



# Tree Root Protection

A guide to the selection and specification of no dig Tree Root Protection systems using ABG Abweb TRP

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# Protecting our Trees

Trees are a valuable natural resource that are increasingly under threat from construction in the urban environment. As well as the obvious benefits to the environment of maintaining healthy trees they also provide aesthetic and resource qualities to any development.

Problems arise when construction takes place in areas around tree root zones; compaction of soils and damage to soil structure from vehicular traffic can prevent valuable water and air from reaching the roots starving the tree of vital resources and leaving it open to decay. Alternatively excavation within the root zone can physically damage the root structure affecting the health and life expectancy of the tree.

The protection of trees during construction is now often written into planning consent for new developments in accordance with BS 5837: Trees in Relation to Construction: Recommendations (2005) which recommends that there be a tree root protection area within which construction should not be permitted.

Arboricultural Practice Note 12: Driveways Close to Trees (APN12) gives guidance on above ground, no dig construction techniques in and around trees and advocates the use of geocellular blanket systems, such as Abweb TRP.

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# Abweb TRP in Tree Root Protection

Abweb TRP offers a practical alternative to traditional methods of construction of paths, roads and parking areas in and around trees. It is used to protect the root structure of the tree from damage caused from the compaction of the local soils as a result of vehicular traffic. Traditional methods of construction tend to be invasive and can affect tree health by damaging the root structure.

The Abweb TRP system is a no dig solution preventing damage to the tree root structure during the installation process. Abweb TRP is quick and easy to install, reduces construction time and in many instances greatly reduces the depth of imported stone required saving time and money and reducing the environmental impact of the project.

Abweb TRP is geocell mattress which is expanded on site and then filled with a clean no-fines stone; the strength of the system comes from the containment of the stone within the structure although unlike traditional construction this is achieved without compacting the stone and the subsequent loss of permeability. It is manufactured from strips of high density polyethylene HDPE cross welded to form cells, the strips can be perforated if required to allow the lateral movement of air and water through the structure. The porous surface also ensures water and air can carry essential nutrients to the tree roots.

