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Yew Tree and Gardens

Client: Mr A. Yates.

– Holden Clough House, Holden Clough, Bolton by
Bowland Lancs.

Tree Report for Proposed Entrance Gateway and Wall

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TREE SURVEY

1. Site

a. Site Description

The survey area comprises an area adjacent to the entrance driveway of Holden Clough House.

This area comprises of sections of land located to either side of the existing access drive and post and wire fence. Tree stock within the surveyed areas is comprised of mature plantings and naturally occurring native species, a number of semi mature and juvenile examples, both planted and as a result of natural regeneration occur within the surveyed area. See Appendix 1, Appendix 2 and Appendix 3 for detailed tree list, site layout detail and images.

b. Survey Details

The site was surveyed on 23/01/13, tree heights were estimated via use of clinometer (Suunto PM-5) measurements of DBH taken at 1.5m height and crown spread was taken by ground measurements. The position of trees and crown extents are taken from the site survey supplied to ourselves. All images were taken at the same date with Nokia N8. Weather conditions were overcast with moderate winds.

All surveying of tree stock on the site was carried out visually from the ground only. Where ivy cover was encountered on trees then only limited visual checking of structure and potential defects was possible.

At the time of surveying all trees were recorded on standard tree record sheets, see Appendix 1 : Tree Schedule. Trees were surveyed throughout the entire site, detailed individual details were recorded for all significant trees within the existing site. Where larger numbers of smaller trees were encountered in the survey area these are included as a Group record which includes the approximate height range and maximum Diameter at Breast Height (DBH) of trees within the group, these groups are referred to by group i.e. Group 2 (G2).

The surveyed trees are categorized by the standard retention categories as defined in BS5837:2012. Such retention categories seek to inform the design process of trees which may be worthy of consideration for inclusion within the proposed development. All work recommendations relate to trees within the context of the current site layout and usage.

Trees requiring removal to facilitate the proposed development are indicated in red on the Tree Location Plan and are further identified in the work recommendation section of the Tree Schedule.

2. Existing Structures and Proposed Development

a. Existing Structures

At the time of survey there are no permanent structures in the surveyed area.

b. Proposed Development

To the best of our knowledge the current development proposal undergoing design consideration is for the replacement of the existing 'stock' fence with a combination of masonry built wall and section of fencing. Allied to the proposed wall is the construction of a new gateway with stone pillars and a vehicle passing place to the Northwest of the entrance.

3. Tree Preservation Orders and Conservation Areas

a. Site Description

We understand that the site is not located within a Conservation Area. At the time of the report we have not verified the status of all tree within the site in respect of Tree Preservation Orders. The status and ownership of all the trees on the site would need to be confirmed and appropriate permissions obtained prior to any works being undertaken on the surveyed trees, as listed in Appendix 1: Tree Schedule.

4. Tree Constraints

a. Overview

The need to survey and report on the condition and useful life expectancy of existing trees has been requested by Ribble Valley District Council to accompany a planning application for the proposed development.

b. Proposed Development

As can be seen from Appendix 1; Tree Schedule, Appendix 2; Tree Location Plan and Appendix 3: Images; trees covered within this survey and report are located adjacent to the location of the proposed wall and entrance gateway.

Tree references T1, T2 and T3 are of low retention value but are intended for retention within the proposed scheme. As such the position of the proposed wall has been located so as to follow a route to the outside of the calculated RPA of these trees. In respect of T1 this route will make a minor incursion into the outer edge of the RPA, due to the location of T1 and its current condition any such incursion should not have a significant effect upon T1.

Tree references T5 and T7 are to be retained within the proposed scheme. As such the route of the wall has been designed to be situated between the calculated RPA's of T5 and T7. Tree reference T5 is a significant Giant Redwood and T7 provides a wooded edge and screening to the site entrance. As can be seen from Appendix 2; Tree Location the proposed wall route necessitates an incursion into the calculated RPA of both T5 and T7. This incursion is again minimal, this is due to the fact that all of the retained trees are open grown and as such it would be acceptable to allow an incursion in one direction up to a maximum of 20% of the RPA radius as per the guidance in BS5837:2012.

