

## Tree Survey, Arboricultural Impact Assessment Arboricultural Method Statement & Tree Protection Plan In Accordance with BS 5837:2012

Proj. No <b>7007</b>		44 Platts Lane, Hampstead, London, NW3 7NT				
	Clie	nt:	Mr Rupert	Horrocks		
Date of Report: 09/11/2018			Revision:	Original		

# Tree Survey, Arboricultural Impact Assessment, Arboricultural Method Statement & Tree Protection Plan – In Accordance with BS 5837:2012

# Summary

The purpose of this report is to provide a consideration of the arboricultural implications created by the proposed development. In accordance with the feasibility and planning sections of BS5837:2012 "Trees in relation to design, demolition and construction -Recommendations", trees deemed to be within the influencing distance of the projected construction have been evaluated for quality, longevity, and initial maintenance requirements. Where trees do not have to be removed for health and safety reasons, a detailed and objective assessment has been made of the consequences of the intended layout.

In this circumstance it is intended to undertake landscaping work to the front garden of 44 Platts Lane, London. The proposed work includes the installation of a dropped kerb to allow vehicular access to the property, demolition of two sets of stairs and the front boundary wall, the installation of a parking bay and bin store and construction of a replacement set of stairs and front boundary wall, a new retaining wall and associated soft landscaping work. As a result two individual trees and one hedge were inspected. The arboricultural related implications of the proposal are as follows:

- 1 It is not necessary to fell any individual trees in order to achieve the proposed layout.
- 2 The alignment of the replacement front boundary wall, new retaining wall and replacement set of stairs encroaches within the Root Protection Areas of trees that are to be retained. In view of this, careful consideration must be given to their construction as discussed at item 4.4.4.
- 3 The alignment of the proposed vehicular access onto the property, parking bay and bin store encroach within the Root Protection Areas of two trees that are to be retained. However, given the use of modern "no dig" construction techniques this is not considered to be a substantial issue.
- This report recommends that specialist advice is obtained by expert 4 practitioners in other disciplines. Such input should always be sought prior to the submission of this report in support of a planning application in order to demonstrate that the techniques and methods hereby proposed are achievable. In this particular circumstance it is necessary to contact the following:
  - Structural Engineer (foundation design, item 4.4.4)
  - Civil Engineer ("no dig" surfacing, item 4.4.3)
- All trees and landscape features that are to remain as part of the development 5 should suffer no structural damage provided that the findings within this report are complied with in full. This includes ensuring that protective measures are installed as detailed at items 4.5 and 5.1 of this report.



# **Contact Details**

Client – Mr Rupert Horrocks						
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Local Planning Authority – London Borough Camden Council					
Address 5 Pancras Square London N1C 4AG	<b>Trees Officer</b> Mathias Genet	Tel: E-mail:	0207 974 5616 mathias.genet@camden.gov.uk		

Arboricultural Consultant – Hayden's Arboricultural Consultants Limited						
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# Contents

- 1.0 Introduction
- 2.0 The Site
- 3.0 Tree Survey
- 4.0 Arboricultural Impact Assessment
- 5.0 Design Advice, Arboricultural Method Statement & Tree Protection Plan
- 6.0 Recommendations
- 7.0 Limitations & Qualifications
- 8.0 References
- 9.0 Appendices



# **1.0** Introduction

#### 1.1 **Terms of Reference**

- 1.1.1 Havden's Arboricultural Consultants Limited has been commissioned by Mr Rupert Horrocks to prepare a Tree Survey, Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan for the existing trees at 44 Platts Lane, Hampstead, London, NW3 7NT.
- 1.1.2 The site survey was carried out on the 13<sup>th</sup> September 2018. The relevant qualitative and quantitative tree data was recorded in order to assess the condition of the existing trees, their constraints upon the prospective development and the necessary protection and construction specifications required to allow their retention as a sustainable and integral part of the completed development.
- 1.1.3 Information is given on condition, age, size and indicative positioning of all the trees, both on and affecting the site. This is in accordance with the British Standard 5837:2012 Trees in relation to design, demolition and construction -Recommendations.

#### 1.2 Scope of Works

- 1.2.1 The survey of the trees and any other factors are of a preliminary nature. The trees were inspected on the basis of the Visual Tree Assessment (VTA) method as developed by Mattheck and Breloer (1994). The trees were inspected from ground level with no climbing inspections undertaken. It is not always possible to access every tree and as such some measurements may have to be estimated. Trees with estimated measurements are highlighted in the schedule of trees. No samples have been removed from the site for analysis. The survey does not cover the arrangements that may be required in connection with the removal of existing underground services.
- 1.2.2 Whilst this is an arboricultural report, comments relating to non arboricultural matters are given, such as built structures and soil data. Any opinion thus expressed should be viewed as provisional and confirmation from an appropriately qualified professional sought. Such points are clearly identified within the body of the report.
- 1.2.3 An intrinsic part of tree inspection in relation to development is the assessment of risk associated with trees in close proximity to persons and property. Most human activities involve a degree of risk with such risks being commonly accepted, if the associated benefits are perceived to be commensurate. In general, the risk relating to trees tends to increase with the age of the trees concerned, as do the benefits. It will be deemed to be accepted by the client that the formulation of the recommendations for all tree management will be guided by the cost-benefit analysis (in terms of amenity) of the tree work.

### 1.3 **Documentation**

- The following documentation was provided prior to the commencement of the 1.3.1 production of this report;
  - Email of instruction received from Mr Rupert Horrocks on the 07/09/18. •
  - Proposed site layout: drawing no: PL02 received on the 12/09/18.