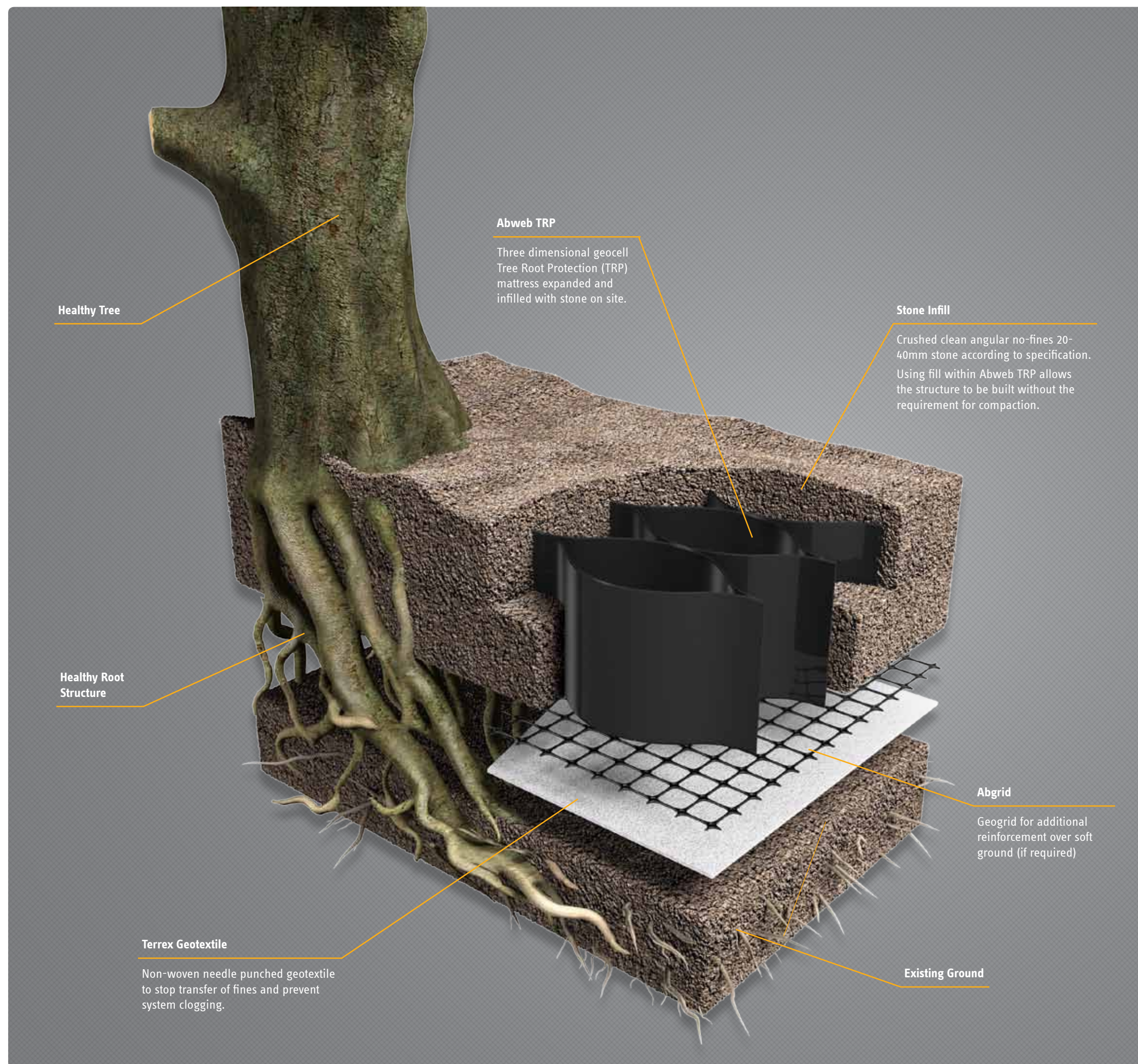
Beneath the Abweb TRP is a non-woven geotextile positioned to prevent any fines washing through and ultimately clogging the system thereby preventing the water and air from reaching the roots over the life time of the tree.

Many pavement finishes are suitable for use over Abweb TRP including porous asphalt and porous block paving. In temporary applications there is usually no requirement for a pavement finish, the fill of the Abweb TRP acting as the surface.

Abweb TRP can be used in both permanent and temporary pavement constructions. In temporary constructions the system can be removed without damaging the roots once operations on site are complete.

#### Abweb TRP is suitable for:

- Access roads and parking areas
- Driveways and paths
- Permanent woodland trails





# Technical Information

Abweb TRP system comprises Abweb geocellular containment system which confines the fill material within the cell improving shear strength and bearing capacity. This is laid over Terrex NW9 needle punched non-woven geotextile which acts as a separation layer preventing material loss whilst allowing the free flow of water and nutrients to the tree root system

## Abweb TRP

| Property                | Unit | 100  | 150  | 200  |
|-------------------------|------|------|------|------|
| Material                |      | HDPE | HDPE | HDPE |
| Web Thickness           | mm   | 1.2  | 1.2  | 1.2  |
| Effective Cell Diameter | mm   | 500  | 500  | 500  |
| Cell Depth              | mm   | 100  | 150  | 200  |
| Seam Tensile Strength   | kN   | 3.5  | 3.5  | 3.5  |

## Terrex

| Property                   | Unit                | NW9   |
|----------------------------|---------------------|-------|
| Thickness at 2kPa          | mm                  | 1.1   |
| Mass per Unit Area         | g/m <sup>2</sup>    | 110   |
| Tensile Strength           | kN/m                | 9     |
| Elongation MD/CD           | %                   | 40/45 |
| CBR Puncture Resistance    | N                   | 1500  |
| Dynamic Perf Cone Drop     | mm                  | 30    |
| Pore Size O <sub>90</sub>  | µm                  | 120   |
| Water flow Normal to Plane | l/m <sup>2</sup> ·s | 110   |
| Roll Width                 | m                   | 5.25  |
| Roll Length                | m                   | 100   |

Other material grades are available. Please contact ABG on 01484 852096 or by email at [technical@abgltd.com](mailto:technical@abgltd.com) to discuss your requirements. Data is for indication only. Full datasheet containing latest test data, test methods and tolerances is available on request.