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4b. Proposed Development (Cont)

No other significant retained trees will be affected by the proposed scheme.

A number of juvenile and semi mature trees will require removal but these are of low retention value and as such their removal may be effectively offset by additional planting in this area.

Individually surveyed trees T8 and T9 require removal under the proposed scheme, these trees have significant identified defects and therefore have low retention value based upon a limited likely useful remaining lifespan.

All above ground issues are addressed in 4c and 6..

c. Existing structures

As previously noted there are no existing structures within the surveyed areas. Whilst no issues exist with regards to trees in relation to the current property within the current site usage a number of potential issues exist within the surveyed site.

Many surveyed trees have a combination of poor form, poor structure and identified defects. This is typified by tree references T1, T2 and T3.

Tree reference T1 is of very poor structure, this is due to it being composed of secondary growth which has occurred since the failure of the main stem. As such these stems have poor unions and will be prone to an increasing risk of failure over time. They may require reduction to prevent future failure.

The group of Larch including T2 and T3 are poor in form with poor stem taper ratios and unbalanced canopy development typical of the species in close plantings. They require regular monitoring especially for signs of root plate movement.

Recommendations for works and monitoring are contained in Appendix 1: Tree Schedule.

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5. Tree Constraints – Development

Due to the nature of the proposed development and the location of the surveyed trees it should be possible to retain all suitable trees and ensure protection of same during the construction process.

Tree Protection Fences will be required for the development phase, suggested positions for same are indicated on Appendix 2; Tree Location Plan.

An indicative list of recommended practices during construction phase is listed below:

Once installed tree protection must remain in place and be observed at all times.

No fires within 10m of the crown of any retained trees.

Soil levels in rooting areas to be retained with minimal level changes, no greater than 300mm.

No cement mixing/washout to take place within 15m of any retained trees.

No chemicals, bitumen etc to be stored within 10m of any retained trees.

Any spillage of fuel, chemicals or contaminated water occurring within 2m of the root protection areas to be reported to project supervisor.

No additional underground services have been indicated to us at this time but they may be safely routed along the proposed access routes, if additional services require routing through the root zones of trees for retention then appropriate sub-surface or micro tunnelling methods should be used. See BS3857:2012

Passing places:

If works are to be undertaken to create a vehicle passing place we would recommend that appropriate construction methods are used. For example, the top surface hand clearing of any shrub and herb layer followed by careful surface grading of track and any parking areas. Surface installation of a cellular confinement system e.g. Terram – GeoCell 25/15, in-filled with aggregate and covered with gravel. This would provide a load bearing surface which would resist soil compaction and allow free passage of nutrients and moisture. See attached product guides. MIS 456 Issue 3: Feb 2012

Edging of the passing places should again be achieved by surface mounted methods. These could be achieved by the use of wooden landscaping poles with a minimal surface excavation and securing by steel pins driven into the ground.

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5. Tree Constraints – Development (cont)

Wall and entrance pillars in relation to T1, T5 and T7:

As the proposed route location of the wall and gateway is located within the outer edges of the previously mentioned RPA's we would recommend that the following guidance is followed for the construction process.

Ground protection to be established within the working area, this can consist of plyboard overlaying compressible material i.e. woodchip or bark chippings. This will allow both pedestrian activity and access for small equipment up to maximum of 1.5t class excavator for digging of the wall and pillar footings. All spoil should be removed from the RPA after excavation. Any roots encountered should be cut back to root unions at the outer edge of the trench.

The trench should be lined with an impermeable membrane prior to introduction of concrete to prevent leaching of chemicals into the RPA.

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6. Tree Constraints - Proposed Development and Juxtaposition with Trees

Due to the nature of the proposed development and the location of trees within the site no above ground issues should be created.

As previously stated, trees in this area will require regular monitoring.

Tree reference T7 (Yew) requires an overall balanced crown reduction as this tree is encroaching upon the existing driveway and would impede the construction of the proposed wall.

See Appendix1: Tree Schedule, Appendix2: Tree Location Plan, Appendix3: Images.