# 2.0 The Site

### 2.1 **Overview**

2.1.1. The site is 44 Platts Lane, Hampstead, London, NW3 7NT. It comprises of a large, detached dwelling with front and rear gardens. The front, northern boundary is at a significantly lower elevation than the position of the house. The house is therefore accessed by two sets of stairs situated adjacent to the east and west boundary of the site. In between the two sets of stairs is a raised area of garden with a retaining wall on the north boundary. Neither of the trees are situated within the property. One is situated within the pavement directly adjacent to the front boundary and the other appears to be situated within the curtilage of the neighbouring property. Both are mature trees, in reasonable condition and considered to provide a good level of public amenity.

### 2.2 Soils

- 2.2.1 The soil type commonly associated with this site are generally freely draining slightly acid loams. They are of low fertility and typically support neutral and acid pastures, and deciduous woodland type habitats. This soil type constitutes approximately 15.5% of the total English land mass.
- 2.2.2 The data given was obtained from a desk top study which provides indications of likely soil types. By definition, this information is not comprehensive and therefore any decisions taken with regards the management, usage or construction on site should be based on a detailed soil analysis.
- 2.2.3 Further to item 2.2.2, this report provides no information on soil shrinkability. It may be necessary for practitioners in other disciplines (e.g. engineers considering foundation design) to obtain this data as required.

### 2.3 Statutory Tree Protection

### 2.3.1 Conservation Area

The site is located within a locality specifically identified by the Local Planning Authority (LPA), London Borough of Camden Council, as a "Conservation Area". This is a planning designation that seeks to provide control over the built environment but which also has provision for tree protection. The effect of this is that prior to undertaking tree work the LPA require 6 weeks written notice to be submitted which specifies the proposed work. No work may be carried during the 6 week period unless written permission has been received from the LPA. The LPA can only prevent works notified to them within the 6 week period by serving a Tree Preservation Order. If this happens, the owner of the tree has a right to object.

There are certain circumstances where written permission from the LPA may not be necessary before undertaking works. These include;

- Making a tree safe if it is an imminent threat to people or property.
- Removing deadwood or a dead tree.
- Undertaking work to trees with stem diameters of less than 75mm (measured at 1.5m above ground level).

Owners, managers or any persons wishing to undertake work as an exception to the written notification process are **required** to provide the LPA with 5 days' notice prior to attending to a tree which they deem as being dead or dangerous; unless such works are required in an emergency.



It is the tree owner's responsibility to provide proof that the tree was indeed dead or dangerous should this exception be challenged; hence, it is always advisable to request an inspection by the LPA prior to carrying out such operations. Furthermore, even in the event of an emergency situation there is still a duty to notify the LPA that work has been completed including supplying an explanation of the necessity. Failure to comply with the requirements of Conservation Area legislation can lead to a maximum fine of up to £20,000 per tree in the Magistrates Court. Fines in the Crown Court are unlimited.

This information was sourced using the LPA's Online Mapping System and to our best knowledge was current and accurate at the time the information was accessed. Before any tree work commences, this must be checked directly with the LPA to confirm that their online mapping system is definitive.

# 3.0 Tree Survey

- 3.1 As part of this survey a total of two individual trees and one hedge have been identified. These have been numbered T001 T002 and H001 respectively.
- 3.2 An accurate topographical survey was not available at the time of inspection. The position of each tree shown on the attached drawing no. 7007-D-AIA has therefore been fixed by use of a hand-held GPS surveying unit. Given this, the position of the trees must be considered indicative, although drawing no. 7007-D-AIA provides a fair representation of the relationship of the trees as distributed across the site.
- 3.3 In order to provide a systematic, consistent and transparent evaluation of the trees included within this survey, they have been assessed and categorised in accordance with the method detailed in item 4.3 of *BS 5837:2012 "Trees in Relation to Design, Demolition and Construction Recommendations"*. For further information, please see the attached Explanatory Notes.
- 3.4 The detailed assessment of each tree and its work requirements with priorities are listed in the attached Schedule of Trees.
- 3.5 In accordance with item 4.2.4 (c) of BS 5837:2012, the items inspected and detailed within this report have been selected for inclusion due to the likely influence of any proposed development on the trees, rather than strictly adhering to the curtilage of the site. However, it must be understood that there may be trees beyond the site and not included in this survey which may exert an influence on the development. Where works for cultural, health and safety, quality of life, or development purposes have been recommended on trees outside the ownership of the site, these can only progress with the agreement of the owner, except where it involves portions of the trees overhanging the boundary.



# 4.0 Arboricultural Impact Assessment

### 4.1 **The Proposal**

4.1.1 This project seeks to landscape the property's front garden. The proposed work includes the installation of a dropped kerb to allow vehicular access to the property, demolition of two sets of stairs and the front boundary wall, the installation of a parking bay and bin store and the construction of a replacement set of stairs, front boundary wall, a new retaining wall and associated soft landscaping work.

### 4.2 Access

4.2.1 Site access is encumbered by the theoretical Root Protection Area (RPA) of the following retained tree – T001. The kerb will be lowered adjacent to the site's northern boundary at the location annotated on the attached drawing no. 7007-D-AIA. The pavement will then be carefully regraded and surfaced to marry in with the on-site levels, as discussed at item 4.4.3. As this area currently comprises of hard surfacing and a service route is visible within the pavement at this location, it is considered this activity is unlikely to result in damage to the roots of T001.

### 4.3. **Demolition**

- 4.3.1 Demolition of ancillary retaining walls and sets of stairs affects the theoretical RPA of the following retained trees T001 and T002. For part of these areas, the presence of both long existing hard surfacing and structures are considered likely to have precluded significant root encroachment. However, to ensure there is no damage to the roots, stems or canopies of these trees, all demolition works must only be completed with appropriate machinery or by hand within the calculated RPA. In the proximity of T001, all walls and material must be demolished away from its stem (often referred to as "top down, pull back"). Furthermore, all demolition works within the theoretical RPA of T001 and T002, including the removal of existing hard surfacing, must be completed under arboricultural supervision.
- 4.3.2 Following demolition of the ancillary walls and sets of stairs, the existing earth within the front garden will be removed to a depth not exceeding 1.25m measured from the top of the existing northern boundary wall, which will then facilitate construction of the parking space and bin store. As discussed at item 4.4.2, no adverse arboricultural implications are expected.

