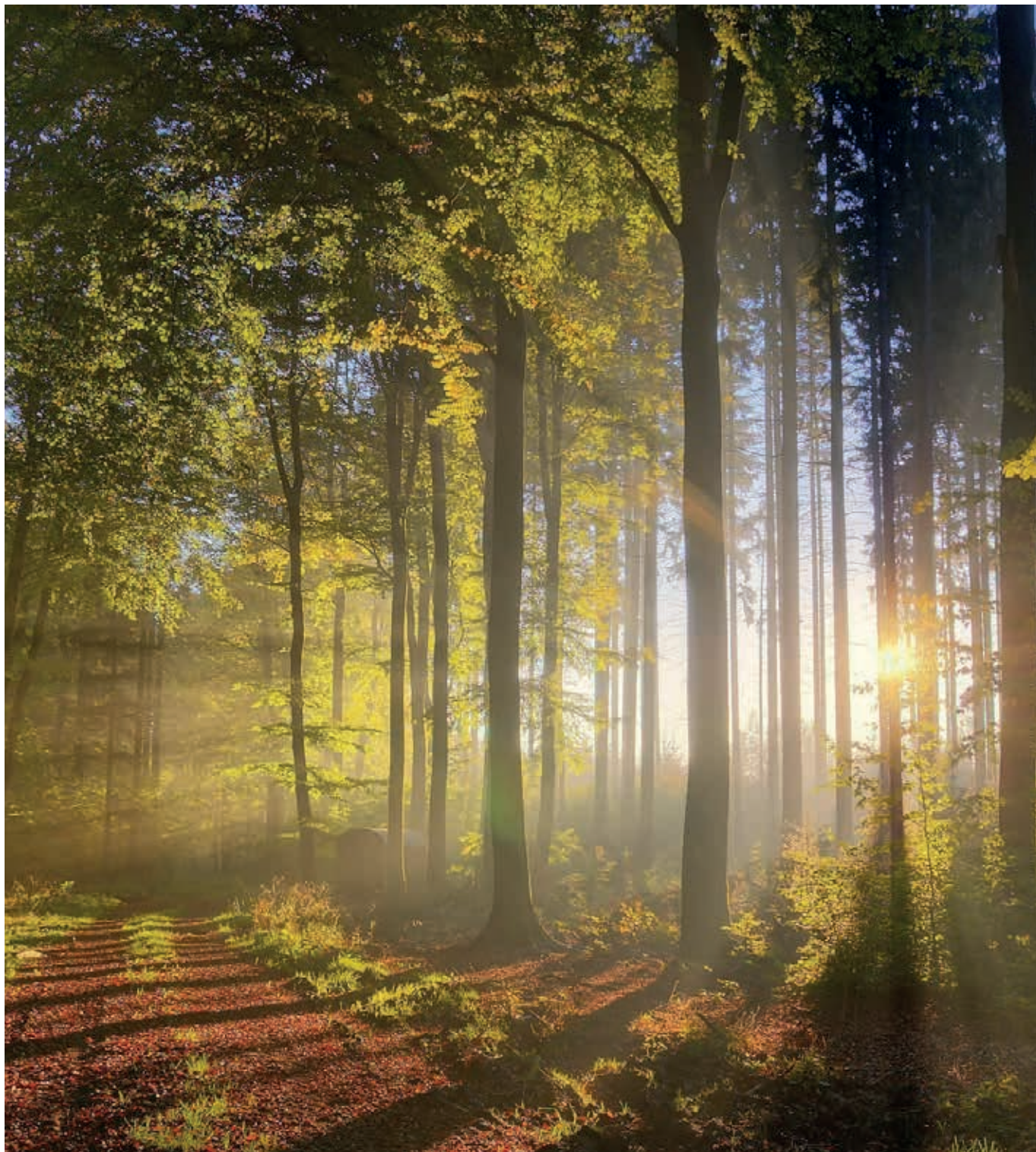
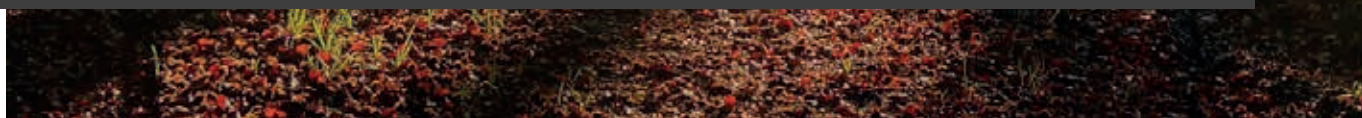




ProtectaWeb™ Tree root Protection System



WREKIN
Intelligent products for civil engineering

A little bit about US...