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7. Proposed Tree Planting

At the time of this survey a requirement for replacement planting has not been identified in direct relation to the proposed development. An opportunity exists within any future landscaping plan for the planting of additional appropriate native species to enhance the tree stock within the site. This would offset the need to remove any unsuitable trees from the existing site.

8. Scope of brief

Carry out a survey of trees within the site in accordance with BS5837:2012 and collect data in order to advise the development designer of key issues relating to trees, with options and strategies. Prepare a Report with associated data, site plans and imagery, in order to facilitate consideration of the tree issues both for existing structures and the proposed development.

9. Supporting Information

Site Plan: Scale 1:100 @ A1

10. Conclusions

It is concluded that

It is possible to retain suitable existing significant surveyed trees within the wooded area adjacent to the proposed scheme. It is also possible to complete the construction phase without additional damage/stress being placed upon trees to be retained within the site if guidance detailed in this report, suitable construction methods are used and recommendations contained in BS5837:2012 are followed.

11. Recommendations

It is recommended that

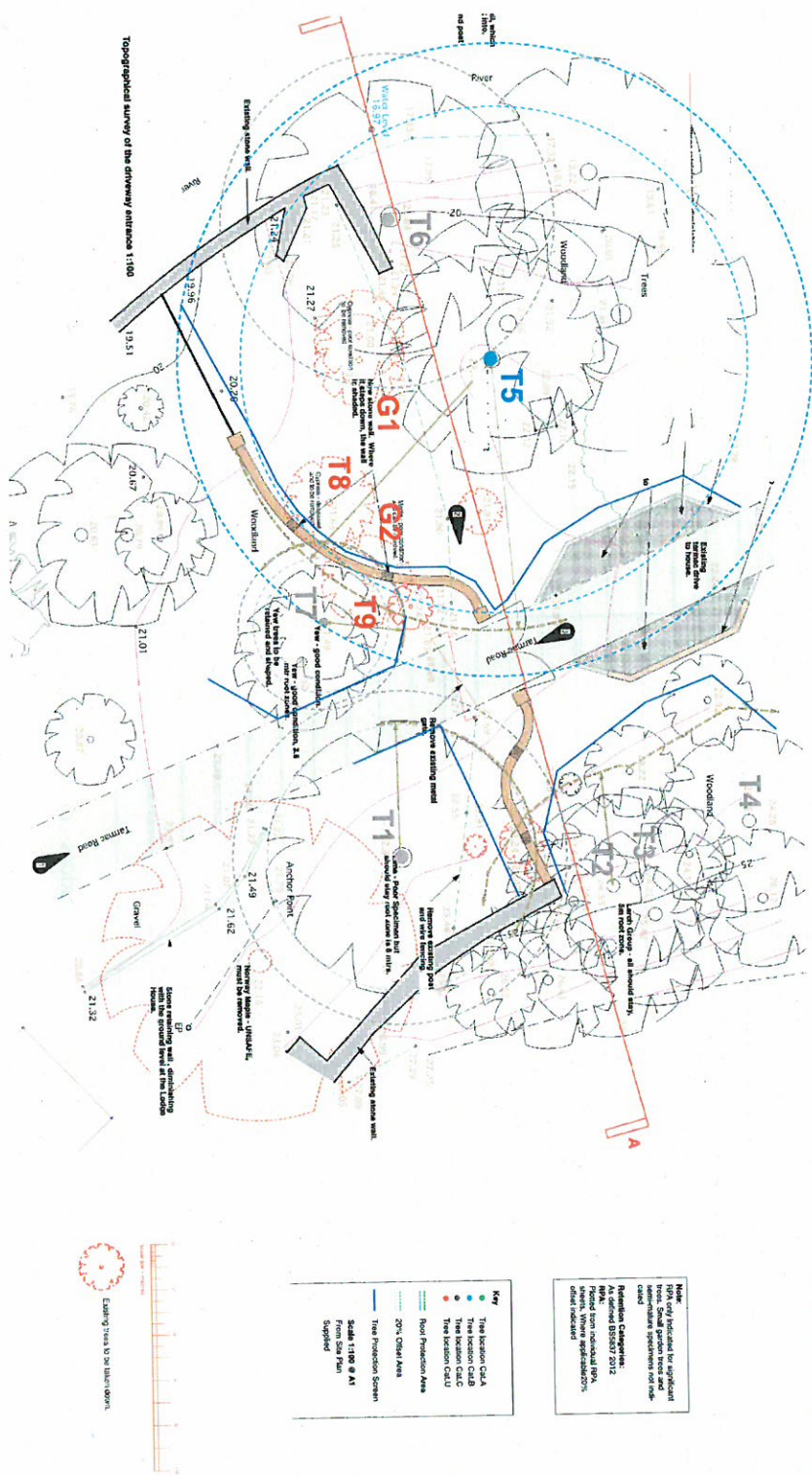
The recommendations contained within this report both for the management of trees for retention and the protection of same during proposed development phase are taken into consideration.