### 4.4 **Construction**

- 4.4.1 A site investigation using an air-spade was completed by Robert Grist of Gristman Tree Surgery and undertaken with the supervision of Hayden's Arboricultural Consultants on the 31<sup>st</sup> October and 1<sup>st</sup> November 2018 in the vicinity of T001. The location of the test trench and photographs are shown on the attached drawing no. 7007-D-AIA.
- 4.4.2 The site investigation demonstrated that at a depth of 140mm lower than the footpath, external to site, is a course bricks and within the site circa. 200mm from the visible boundary wall is a secondary wall with an external bitumen-like lining. No structural roots were unearthed in the trial trench and it is apparent the secondary wall and lining have therefore acted as an effective root barrier.



As a result, it is considered the proposed level change required to facilitate the implementation of the proposed landscaping will not result in any damage occurring to the structural roots of T001. No adverse arboricultural implications are therefore expected.

- 4.4.3 Installation of new hard surfaces that encroaches within the theoretical RPA of T001 and T002. This should be attended to by the use of "no dig" construction methods. A sample design of "no dig" surfacing is provided. However, the exact specification (adhering to the principles of the sample design) must be provided by a Civil Engineer who can confirm that the finished levels and load bearings are achievable with this type of design without cutting into the ground beyond a depth of 1.25m measured from the top of the existing boundary wall. This surfacing should be installed immediately after excavation of the front garden.
- 4.4.4 Construction of foundations or structural supports encroach within the calculated RPA of two trees to be retained - T001 and T002. In regard to the replacement set of stairs adjacent to the site's eastern boundary there will be no need for a foundation design that protects tree roots, as in this situation the existing set of stairs on a similar footprint is likely to have had a limiting effect on root growth. It is therefore reasonable to conclude that no significant root disturbance is likely. However, the replacement front boundary wall is cracked and deformed immediately adjacent to the stem of T001. Although the wall is being constructed on the existing foundation footprint, thereby ensuring no adverse arboricultural implications are expected, given the proximity of the proposed construction to the tree it is recommended that a Structural Engineer is consulted to assess the implications of the tree's retention on the required foundation design.
- Although excavation and soil re-modelling is shown to encroach within the RPA 4.4.5 of two trees to be retained - T001 and T002, as discussed at item 4.4.2 the excavation that is necessary to implement the proposed landscaping work will not result in damage to the structural roots of these trees as no roots were found at a depth greater than the necessary excavation.

#### 4.5 **Requirement for Tree Protection**

Prior to the commencement of demolition a Barksaver will be attached to the 4.5.1 stem of T001.

#### 4.6 Compound

4.6.1 The site provides limited internal space to locate a construction compound outside the RPA of retained trees. As such the project will require careful phasing to manage the storage of materials.

### 4.7 Phasing

The approval involves the integration of a number of complex aspects that 4.7.1 affect tree protection. For this reason, the project must be carefully phased to ensure the protection of retained trees at all times. Shown on the attached drawing no. 7007-D-AIA is a phasing recommendation to cover the major operations on site as they affect retained trees.



#### 4.8 Monitoring

4.8.1 In accordance with item 6.3 of BS 5837:2012, the site and associated development should be monitored regularly by a competent Arboriculturalist to ensure that the arboricultural aspects of the planning permission are complied with. Shown on the attached drawing no. 7007-D-AIA is an auditable monitoring schedule to assess the progress of key site events/activities.

#### 4.9 **Cultural Implications for Retained Trees**

4.9.1 There are no cultural implications for any retained trees in order to permit development.

### 4.10 Landscape Implications

4.10.1 It is not necessary to fell any trees in order to achieve the proposed layout.

### 4.11 **Post Development Implications**

- 4.11.1 No adverse arboricultural implications are considered reasonably foreseeable for the trees that remain provided that the recommendations of this report are complied with in full.
- 4.11.2 Due to the dynamic nature of trees and their interaction with the environment, their health and structural integrity is liable to change over time. It is therefore recommended that all trees on or adjacent to the site be inspected on an annual basis.

# 5.0 Design Advice, Arboricultural Method Statement & **Tree Protection Plan**

#### 5.1 Securing of Tree Structure and Root Protection Areas (RPA)

- 5.1.1 The trees to be retained will be protected by the use of ground protection and Barksavers installed in the positions indicated on the attached Arboricultural Impact Assessment & Tree Protection drawing no. 7007-D-AIA. These tree protective measures will be in accordance with the requirements of BS 5837:2012.
- 5.1.2 All tree protective measures will be installed prior to any demolition or development commencing on the site, therefore ensuring the maximum protection. These protective measures will be regarded as sacrosanct and, once installed, will not be removed or altered without the prior consent of the LPA.

#### 5.2 Location of Site Office, Compound and Parking

The position of the office, compound and parking will be agreed in writing with 5.2.1 the LPA prior to commencement of any permitted development works. Any proposed re-location of these items through the various phases of development will be agreed prior to re-siting with the LPA.



### 5.3 **On Site Storage of Spoil and Building Materials**

- 5.3.1 Any facilities for the storage of oils, fuels or chemicals shall be sited on impervious bases and surrounded by impervious bund walls. The volume of the bund compound shall be at least equivalent to the capacity of the tank plus 10%. If there is a multiple tankage, the compound shall be at least equivalent to the capacity of the largest tank, or the combined capacity of interconnected tanks, plus 10%. All filling points, vents, gauges and sight glasses shall be located within the bund. The drainage system of the bund shall be sealed with no discharge to any watercourse, land or underground strata. Associated pipework shall be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets shall be detailed to discharge downwards into the bund.
- 5.3.2 All material storage facilities and work areas must consider the effects of sloping ground on the movement of potentially harmful liquid spillages towards or into protected areas.