At Wrekin, we manufacture, supply and install landscaping systems, geotextiles, geogrids and other ground engineering products.

Our innovative approach to product design and commitment to quality and service has firmly embedded our position as a market leader in civil engineering solutions.

With more than 20 years of technical expertise and leadership, we have a mature range of unique, patented products to perfectly suit both specifier and contractor.

A significant area of our business is Geosynthetic products, which play an integral role in the majority of building, civil and marine engineering projects. We offer Geosynthetic solutions for ground stabilisation, reinforcement, erosion control, drainage, tree and grass protection and weed suppression.

ProtectaWeb™ is a tree root protection system which has been years in the making. Sympathetically developed using the expertise of arboricultural consultants, tree experts and landscape professionals. We understand the balance between the need for vehicular access and protecting the wider environment – in particular tree roots and trees protected by Tree Preservation Orders or other legislation.

We know ProtectaWeb™ Tree Root Protection System is the most cost effective and environmentally sensitive answer.



Protect what matters

Trees are a valuable natural resource. They give us clean air, shade, food, raw materials and medicines. They provide natural habitats for insects, birds and animals. Trees are critical in maintaining the ecosystems we all rely on.

But they are increasingly under threat from urban development, new construction and expansion of our cities, towns and villages.

How are trees damaged during construction activities?

- Poorly defined and implemented tree works
- Insufficient tree protection fencing and ground protection
- Unauthorised or unsupervised excavations for service trenches
- Storage of heavy materials within the root protection area
- Compaction of sub-soils due to construction activities
- Contamination of tree root zones by concrete washings, oils or diesel spills, chemicals or tarmac
- Waterlogging of sub-soils

Guidance is available from our specialist Geosynthetics team on 01543 440432 or via email at TRP@wrekinproducts.com

BS 5837:2012

Trees on construction sites and Arboricultural Practice Note 12 (APN 12)

As part of the survey and reporting process, carried out by a qualified Arboricultural consultant, individual trees or copse of trees may be singled out to be retained. These documents provide guidance for the construction site management of such trees.

Where tree retention is specified on development sites, the objective is to achieve a successful relationship between the trees and the newly constructed environment. Retained trees can add a certain maturity and quality to freshly developed areas, enhancing the space for years to come.

The latest guidance includes good practice which is intended to help the land owner or developer and the local authority achieve this goal. It applies even if planning permission is not required.

BS 5837:2012 provides strong, explanatory guidance on tree care, carefully outlining best practice for every aspect of the development. Revised in 2012, the latest standard introduced the following changes:

- Refers to current planning practices for the management, protection and planting of trees near structures, and for the protection of structures near trees
- Updated building regulations guidance
- Recognises the positive contribution trees make towards slowing climate change.



Local Authority Adoption

3 dimensional cellular confinement systems have been used to protect tree roots from soil compaction since the 1990's and more and more projects are being adopted by local authorities within their highways and pathways.

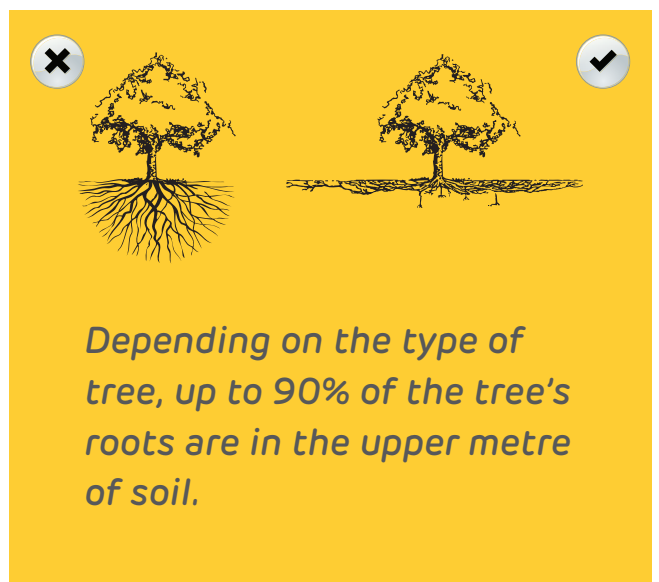
Damage caused to trees on construction sites

Soil compaction is the biggest threat to existing trees on development sites. Soil compaction forces air, minerals and water particles out of the soil leaving the tree root starved of the vital components needed for health.

Compaction is caused primarily from the construction process or creating new paths, car parks or roadways above the root protection area of existing trees.