That the Local Authority Tree Officer be consulted for input and professional guidance through the planning process.

Tree Ref.	Species	Height (est) m	Sread (est) m NSEW	Age Class	Vigour	DBH (mm)	Condition/Comments	BS5837 RetCat	Work Recommendations	
1	<i>Tilia x europea</i>	20	8	m	n	450 370 450	All growth is secondary growth, stems regrowth from previous main stem failure @ 2m	C1	regularly monitor condition - retain in context of development - likely to require reduction of stems to prevent failure at main unions	
2	<i>Acer pseudoplatanus</i>	16	7	m	n	320	Growing on top of banking, all growth to W growing into crown of T3. Suppressed crown.	C1	regularly monitor condition - retain in context of development	
3	<i>Larix decidua</i>	30	10	m	n	420	Larch, growing as part of group. Poor stem taper ratio.	C1	regularly monitor condition - retain in context of development	
4	<i>Larix decidua</i>	30	12	m	n	575	Larch, growing as part of group. Poor stem taper ratio. Stem bifurcates @ 10m with included bark. Previous branch removals	C3	regularly monitor condition - retain in context of development	
5	<i>Sequoiadendrom giganteum</i>	40	7	m	n	1170	Giant redwood, balanced crown	B1	regularly monitor condition - retain in context of development	
6	<i>Fraxinus excelsior</i>	28	7	m	n	560 480	Multi stem Ash. All growth over river, growing from banking, poor rooting zone. Ivy	C1	regularly monitor condition - retain in context of development	
7	<i>Taxus baccata</i>	12	5	m	n	305	Single stem Yew, suppressed form	C1	regularly monitor condition - retain in context of development - reduce by 20%	
8	X <i>Cupressocyparis leylandii</i>	18	4	m	n	500	Hybrid cypress, cavity in stem, previous failure. Unbalanced towards S	U	will require removal in context of development	
9	<i>Acer platanoides</i>	16	5	m	n	265	Co dominant Maple, 1x stem previously failed	U	will require removal in context of development	

[illegible]

Appendix 2 - Tree Location Plan - Holden Clough Entrance Gates



Appendix3 - Site Images



T1 form



T3



T2 - T3



T6



T8 - large cavity



Group G2 and T5

SPECIFICATION & INSTALLATION GUIDANCE



TERRAM GEOCELL CONFINEMENT SYSTEM FOR TREE ROOT PROTECTION

Terram Geocell is a geocellular sub-base confinement system designed for the protection of tree roots where the construction of roads, car parks and access routes are required in the vicinity of trees and where Tree Preservation Orders (TPO) may be enforced. The structure confines and stabilises the sub-base stone ensuring that vehicle loads are dissipated, rutting and soil compaction is prevented and damage to tree roots is avoided. When installed as advised, Terram Geocell will also allow the continued passage and circulation of air, water and nutrients to tree roots to sustain a healthy growing environment by the following 2 documents:

- British Standard BS5837: 'Trees in Relation to Construction' (2005).
- Arboricultural Advisory and Information Service: Practice Note 1 – 'Driveways Close to Trees' (APN1)