### 5.4 Services

5.4.1 No new services routes are currently proposed within the RPA's of retained trees.

### 5.5 **Construction within the Root Protection Area**

5.5.1 Where it is shown that the construction of a boundary wall encroaches within the RPA of a retained tree, the foundations of the wall or dwelling will be designed in such a manner so as to minimise the detrimental effect of the construction on the tree's roots. In this instance the replacement boundary wall is being constructed on the existing foundation footprint, thereby ensuring no adverse arboricultural implications are likely. However, given the proximity of the proposed construction to the tree it is recommended that a Structural Engineer is consulted to assess the implications of the tree's retention on the required foundation design.

### 5.6 **Reporting and Monitoring Procedures**

5.6.1 In accordance with item 6.3 of BS 5837:2012, the site and associated development should be monitored regularly by a competent Arboriculturalist to ensure that the arboricultural aspects of the planning permission (e.g. the installation and maintenance of protective measures and the supervision of specialist working techniques) are implemented. Furthermore, regular contact between the Site Manager and the Arboriculturalist allows them to effectively deal with and advise on any tree related problems that may occur during the development process. This system should be auditable. Should any issues arise during the arboricultural monitoring of the development the Arboriculturalist will contact the Local Planning Authority and appropriate action taken only with the prior permission of Mr Rupert Horrocks and the LPA.

# 6.0 Recommendations

6.1 It is recommended that the measures detailed in this report are implemented in full to provide retained trees with the highest level of protection during the process of demolition and construction.



# 7.0 Limitations & Qualifications

Tree inspection reports are subject to the following limitations and qualifications.

### General exclusions

Unless specifically mentioned, the report will only be concerned with above ground inspections. No below ground inspections will be carried out without the prior confirmation from the client that such works should be undertaken.

The validity, accuracy and findings of this report will be directly related to the accuracy of the information made available prior to and during the inspection process. No checking of independent third-party data will be undertaken. Hayden's Arboricultural Consultants Limited will not be responsible for the recommendations within this report where essential data are not made available or are inaccurate.

This report will remain valid for one year from the date of inspection but will become invalid if any building works are carried out upon the property, soil levels altered in any way close to the property, or tree work undertaken. It must also be appreciated that recommendations proposed within this report may be superseded by extreme weather, or any other unreasonably foreseeable events.

If alterations to the property or soil levels are carried out, or tree work undertaken, it is strongly recommended that a new tree inspection be carried out.

It will be appreciated, and deemed to be accepted by the client and their insurers, that the formulation of the recommendations for the management of trees will be guided by the following: -

- 1. The need to avoid reasonably foreseeable damage.
- 2. The arboricultural considerations tree safety, good arboricultural practice (tree work) and aesthetics.

The client and their insurers are deemed to have accepted the limitation placed on the recommendations by the sources quoted in the attached report. Where sources are limited by time constraints or the client, this may lead to an incomplete quantification of the risk.

Signed:

November 2018..... For and on Behalf of Hayden's Arboricultural Consultants Limited



# 8.0 References

British Standards Institute. (2010). *Recommendations for Tree Work BS* 3998:2010 BSI, London.

British Standards Institute. (2012). *Trees in Relation to Design, Demolition and Construction – Recommendations BS5837:2012* BSI, London.

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Patch D. Holding B. (2006) *Arboricultural Practice Note 12 (APN12), Through the Trees to Development.* Arboricultural Advisory and Information Service (AAIS).

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Biddle P.G. (1998). *Tree Root Damage to Buildings, Volumes 1 & 2.* Willowmead Publishing Ltd

British Standards Institute. (1999). *Code of Practice for Site Investigations BS 5930:1999* HMSO, London.

Roberts J., Jackson N. & Smith M. (2006). *Research for Amenity Trees No.8: Tree Roots in the Environment*: Department for Communities and Local Government, HMSO, London.

Strouts R.G. & Winter T.G. (1994). *Research for Amenity Trees No.2: Diagnosis of Ill-Health in Trees*. Department of the Environment, HMSO.



# 9.0 Appendices

Appendix	Α	Species List			
Appendix	В	Schedule of Trees			
Appendix	С	Explanatory Notes			
Appendix	D	Tree Preservation Order Enquiry/Response			
Appendix	Е	Advisory Information & Sample Specifications			
1.	BS 5837	7:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care			
2.	Europea	uropean Protected Species and Woodland Operations Checklist (v.4)			
3.	Method	Method Statement for 'No Dig' Construction in line with Arboricultural Practice Note 12			
	'Through the Trees to Development'				
4.	BarkSav	3arkSavers Specification			
5.	MultiTra	ck Ground Guards Specification			

Appendix **F** Drawing no: 7007-D-AIA



# Appendix A - Species List

## Species List:

Laurel

Prunus laurocerasus 'Rotundifolia'