This is usually compounded by site traffic using the site prior to any tree protection measures being in place. There are other factors which can cause harm to trees on development sites. These include:

- Storing building materials above the root protection area
- Creating impermeable surfaces above tree roots
- Raising ground levels above the root protection area
- Poor design of tree protection measures
- Root severance and disturbance during tree works
- Building too close to tree trunks.



Time to make a difference...

Available land is a precious commodity, and a finite resource. Building access roads, cycle tracks and footpaths in close proximity to established trees is becoming an increasingly frequent challenge.

We are also becoming progressively more aware of environmental consequences. Protecting trees is now often recognised as an essential stage in development planning and implementation.

ProtectaWeb™ is a proven no-dig method of enabling the creation of access ways or parking areas in close proximity to nearby trees. The unique composition and strength of ProtectaWeb™ ensures this can be done without compacting the soil, which can cause irreparable harm to the tree's life support system.

Legislation to ensure the construction industry preserves trees where appropriate:



To ensure construction activities provide for the preservation of trees where appropriate, the following legislation has been developed:

Town and Country Planning Act 1990



Town and Country Planning (Trees) Regulations 1999



Tree Preservation Orders (TPO)





ProtectaWeb™ Tree Root Protection System is fully compliant with BS 5837:2012 section 7.4.2 Note 1 and accomplishes the following objectives:

- Offers a no-dig solution with no mechanical damage to the existing tree roots
- Provides a stable running surface for the required road and vehicle loadings
- Delivers significant reduction in the loads transferred from above to the tree roots
- Prevents harmful compaction of the soils in the root protection area
- Provides a porous, flexible structure to protect the tree's essential supply of water and oxygen
- Eliminates the risk of a potential fine for causing damage to or demise of a tree subject to a Tree Preservation Order
- Long term performance for 75 years
- Available in 50mm, 75mm, 100mm, 150mm, 200mm & 300mm depths
- CE marked product

Wrekin also offers:

- Design solutions for your scheme with full consideration of on-site conditions and loading requirements
- Seminars and training on all aspects of ProtectaWeb™
- On-site and off-site support for all phases of the build including planning, installation and project sign-off



ProtectaWeb™ TRP System being pegged out



ProtectaWeb™ TRP System being infilled with stone



ATTENTION:

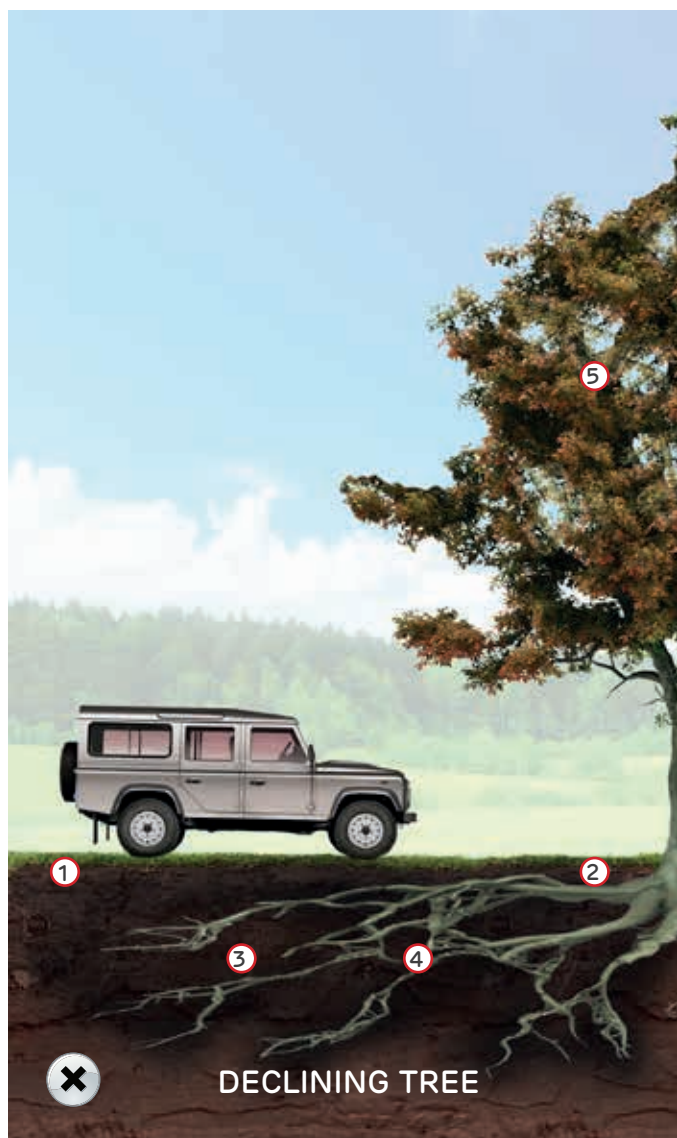
If developers or contractors are found to have cut down or damaged trees subject to TPOs they may be prosecuted and fined up to £20,000 per tree.

