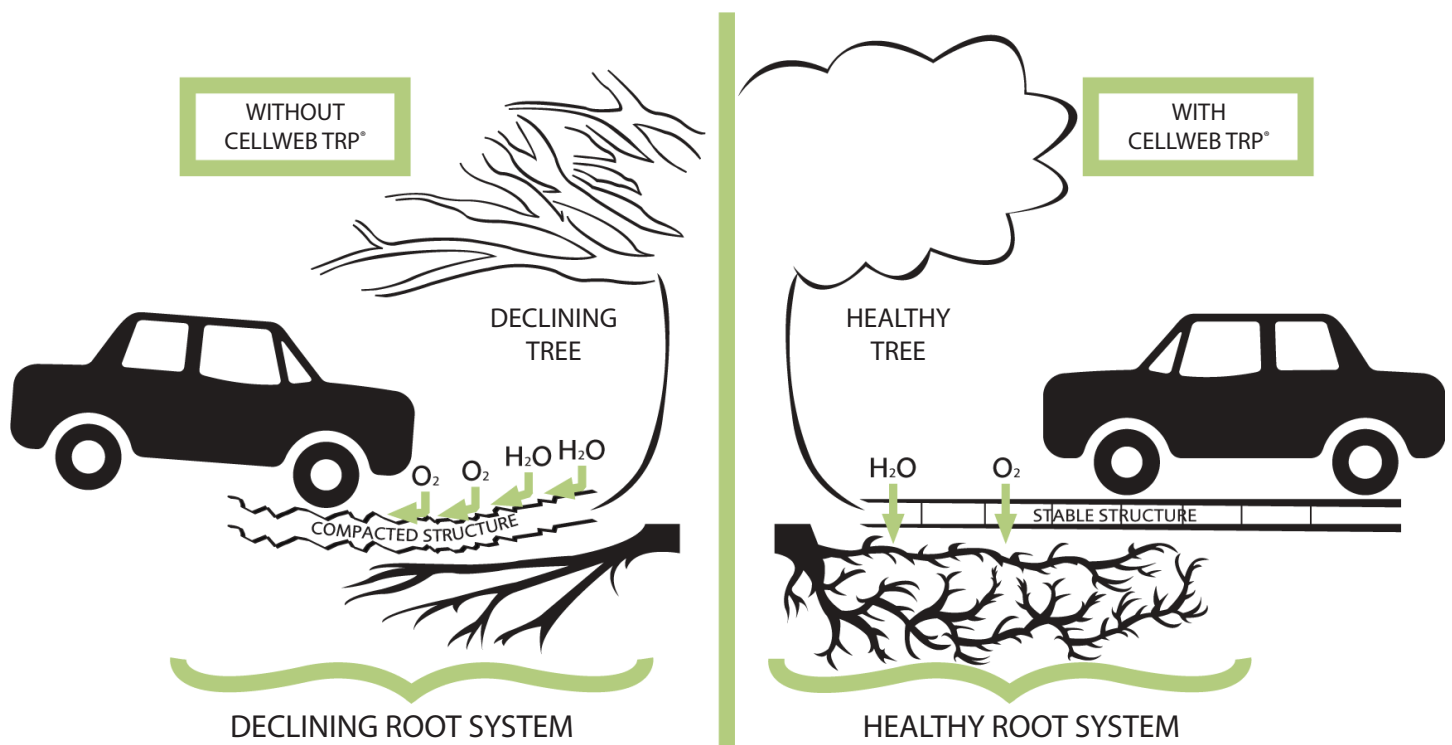
How the System Works



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 Aboretum

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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