Lime *Tilia x europaea* 



# Appendix B

Schedule of Trees

### SCHEDULE OF TREES (AIA) 44 Platts Lane, Hampstead, London,

Surveyed By: Liz Beckett Date: 01/11/2018 Managed By: Liz Beckett

On site         Common Lowest Base Branch         Age State Branch         Wolfer Demond Ground Cover         Coll         Coll         (13)           H001         Common Laurel         50         1.2         Moderate Wolfs         No.6, EG 5, 50.5, Moderate         Maintained Laurel Hedge comprising Wolfs         Call         No work required.         4           No         1.1         0.02m         EM         Moderate Wolfs         Moderate Wolfs         Maintained Laurel Hedge comprising wolfs         Call         No work required.         4           No         9.84         2.1.4m         M         Moderate Wolfs         State State Moderate         State State Moderate         State State Moderate         State Moderate         No         No         State Moderate         No         No         State Moderate         No         No         No work required.         4           No         9.84         2.1.4m         M         Moderate Moderate         No         State Moderate         State Moderate         State Moderate         State Moderate         State Moderate         State Moderate         No         No         No         A           No         9.84         2.1.4m         M         Moderate         Moderate         State Moderate         State Moderate         State Moderate <th>TreeNo</th> <th>Species</th> <th>DBH</th> <th>Не</th> <th>ight</th> <th>Visual</th> <th>Crown Spread</th> <th>Problems / Comments</th> <th>BS</th> <th>Work Required (TS)</th> <th>Priority</th> <th>Work Required (AIA)</th> <th>Priority</th>	TreeNo	Species	DBH	Не	ight	Visual	Crown Spread	Problems / Comments	BS	Work Required (TS)	Priority	Work Required (AIA)	Priority
On site     RPA (m)     Aspect     Aspect     Supect     Supect     Ground Cover       H001     Common Laurel     50     1.2     Moderate     N0.5, E0.5, S0.5, W.0.5     Maintained Laurel hedge comprising     C2.     No work required.     4       No     1.1     10 + years     Moderate     work software     work software     All space software     All space software     4       No     1.1     10 + years     Moderate     work software     Software     Software     4       No     820     17     High N4.5, E0.4, S3.5, W.30, Obc. Base of the training wall to the south is domain a southage of 4 Histo Lane's from thorit poundary of 4 Histo Lane's from thorit poundary of 4 Histo Lane's from thorit participation is southing and the south is domain a southage of the training wall to the south is domained to retaining wall to the south is domained to the south is down the pattern the south is domained to the south is domained to the south is domained to the south is down the pattern hypolal to the west is also deformed. Lang to column the south is down the pattern hypolal to the west is also deformed. Lang to column the south is down the pattern hypolal to the west is also deformed. Lang to column the south is down the pattern hypolal to the west is also deformed. Lang to column the south is down the south is do			Min Dist	Crown	Lowest	Age	Water Demand		Cat		(TS)		(AIA)
H01       Common Laurel       50       1.2       Moderate       N05, EG, S05, S05, Maintained Laurel hedge comprising of 10 pains planted in a relaxing wall separating the site from no.28.       C2       No work required.       4         No       1.1       10 + years       Mixed softmate (in a relaxing wall separating the site from no.28.       C2       No work required.       4         T001       Common Lime       820       17       High N4.5, E40, S3.5, Highway tree set within a tarmation of the total set on the south is good.       9.84       2.1.4m       M       Moderate       Moderate       B1       No work required.       4         No       304.2       20+ years       Mixed softmate       Southage of 44 plants Lanes front ognome retaining wall to the south is good.       B1       No work required.       4         No       304.2       20+ years       Mixed softmate       Southage of 44 plants Lanes fortom tognome retaining wall to the south is good.       B1       No work required.       4         No       304.2       20+ years       Mixed softmate       Southage of 44 plants Lanes fortom tognome retaining wall to the south is good.       B1       No work required.       4         No       304.2       20+ years       Mixed softmate       Southage of 44 plants Lanes fortom tognome retaining wall to the southis southage of 44 plants Lanes fortom tognotem retaining wall to th	On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
No     0.6     0-2m     EM     Moderate surface     wall separating the site from no.28.       11.1     10 + years     Mixed softhard surface     wall separating the site from no.28.     Image: Common Lime     820     17     High NJ, SE, E4,0, S3.5, 9.84     Highway tree set within a tarmac footpath. Centre of stem to front sourface     B1     No work required.     4       No     9.84     2.1-4m     M     Moderate Wised softhard surface. Tarmac     500.1 The wall measure store footpath. Centre of stem to front in height and is vertically split from to b botton immediately agacent to the tree's stem indicating direct damage. The retaining wall to the west is also cotpath appears to footpath and the stem set back SOm the parement dage. Disruption to the tarmac footpath appears to follow the pattern typical of root growth. If has been pollarided nour set so and becotpath appears to follow the pattern typical of root growth. If has been pollarided nour growth. If has been growth appears stable. Leaf size, density and colour indicates good physiological condition.     B1     No work required.     4       1002     Common Lime     830     14     High     N3.0, E2.5, S3.0, NV3.0     It has been pollarided not clast good physiological condition. Postioned within a surface. Tarmac     B1     No work required.     4	H001	Common Laurel	50	1	.2	Moderate	N0.5, E0.5, S0.5, W0.5	Maintained Laurel hedge comprising of 10 plants planted in a retaining	C2	No work required.	4		
No       1.1       10 + years       Miced softhard surface         T001       Common Lime       820       17       High NA 5, E40, S3.5, Moderate       Highway tree set within a tarmac foopath. Centre of stem to front boundary of 44 Pitts Lare's front garden retaining wall to the south is gurden retaining wall to the south is gurden retaining wall to the southace, Tarmace       B1       No work required.       4         No       304.2       20+ years       Miced softhard surface, Tarmace       B1       No work required.       4         No       304.2       20+ years       Sint Sint Sint Sint Sint Sint Sint Sint			0.6	0-2m		EM	Moderate	wall separating the site from no.28.					
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Torog       Common Lime       830       14       High       N3.0, E2.5, S3.0, Ut has been pollarded historically at approximately 15m above ground level with na approximately 15m above ground level with na approximately 15m above ground level with na above ground level	No		304.2			20+ years	Mixed soft/hard surface, Tarmac						
No     9.96     2.1-4m     M     Moderate       100     311.7     20+ years     Mixed soft/hard surface, Tarmac	T002	Common Lime	830	1	4	High	N3.0, E2.5, S3.0,		B1	No work required.	4		
No     311.7     20+ years     Mixed soft/hard surface, Tarmac     Mixed soft/hard surface, Tarmac			0.06	214~		М	W3.0			•			
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retaining wai out in neight.	NO		311.7			20+ years	surface, Tarmac						

# Appendix C

Explanatory Notes

# **Explanatory Notes**

### Categories





Below is an explanation of the categories used in the attached Tree Survey.