Further information is available at [www.abgltd.com/tree-root-protection](http://www.abgltd.com/tree-root-protection)

## Installing Abweb TRP

### Before works commence

1. Ensure approval for use of Abweb TRP in this application from both local planning department and Tree Protection Officer.
2. Determine the limits of construction and proximity to the tree of the installation.

### Site preparation

3. Remove all debris and areas of hard surfacing. Reduce site levels to permitted reduced dig to meet final levels. Soil compaction and tree root damage should be avoided.
4. Ensure the site is reasonably level and free from undulations. Level using sharp sand if required. Rolling and compaction is not advised.

### Installation

5. Install approved edge retention system around perimeter of the installation area.
6. Lay Terrex geotextile across area of installation. Adjacent sheets should be overlapped by a minimum of 150mm.
7. Open out Abweb TRP pinning in place between the installed edging. It may be necessary to cut the Abweb TRP to ensure good fit. This can be done using a sharp knife.
8. Pin the perimeter of the Abweb TRP 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.
9. Fill the Abweb TRP 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 whacker plate.
10. Install the finishing surface as specified.

### Installation of temporary access roads

Abweb TRP can be installed to form a temporary access or haul road that can be partially or completely removed once construction works have been completed.

11. Follow steps 1 through to 9 above
12. Install a second layer of Terrex geotextile above the Abweb TRP. The specification of this is dependent upon the specific site/traffic conditions and the grade can be advised by ABG Technical Department.
13. Place 100mm of approved aggregate over the geotextile. Suitable aggregate is again site specific and advise should be sought.

### Decommissioning

14. Once the road is no longer required remove the top layer of aggregate and replace with the final finishing layer. Alternatively the entire road construction can be removed taking care not to damage the tree root structure during the removal process.
15. Abweb TRP can be recycled after use. Seek specific local advice on recycling.



Access track prior to installation



Inserting temporary pins to hold cell panel open



Preparing for infilling



Infilling using filled area as a working platform

# About ABG

ABG is a market leader in the design, development, manufacture and technical support of high performance geosynthetic systems for use in a wide range of civil engineering, environmental and sustainable building applications.

Formed in 1988 and based in Meltham, in the heart of the West Yorkshire Pennines, ABG have developed a reputation for developing quality products and delivering outstanding customer service. The ability for rapid product development ensures that the most innovative, up to date and cost effective solution can be found for many engineering problems.

Technical support on ABG systems is provided by the highly trained technical department, many of whom are Chartered Civil Engineers. The support extends to full design services, design validation, feasibility studies, cost advice and advice on meeting regulatory requirements.

Part of this support includes developing and driving knowledge within our active markets. This includes working with both local and international regulatory bodies on developing guidance and best practices on the use of innovative geosynthetics to solve complex engineering issues.

Contact ABG today to discover how ABG can help deliver a sustainable and cost effective solution to your engineering requirement.

## Further Reading

British Standards Institute (2005). *BS5837 – Trees in Relation to Construction - Recommendations*, BSI, London, UK

Patch, D. & Holding, B. (2007). *APN12: Through the trees to development*. Arboricultural Advisory and Information Service, Farnham, UK

Biddle, P.G. (1998). *Tree Roots and Foundations*. *Arboriculture Research and Information Note I42/98/EXT*. Arboricultural Advisory and Information Service, Farnham, UK.

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

Guidance for Trees: Conflict or Compliment?'. (R. Nicholson 2001). *Arboricultural Journal* No. 25.

Helliwell, D.R. & Fordham, S.J. (1992). *Tree Roots and Tree Growth*. Reading Agricultural Consultants, Didcot, UK.

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