To avoid this, trees subject to TPOs must be managed in accordance with BS 5837:2012 (Trees in relation to construction) and Arboricultural Practice Note 12 (APN 12)

How ProtectaWeb™ TRP system works



Without ProtectaWeb™ Tree Root Protection

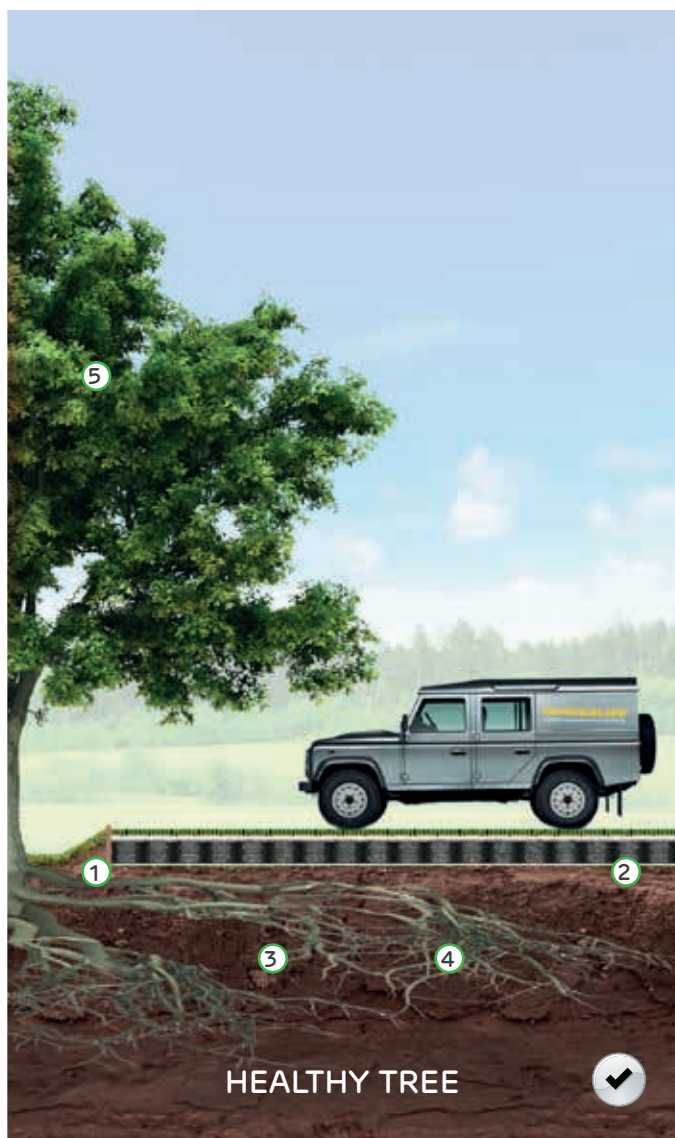


Lack of tree root protection can lead to:

1. Rutting and compaction of soil
2. Physical root damage from wheels
3. Restricted oxygen and water channels to root system
4. Roots exposed to contamination from vehicle leaks of oil, petrol and diesel
5. Root dieback
6. Overall decline of tree

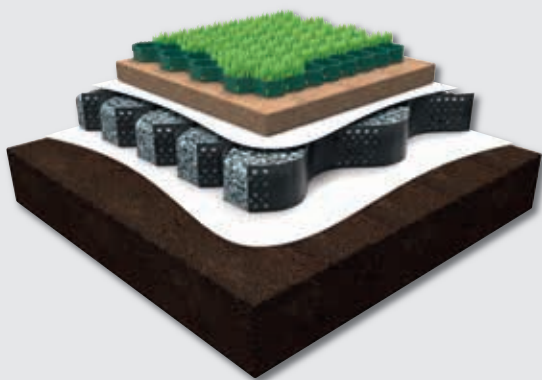


With ProtectaWeb™ Tree Root Protection



ProtectaWeb™ TRP system provides:

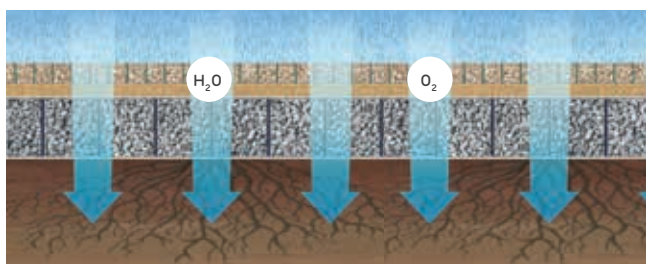
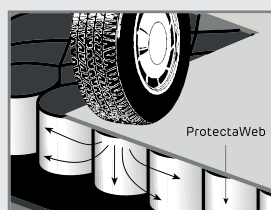
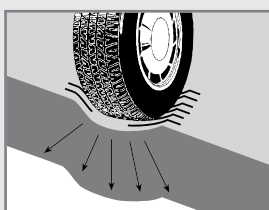
1. Provides even distribution of traffic weight
2. Guards against root damage from digging out
3. Ensures unrestricted passageways for oxygen and water to roots
4. Protects roots from contamination by non-woven geotextile
5. Reduced compaction of sub-soils
6. Keeps tree healthy



ProtectaWeb™ TRP system comprises of:

- Root-Tex 30 Separation Geotextile
- ProtectaWeb cells in-filled with stone
- Root-Tex 10 Separation Geotextile
- Bedding sand layer
- Choice of permeable surfacing

CellTrack 38mm illustrated see next page for more surfacing options



Passage of oxygen and filtered rainwater to roots directly below the system

Our knowledgeable team has more than 20 years' experience in developing solutions for protecting trees.

Call our technical sales department on 01543 440440 to find out more.

ProtectaWeb™ provides the solution

ProtectaWeb™ owes many of its desirable characteristics to the U.S. Army Corps of engineers, who developed the system to enable them to lay low-cost roads on weak ground very quickly.

Advances since include texturing of the cell walls and adding perforations to allow greater frictional interlock of the in-fill, lateral drainage and airflow. Once its potential for tree root protection was realised, in the early 1990s, a three-dimensional cellular confinement arrangement was layered into the system. There followed a long history of successful implementation into development sites with tree related issues.

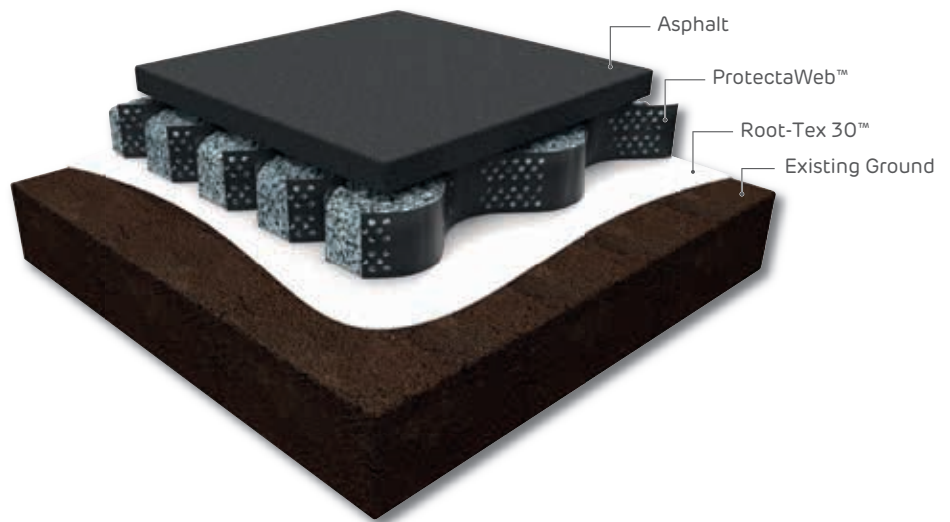
Wrekin's tree root protection system, ProtectaWeb™, is ideal for building roads, car parks, lorry parks, and pathways over the root protection area of existing tree roots. It can be designed to accommodate all types of vehicle loadings and soils without any digging required. The system is simply placed on the existing ground, filled and finished with a porous surface. The cells are filled with a clean angular stone which allows drainage and aeration through the cells. Two key components of the ProtectaWeb™ system are the special grading of the stone and the selection of the geotextile separator, placed below the ProtectaWeb™.

ProtectaWeb™ surfacing options:

ProtectaWeb TRP Sytem can be surfacing with a number of different surfaces:

Typical Applications:

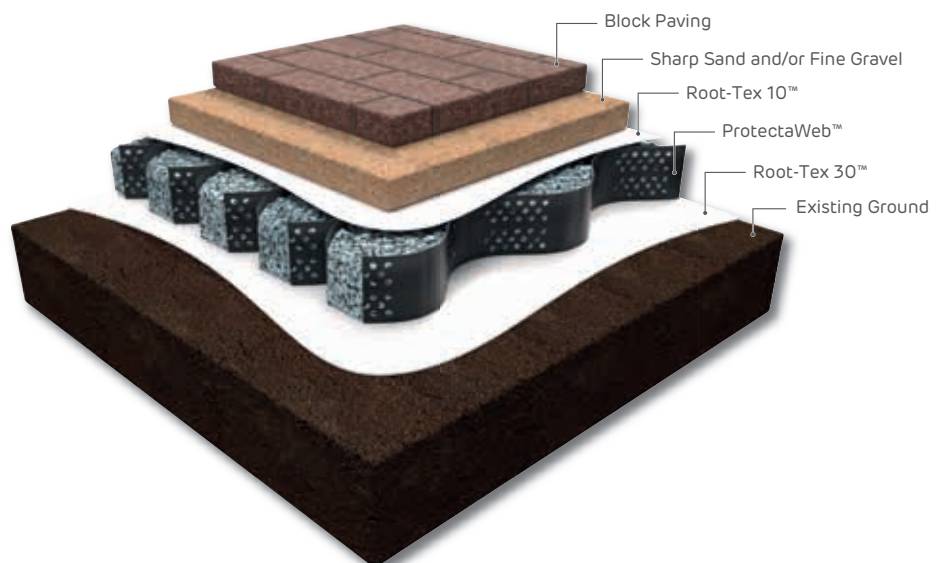
- Car park areas
- Access roads
- Driveways
- Footpaths
- Fire access route



▣ Porous Asphalt Finish

Typical Applications:

- Car park areas
- Driveways
- Footpaths
- Access roads
- Fire access route



▣ Block / Pourous Block Paving Finish

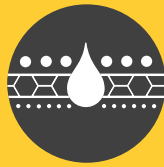
Functions:



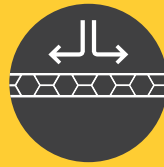
DRAINAGE



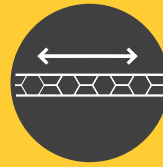
EROSION CONTROL



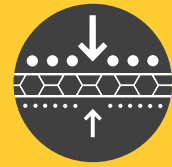
FILTRATION



PROTECTION



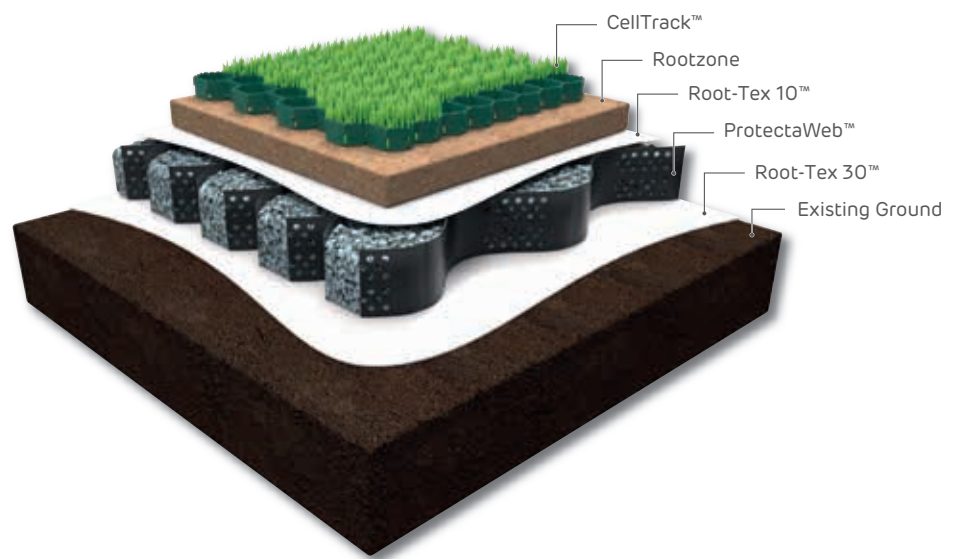
REINFORCEMENT



SEPERATION

Typical Applications:

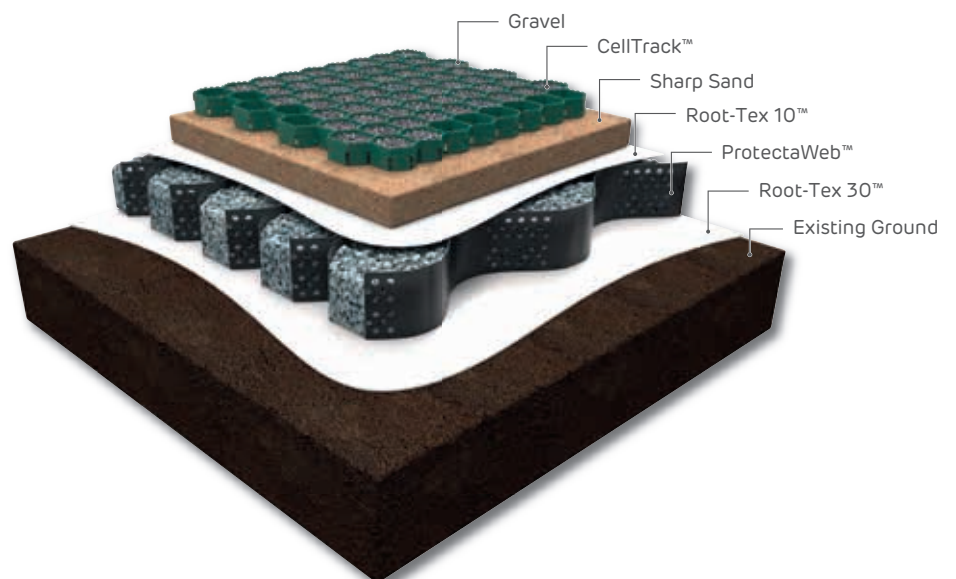
- Car park areas
- Footpaths
- Trim Trails
- Helipads
- Caravan sites



CellTrack™ Grass Paving Finish

Typical Applications:

- Car park areas
- Footpaths
- Trim Trails
- Helipads
- Caravan sites



CellTrack™ Gravel Paving

ProtectaWeb™ specifications:

ProtectaWeb™ is a three-dimensional cellular confinement system manufactured from strips of HDPE. The strips are ultrasonically welded together to create a flexible, load-bearing, free-draining mattress of interconnecting cells. The structure and properties of the system spread the vertical load over larger footprints, thereby reducing the impact on the sub-soil beneath.

Our RootTex 30 Geotextile is highly puncture resistant and, combined with its high tensile strength, provides resilience and stability to the system. The 300g/m² Root-Tex Geotextile is proven to filter four times more heavy metals and hydrocarbons than standard geotextiles as water moves through the system.

BS5837:2012 and APN 12 both recommend the use of 3D cellular confinement systems as part of any sub-base for building vehicular access paths above the root protection area of existing trees which are subject to a Tree Preservation Order.

Design flexibility:

ProtectaWeb™ panels can be stacked to meet each site's individual requirements for ground level.

Similarly, if finished ground levels need to be kept to a minimum but initial construction loadings call for a higher level, ProtectaWeb™ can be placed in layers then removed to leave a single piece for final surfacing.

If more substantial kerbs are to be used instead of conventional timber edging boards, concrete haunching can be applied to the perimeter of ProtectaWeb™.

Wrekin offers free site consultation, standard and site-specific CAD drawings, on-site installation supervision and exceptional customer service at every stage.

	PROPERTY	DESCRIPTION	
MATERIAL	Material composition	HDPE polymer with density of 0.95 g/cm ³	
	Colour	Tan, Green, White and Black	
STRIP PROPERTIES	Surface Treatment	Texturing: Multitude of rhomboidal indentations over the entire strip area, at a surface density of 22-30cm ² and depth of 0.35-0.85mm	Strips are perforated with horizontal rows of Ø10mm holes. The total open area is 10-15% of the cell wall area depending on cell dimensions
CELL DIMENSIONS	CELL SIZE (mm)	CELL DEPTH (mm)	AREA (m ²)
	260 x 224	50, 75, 100, 150, 200	20

ProtectaWeb™ installation guide:



- Install approved edge retention system around perimeter of the installation area.
- Lay Wrekin Geotextile across area of installation. Adjacent sheets should be overlapped by a minimum of 150mm.
- Open out ProtectaWeb™, pinning in place between the installed edging. It may be necessary to cut the ProtectaWeb™ to ensure good fit. This can be done using a sharp knife.



- Pin the perimeter of the ProtectaWeb™ panels. The pins' primary function is to ensure the cell apertures remain open during the filling process. Avoid damaging the tree root structure during the pinning process.
- Fill the ProtectaWeb™, working from the outer perimeter of the installation towards the tree. The filled area can be used as a working platform for the filling operation. The laid surface should not be rolled although light compaction can be achieved using a soil compaction plate.
- Install the finishing surface as specified.



Colchester cemetery & crematorium



Colchester, Essex. CO3 3WG



Colchester Borough Council



Landscape Planning Group



Constructionline



1000m²



150mm ProtectaWeb TRP system™
Root-Tex 30™ and Root-Tex 10™

When Colchester Cemetery and Crematorium needed to increase the space visitors had to park their cars, its options were limited.

The only potential area it identified was within a copse of established oak and maple trees. Wrekin was approached to work with the project managers to create an attractive space for car parking around a central island containing two retained maple trees. The use of ProtectaWeb™ for this project enabled it to go ahead with minimal tree felling and maximum land use.