- No Identifies the tree on the drawing.
- **Species** Common names are given to aid understanding for the wider audience.

BS 5837Using this assessment (BS 5837:2012, Table 1), trees can be dividedMaininto one of the following simplified categories, and are differentiated by<br/>cross-hatching and by colour on the attached drawing:

**Category A** - Those of high quality with an estimated remaining life expectancy of at least 40 years;

**Category B** - Those of moderate quality with an estimated remaining life expectancy of at least 20 years;

**Category C** - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm;

**Category U** - Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

- **BS 5837** Table 1 of BS 5837:2012 also requires a sub category to be applied to
- Subthe A, B, C, and U assessments. This allows for a further understanding of<br/>the determining classification as follows:

Sub Category 1 - Mainly arboricultural qualities;

Sub Category 2 - Mainly landscape qualities;

Sub Category 3 - Mainly cultural values, including conservation .

Please note that a specimen or landscape feature may fulfil the requirements of more than one Sub Category.

**DBH** Diameter of main stem in millimetres at 1.5 metres from ground level.

(mm) Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.

Age Recorded as one of seven categories:

**Y** Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.

**S/M** Semi-mature. An established tree, but one which has not reached its prospective ultimate height.

**E/M** Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.

**M** Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.

**O/M** Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.

**V** Veteran. An over-mature specimen, usually of high value due to either its age, size and/or ecological significance



D Dead.

Height Recorded in metres, measured from the base of the tree.

- **Crown Base** Recorded in metres, the distance from ground and aspect of the lowest branch material.
- **Lowest Branch** Recorded in metres, the distance from ground and aspect of the emergence point of the lowest significant branch.

**Life Expectancy** Relates to the prospective life expectancy of the tree and is given as 4 categories:

- 1 = 40 years+;
- 2 = 20 years+;
- 3 = 10 years+;
- 4 = less than 10 years.

# **Crown Spread** Indicates the radius of the crown from the base of the tree in each of the northern, eastern, southern and western aspects.

- **Minimum Distance** This is a distance equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level tree for multi stemmed specimens. (BS 5837:2012, section 4.6).
- **RPA** This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as "a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority". The RPA is shown on the drawing. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority's tree officer.
- **Water Demand** This gives the water demand of the species of tree when mature, as given in the NHBC Standards Chapter 4.2 "Building Near Trees".

**Visual Amenity** Concerns the planning and landscape contribution to the development site made by the tree, hedge or tree group, in terms of its amenity value and prominence on the skyline along with functional criteria such as the screening value, shelter provision and wildlife significance. The usual definitions are as follows:

- Low An inconsequential landscape feature.
- Moderate Of some note within the immediate vicinity, but not significant in the wider context.
- High Item of high visual importance.

Problems/May include general comments about growth characteristic, how it isCommentsaffected by other trees and any previous surgery work; also, specific<br/>problems such as deadwood, pests, diseases, broken limbs, etc.

# **Work Required** Identifies the necessary tree work to mitigate anticipated problems and deal with existing problems identified in the "Problems/comments" category.





Work Required (AIA)	Identifies the tree work specifically necessary to allow a proposed development to proceed.
Priority	This gives a priority rating to each tree allowing the client to prioritise necessary tree works identified within the Tree Survey.
	1 Urgent – works required immediately;
	<b>2</b> Works required within 6 months;
	<b>3</b> Works required within 1 year;
	<b>4</b> Re-inspect in 12 months,
	<b>0</b> Remedial works as part of implementation of planning consent.



- Access Facilitation Pruning One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
- Arboricultural Method Statement Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
- Arboriculturist Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
- **Competent Person** Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. NOTE a competent person is expected to be able to advise on the best means by which the recommendations of this British Standard may be implemented.
- ConstructionSite-based operations with the potential to affect existing<br/>trees.
- **Construction Exclusion Zone** Area based on the root protection area from which access is prohibited for the duration of a project.
- **Root Protection Area (RPA)** Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
- Service Any above or below ground structure or apparatus required for utility provision.
  - **NOTE** examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.
- StemPrincipal above ground structural component(s) of a tree that<br/>supports its branches.
- StructureManufactured object, such as a building, carriageway, path,<br/>wall, service run, and built or excavated earthwork.
- Tree Protection PlanScale drawing, informed by descriptive text where necessary,<br/>based upon the finalized proposals, showing trees for<br/>retention and illustrating the tree and landscape protection<br/>measures.
- Veteran TreeTree that, by recognized criteria, shows features of biological,<br/>cultural or aesthetic value that are characteristic of, but not<br/>exclusive to, individuals surviving beyond the typical age<br/>range for the species concerned.NOTE these characteristics might typically include a large<br/>girth, signs of crown retrenchment and hollowing of the stem.



# Appendix D

Tree Preservation Order Enquiry/Response

### **Gabrielle Justesen**

То:	mathias.genet@camden.gov.uk
Subject:	TPO Enquiry - 7007 - 44 Platts Lane, Hampstead, London, NW3 7NT
Attachments:	7007 - 44 Platts Lane, Hampstead, London, NW3 7NT - Site Map.pdf

Dear Mr Genet,

Could you please advise if the above mentioned site is covered by TPO or is located within a Conservation Area?

I have attached a map for your use.

I look forward to hearing from you.