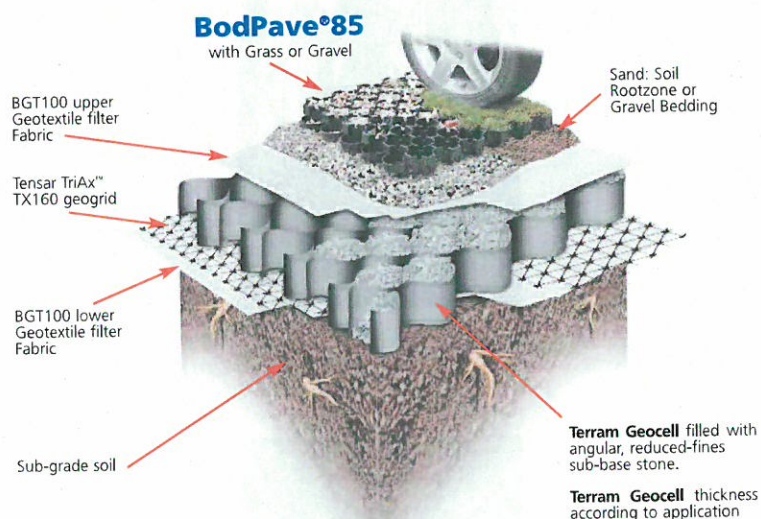
Tree Root Protection is supplied flat packed and opens to form a strong geocellular structure. It is simply pinned in place using metal fixing pins as described.

In this type of 'Reduced-Dig' or 'No-Dig' Tree Route Protection application, Terram Geocell is intended for use in conjunction with a water and gas permeable SuDS (Sustainable Drainage System) compliant pavement surface product such as BodPave®85 cellular plastic paving, Concrete Porous Block Paving or Porous Asphalt surfaces. Although Terram Geocell can be used by traffic in isolation for a very limited period when filled; it is not advised that Terram Geocell is used as the permanent surface finish for vehicle access routes. Exceptions may arise where Terram Geocell is installed as a temporary haul road for example as a site access route and may be removed and disposed of or fully re-surfaced after use. Refer to installation method details for further information.

GENERAL INSTALLATION ADVICE FOR ALL APPLICATIONS

Prior to commencing works it is advisable to seek the professional opinion and approval of the Local Planning Department and Arboriculture Officer. Specific design limitations may be determined by Tree Officers, Engineers or Planners and must be closely adhered to. All applications will vary according to the site conditions and specific tree species involved. The ground and tree roots within the tree root protection zone must be protected from compaction and damage at all stages of the construction works. Works may involve varying degrees of excavation or build-up where edge retention is required, which must avoid root damage and soil compaction. The use of mechanical equipment or even low ground pressure machinery in the tree root protection zone must be avoided and hand tools may be the only method of excavation close to the root system.

Typical Profile



Typical Profile showing various product layers.
Not all layers will apply to every application.

SPECIFICATIONS

PRODUCT	PANEL SIZE	CELL DIAMETER & DEPTH	PANEL WEIGHT	MATERIAL	LOADING APPLICATION	PART No.
Geocell™ 250/100	5m x 7m	250mm x 100mm	18kg	Non-woven Polypropylene	Pedestrians	051397
Geocell™ 250/150	5m x 7m	250mm x 150mm	25kg	Non-woven Polypropylene	Cars/Light vehicles	051403
Geocell™ 220/200	6m x 3m	220mm x 200mm	20kg	Non-woven Polypropylene	HGV's	051380

PRODUCT	MATERIAL	SIZE	UNIT	PART No.
Fixing U-Pin	Steel rod	550mm long x 8mm dia	Each	082834

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GEOCELL FOR TREE ROOT PROTECTION