Work began on the project, which had a tight turnaround, on 5th January 2016 and was completed and signed off on 22nd March.

The new car park was constructed by two previously untrained workers who were helped every step of the way during the construction process by Wrekin's technical support team.

Landscape Planning Group visited the site 11 times to ensure compliance with tree protection measures.



“Wrekin’s technical support and product training was essential to the completion of this project on time. The car park is now in use and is operating very well, and we minimised damage to the existing trees.”

Dave O’Connell DipArb(RFS)
Landscape Planning Group

”





Thetford woodland lodges



Brandon, Santon Downham IP27 0TJ



Wooden Lodge Foundations



EnviroArb Solutions



EnviroArb Solutions



400m²



150mm ProtectaWeb TRP System™
Root-Tex 30™



Thetford Forest is the UK's largest man made lowland forest. It's patchwork of pines, heathland and broadleaves provide the ideal setting for a great day out, and a welcome refuge for a rich variety of animal and plant life.

To accommodate some of the thousands of visitors who flock to the woodland every year, the operators decided to construct a collection of luxury woodland cabins. The site identified for the cabins contained many mature trees which the local authority was keen to preserve.

During the selection of products, Wrekin's technical team considered the mass of the lodges themselves as well as delivery vehicles. Due to the weight involved, it was clear correct selection of ProtectaWeb™ depth was imperative to the success of the project.

The contractors employed to carry out the works praised ProtectaWeb™ for its ease of installation, and appreciated on-site assistance provided by Wrekin's support team.

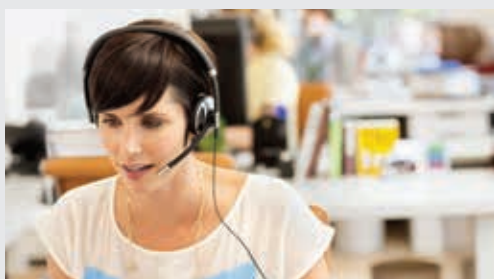
“Wrekin’s technical product design was vital to the implementation of the ProtectaWeb™ Tree Root Protection System. The on-site supervision they provided was critical to the unintrusive installation process.

Paul Allen DipArb(RFS) MICFor MAE
EnviroArb Solutions



ProtectaWeb™ Design and Guarantee

Wrekin provide full design proposals for all ProtectaWeb™ components. We have provided the chart below, which can be used as a guide for initial project implementation. However, we always suggest the full requirements of your design be verified by our technical support team.



Wrekin will guarantee ProtectaWeb™ Tree Root Protection System for 25 years, providing the ProtectaWeb™ has been installed strictly to our recommendations and all system components have been used.



Depth of cell required	Gross vehicle weight	Application
200mm	<60,000 Kg	HGV / Crane / Piling rigs
200mm	<50,000 Kg	Heavy construction traffic
150-200mm	<30,000 Kg	Standard construction traffic & Refuse vehicles
150mm	<16,000 Kg	Emergency access & Tractors
100-150mm	<9,000 Kg	Delivery vans
100-150mm	<6,000 Kg	Car Park: Cars & Light van
100mm	<3,000 Kg	Domestic traffic
75mm	<1,000 Kg	Pedestrians / Cycleways



NOTE:

This is general guidance for the depth of ProtectaWeb™ according to Gross Vehicle Weight for a firm and stable sub-grade (CBR.3%). If the ground conditions are poor and/or unstable please contact our ProtectaWeb™ team for a site-specific design on 01543 440432 or via email at TRP@wrekinproducts.com

Continuous Research Project:

Project Name:

Stanway Evangelical Church

Installation Date:

26th September 2014.

Tree Species:

Lime Tree (*Tilia x europaea*)

Project summary:

The design of a new car park for church visitors encroached across the root protection area of nine existing Lime trees which were subject to protection by tree related planning conditions. Wrekin Products are continually monitoring the health and vigour of the trees and also the structural performance of the car park construction. This information will be updated on a regular basis and posted on our website and social media outlets.

Continuous monitoring will include:

- Checking the crown for vitality and any retrenchment
- Shoot extension
- Density of crown, leaf size and colour
- Checking leaf for any signs of stress using the latest technology including Chlorophyll Fluorescence
- Visually inspecting for any potential settlement in the surfacing
- Post installation bulk density testing



Other products from Wrekin:



Geogrids



Asphalt Reinforcement Grids



Turfmesh



Geomembranes



Gabion Baskets



Woven & Non Woven Geotextiles



Grass / Gravel Paving Systems



CellPave HD



Geocomposite Drainage

Intelligent products for civil engineering

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