Kind regards

### Gabby Justesen Office Manager - South West Office

(Please note my working hours are 9am - 1pm)



### Tel: 01722 657423 gabby@treesurveys.co.uk www.treesurveys.co.uk

Head Office: 5 Moseley's Farm Business Centre, Fornham All Saints, Bury St. Edmunds, Suffolk, IP28 6JY South West Office: Unit 7, Enterprise House, Cherry Orchard Lane, Salisbury, Wiltshire, SP2 7LD

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By entering into email correspondence with Hayden's, you are confirming that you are happy for us to keep your details on file, stored securely, to enable us to provide services and advice at any future point. If you would not like your details stored on our secure client database, please email info@treesurveys.co.uk. Your personal details will not be used for any marketing purposes.



Please consider your environmental responsibility - think before you print!

# Find a conservation area

### **Conservation Area Map**

Check whether an address is in a conservation area. Click the map or enter a full street name or postcode (If the map has not loaded, display the map)

### Management strategies for conservation areas



# Appendix E

Advisory Information & Sample Specifications



\*\* See Commentary on Clause 6.

2.

	European Protected Species and woodlar Complete all sections of the Ch	nd operati ecklist	ions. (V4)
		✓	
	Checklist		Details
1	Are you within, or close to, the known mapped range of any of the protected species OTHER THAN BATS which are potentially everywhere? Tick any that apply. See distribution maps in the Good Practice Guidance for each species -	YES NO	Name of Wood:
	<ul> <li>Dormice</li> <li>Otters</li> <li>Great crested newts</li> <li>Sand lizards</li> <li>Smooth snakes</li> </ul>		Grid Reference:
6	Does your wood contain any of the following habitats? Tick any that apply.	YES	Area: (ha)
٢	<ul> <li>Old trees with holes and crevices which might be used bats</li> <li>Species rich scrub/coppice, early growth stage plantations and forest interfaces</li> <li>Rivers on which otters might be found</li> </ul>	NO	
	<ul> <li>Ponds which might be occupied by great crested newts</li> <li>Open areas on heathy soils</li> </ul>		Date of Assessment:
3	Have any of the protected species been recorded in this wood or on adjoining sites? Tick any that apply.	YES	
9	Indicate which sources of information you have checked:	NO	Name of Assessor:
	National Biodiversity Network ( <u>www.nbn.org.uk</u> )     Local Biological Records Centre     Local Wildlife Trust     Other		
	Specify Other:		
4	Have your inspections or any expert surveys found any of the following signs or evidence? Tick any that apply.	YES	
	<ul> <li>Signs (e.g. otter spraint, nuts gnawed by dormice, leaves folded by newts)</li> <li>Sightings (or echo-location)</li> <li>Potential branding or prosting sites (e.g. veteran trace, old trace with crevices)</li> </ul>	NO	
	riverside hollow trees, ponds, timber stacks, large fallen deadwood) Confirmed breeding or roosting sites (i.e. evidence of sites actually being used) Details:		
ск	If you have answered NO to ALL of the above then only bats need to be considered in your operations.		
NT.	If you have answered YES to any of the above then the species concerned must be considered as well as bats.	U	Notes
5	Do the operations comply with Good Practice for bats and any other species found (or likely to be found in your wood) or can the operations be modified to do so?	YES	A licence is not required but continue to ections 6 and 7 below
	Details: Use reverse of form to expand as required:		/ou will need to obtain a licence BEFOF arrying out the work (see EPS Licence Application Forms and Notes)
6	Whether or not a licence is required	YES	
Ľ	mas the information been communicated to operators (including the location of breeding sites and sensitive areas)? Tick any that apply.	NO Y	/ou may commit an offence if you do no ell your operators about the protected
	<ul> <li>Included in documentation (e.g. contract, letter of instruction, site assessment or other management plan)</li> <li>Shown to operators and/or their supervisor</li> <li>Marked with paint or hazard tape</li> <li>Shown on the site plan</li> </ul>	s	pecies in your wood.
		VES	
7	Have arrangements for supervision been made to ensure Good Practice guidance is complied with during the operations? Details:	NO NO	ou may commit an offence if you do no
		ti C	ake steps to ensure that your operators comply with the Good Practice guidance

### 3. METHOD STATEMENT FOR "NO-DIG" CONSTRUCTION IN LINE WITH ARBORICULTURAL PRACTICE NOTE 12 "Through the Trees to Development"

Prior to commencing any demolition or construction on site, erect protective fencing around trees to form an exclusion zone (see attached plan).

This will ensure that roots will not be severed during the construction work and the soil in the area of the exclusion zone will not be compacted thus enabling oxygen to continue to diffuse into the soil beneath.

Construction of the driveway, path or other hard surface should be undertaken in dry weather between May and October when the ground is driest and least prone to compaction.

- 1 Kill ground vegetation using a translocated herbicide (glyphosate), ensuring that the selected herbicide doesn't damage the root of the tree(s) below the surface of the path.
- 2 Remove the dead or organic material from the site and ensure that large stones and shrub stumps are removed from the proposed route.
- 3 Any tree stumps should be ground out rather than excavated to minimize soil disturbance.
- 4 The resulting hollows and any other holes along the route driveway, path or other hard surface should be filled with sharp sand.
- 5 Lay *Terram Geotextile* matting across the full width of the driveway, path or other hard surface. This will prevent the intrusion of roots into the sub-base whilst still allowing nutrients and gaseous exchange.
- 6 Lay *Terram 150 Geocell* (cellular confinement system). (This is available from the Terram Ltd, tel: 01495 757722, fax: 01495 762393, and can be cut with a Stanley knife on site to the length, width and profile of the path required).
- 7 The driveway, path or other hard surface is to be supported against 150 x 20mm tanalised softwood boarding and 200mm long tanalised soft wood pegs driven into the ground at 1500mm centres.
- 8 Carefully push 20mm 40mm gravel chippings (no fines) into the *Geo 150 Geocell* matting to form an aggregate sub-base.
- 9 The chippings should be placed at one end of the matting and pushed/spread across the matt to prevent compaction of the soil, working on either side of the driveway, path or other hard surface.
- 10 Compact the sub base to ensure binding with the *Geocell* and to minimise future wheel rutting.
- 11 Lay second layer of *Terram Geotextile* matting across the full width of the driveway, path or other hard surface. This will prevent the intrusion of fines into the gravel chippings.
- 12 Add layer of 'no fines, sharp sand and compact if using pavers as surface treatment.
- 13 Place proposed surface treatment (e.g. Pavers) on top of the compacted sub-base to form the finished surface to the path and 'bank up' the edging with topsoil, which is to be grass seeded in spring/autumn. This will form a gentle slope from the edging to the existing ground level.