MIS 456 Issue 3: Feb 2012

INSTALLATION METHOD FOR PERMANENT ACCESS ROUTES AND CAR PARKS

1. Obtain the approval of the Local Planning Department and Arboriculture Officer that this method of construction is appropriate and acceptable for the application and to determine the limits of construction and proximity to the tree.
2. Prepare the site by carefully removing all debris and reducing surface levels to the allowable reduced dig as appropriate to the specification, whilst strictly avoiding soil compaction and tree root damage. Build-up directly on the existing surface levels may be necessary.
3. Ensure that the prepared surface is reasonably even and fill any localised depressions with sharp sand to achieve an even surface profile. Do not roll or consolidate the area.
4. Install tanalised timber edging boards or other approved edge retention to the perimeter of the construction zone as appropriate to the total layer profile thickness. Avoid damage to tree roots when placing fixing posts and pegs. Concrete kerbs are unlikely to be appropriate or allowed.
5. Install a layer of BGT100 Geotextile Fabric across the site, overlapping adjacent rolls by a minimum of 150mm. It may be necessary to lightly pin the Geotextile in place until the overlying layers are installed.
6. An optional layer of Tensar TX160 TriAx[™] Geogrid may be required at this stage, possibly determined by the site soil strengths (i.e. weak CBR% strength*), the proposed application and applied load such as HGV's. In some cases the TX160 layer may also aid the reduction of the required layer thickness of Terram Geocell where an extremely limited allowable excavation or build-up has been applied. Place the Geogrid layer over the Geotextile Fabric layer and fix down using steel pins to hold flat. Overlap adjacent rolls by minimum 150mm. Avoid tree root damage and soil compaction.
7. Open out and lay the specified layer thickness of Terram Geocell (100mm/150mm/200mm deep) and pin in place between the edging boards. It may be necessary to cut the Terram Geocell to size using a sharp knife or it can be left uncut and folded up against the edgings if preferred.
8. Pin the Terram Geocell in place using Steel Fixing Pins or similar approved. The pins are generally used to maintain the cells in an open and fully expanded position whilst the cells are being filled and also to stop the structure from being pushed up by migrating aggregate during the filling process. Pin spacing will vary according to the site conditions, but will generally be required at 1m – 2m centres on flat surfaces, mainly placed around the perimeter of the area and where adjacent sections of Terram Geocell abut each other, with less in the middle of the area. Drive the pins in so that they are just touching the top of the cells but do not compress the fabric. Avoid tree root damage during the pinning process.
9. Fill the Terram Geocell, working toward the tree from the furthest point away and using the filled Terram Geocell as a platform. The cells must be filled with clean, open graded angular aggregate, normally in the particle size range of 5mm – 45mm. Not single sized or rounded aggregate. The project engineer may determine alternative fill materials such as clean 4/20 or 4/40 stone or a reduced-fines DoT Type 1X sub-base. It is not acceptable to use a standard DoT Type 1 Sub-base within the cells for tree root protection. Do not roll the surface, a light vibratory compaction plate (vibracker) may be permitted to settle the stone into the cells, seek advice from the specifier or Tree Officer on this detail. Do not contaminate the filled cells with site debris, soil or mud.
10. Install the permeable pavement layer/wearing course i.e. BodPave[®]85, Block Paving, Porous Asphalt, on top of the Terram Geocell according to the manufacturers recommendations. Each porous pavement layer will have a specific design layer requirement; therefore for example, where a sand or sand:soil bedding layer is specified or a contaminant filtration layer is required, then a layer of BGT100 Geotextile Fabric shall be placed above the Terram Geocell prior to the pavement bedding layer being installed and finished according to manufacturers instructions. The Geotextile will stop the pavement bedding layer from migrating down into the aggregate voids within the Terram Geocell.

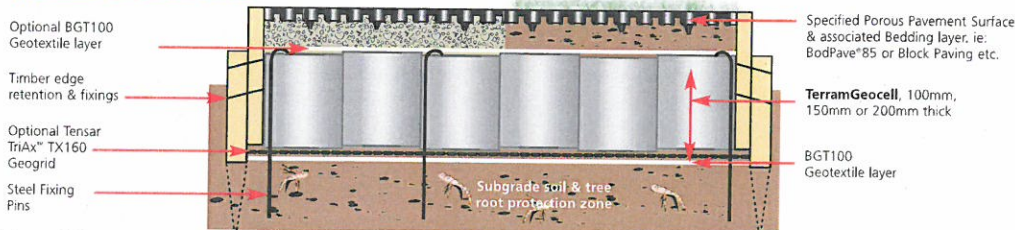
For installation recommendations for BodPave[®]85 cellular paving for Grass & Gravel, refer to BodPave[®]85 Specification and Installation Guidance Notes. For all other pavement layer products, refer to the specific manufacturers' guidance.

INSTALLATION METHOD FOR TEMPORARY ROADS AND SACRIFICIAL PAVEMENT LAYERS IN HAUL ROADS

In some applications Terram Geocell may be installed as a temporary haul road base and completely removed after use. Alternatively it may have a sacrificial stone layer placed over it which is removed and replaced with a permanent permeable pavement solution when use of the haul road is complete.

1. Obtain the approval of the Local Planning Department and Arboriculture Officer that this method of construction is appropriate and acceptable for the temporary access and to determine the limits of construction and proximity to the tree.
2. Apply all construction detail as for items 2 to 9 above for 'Permanent Access Routes'.
3. Place a layer of BGT100 Geotextile or greater strength Geotextile (i.e. Terram 2000) onto the Terram Geocell surface. The geotextile grade will be determined by the specific site design criteria and degree of haul road traffic proposed. This layer will be removed and replaced later if a porous pavement surface is being installed on the Terram Geocell.
4. Place a minimum 100mm thick layer of either clean graded stone or DoT Type 1 sub-base stone onto the surface. This will be the sacrificial pavement layer to be removed later. Aggregate specification will be determined by the project manager.
5. During use of the access route, routinely check for erosion of the surface and repair with stone as required to avoid exposure of the geotextile.
6. After the haul road use is completed, remove the sacrificial layer of stone and geotextile and replace with the preferred permeable pavement layer in accordance with manufacturers recommendations. Alternatively remove the entire construction profile to return the site to its original status; it is critically important to avoid contamination of the remaining layer of open-graded stone within the Terram Geocell where partial removal is carried out and at all times to avoid damage to tree roots and soil compaction during removal and disposal of the construction layers.
7. Where complete removal of Terram Geocell is required, seek the specifiers' advice on renovation and restoration of the landscaped surfaces within the tree protection zone.

Typical Profile Construction



Other useful notes on Tree Root Protection

- In most applications the total porous pavement area should not exceed 20% of the tree root protection area.
- It is advisable to seek an Engineers advice on the required Terram Geocell layer thickness related to local soil strengths and proposed traffic loadings.
- Soil compaction will severely affect the trees ability to take up water and oxygen; similarly, raising soil levels around trees will deprive roots of oxygen and cause stress and dieback.
- In most cases 80% - 90% of a trees root system are in the upper 1m of soil and the small fibrous tree roots are the most important to a trees health. The fine roots enable transport of oxygen, water and nutrient to the tree via the larger roots which also anchor the tree and provide stability. Severing only a small proportion of the fine surface root structure can severely affect the tree, causing stress, dieback and loss of stability.

* CBR% Strength = California Bearing Ratio – a measure of subgrade soil strength.

Further Reading

- British Standard: BS5837 1991 / 2005 – Trees in Relation to Construction - Recommendations.
- Arboricultural Advisory and Information Service: Practice Note 1 – 'Driveways Close to Trees' (APN1).
- 'Tree Root Systems'. (M. Dobson 1995) – Arboricultural Research Information Note 130/ARB/95.
- 'Driveways Close to Trees' (M. Dobson / D. Patch 1996), Arboricultural Practice Note 1.
- 'Guidance for Trees: Conflict or Compliment?'. (R. Nicholson 2001). Arboricultural Journal No. 25.

The information contained herein is, to the best of our knowledge, accurate in all material respects. However, since the circumstances and conditions in which such information and the products mentioned herein can be used may vary and are beyond our control, no representation or warranty, express or implied, of any nature whatsoever is or will be made and no responsibility or liability is or will be accepted by us, any of our affiliates or our or their respective directors, officers, employees or agents in relation to the accuracy or completeness or use of the information contained herein or any such products and any such liability is expressly disclaimed.

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Appendix 4

Reference List

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