# The Aquaflow range of permeable paving



Formpave have designed a range of Aquaflow paving blocks to be used in conjunction with either tanked or infiltration systems.

The range consists of six blocks manufactured from concrete with a tensile splitting strength in accordance with BS EN 1338:2003.

Included within the range is the Aquaslab which has been designed for use on non-trafficked pedestrian areas. All of the blocks and slabs provide drainage through vertical channels and will allow water through the surface at a rate of approximately 9000mm per hour (9000 litres per m<sup>2</sup> per hour). The Inbitex geotextile beneath the laying course will allow approximately 4500 litres per m<sup>2</sup> per hour through and this figure should be used for design purposes. The Aquaflow ML block system consists of an interlocking block with specialist top, bottom and edge blocks and has been specifically designed for heavy duty applications.

The ML blocks can be laid by hand or by machine. Where the blocks are machine laid modules of .65m<sup>2</sup> are laid in one pass. Laying rates of over 600m<sup>2</sup> per day have been readily achieved with a three man crew.  Other colours and finishes such as EcoGranite are available to special order.





# Terram Cellular Confinement System For the protection of tree roots

# **Cellular Confinement Systems**

The perfect no-dig ground reinforcement system. Provides above-ground load bearing for paths and driveways whilst preventing soil compaction and protecting tree roots.

### Damage to tree roots during driveway construction

The conventional method for constructing paths, drives and roads involves excavating soil to enable the installation of a sub-base that will adequately support traffic loads. Unfortunately this method of construction can badly damage trees since a by-product of the excavation is root severance. Most people don't realise that trees are very sensitive to disturbances in the soil around them. The reason for this is that, contrary to popular belief, trees do not have massive roots that go deep down into the soil but rather have lots of relatively small roots (frequently only a few centimetres in diameter) which spread out from the tree very close to the soil surface for quite large distances (often equal to the height of the tree).

If you imagine a tree system as a wine glass standing on a dinner plate you will have a roughly accurate idea of the above and below ground proportions of a tree (Figure 1). It may come as a surprise to learn that about 80-90% of all tree's roots are in the upper metre of soil (Figure 2). These roots serve two purposes: anchorage and absorption of moisture. If even relatively small roots are severed, for example by digging a trench, the tree can begin to suffer symptoms of drought stress as it is no longer able to obtain all its water needs. In addition the tree may become unstable as cutting the roots is a bit like cutting the guy roots on a tent.

It is not only root severance that may harm trees but also compaction of the soil. If the root zone of a tree is not protected during development then the soil may become compacted by vehicles or heavy machinery moving repeatedly over the ground (Figure 3). The effect of compaction is to close up pores in the soil which contain air and water. The tree's roots then suffer from both a lack of oxygen and a lack of moisture, and, as the soil becomes denser, roots find it hard to penetrate the soil. All this can lead to a dieback of the root system and frequently dieback of the tree. Raising of soil levels has a similar damaging effect as it deprives roots of oxygen and creates a build up of harmful carbon dioxide around the roots.





# So, How Do Tree Roots Grow?

People often wrongly assume that tree roots are thick and grow down into the soil for many metres (Figure A). In reality tree roots:

- Are usually only large near to the trunk and get thinner the deeper and further from the tree they go. At a distance of just 3-4 metres from the trunk most roots are no bigger than a few centimetres in diameter.
- Spread outwards from the trunk, more or less parallel with the soil rather than growing downwards (Figure B).
- Can spread horizontally in any direction for a distance equivalent to at least the tree's height.
- Are usually relatively shallow; 80-90% of a tree's roots are in the Upper metre of soil. Few roots reach depths of more than about 2-3 metres and at this depth they are only a few millimetres in diameter.



Figure A: Incorrect

Figure B: Correct

# British standard for trees in relation to construction and APN1

In recognition of the fact that trees are sensitive to disturbance the British Standards Institution has published recommendations on how to protect trees during development. In line with the earlier British Standard (BS 5837: 1991) the most recent guide, published in September 2005 (see further reading), recommends that there should be a 'root protection area' in which development should not be permitted.

In most case this are has a radius equal to twelve times the trunk diameter and forms a exclusive zone around the tree protected by means of robust fencing. This guidance had the effect of prohibiting the installation of roads, driveways and parking areas near to trees. But in 1996 the Arboricultural Advisory and Information Service published Arboricultural Practice Note 1 Driveways Close to Trees (APN1) which suggested that driveways could be installed within the root protection area provided roots and soil were not damaged.

The conditions set out for a suitable system were as follows:

- Roots must not be severed
- · Soil should not be compacted
- Free movement of oxygen and carbon dioxide into and out of the soil should be maintained
- · Water infiltration into the soil should not be impeded

The, APN1 advised that driveways could be installed within the root protection zone provided that an above-ground, no-dig construction was used. This advice was incorporated into the recent British Standard which recommended that the most effective means of achieving this was through the use of a three-dimensional cellular confinement system.

## Terram Geocell ground protection

Terram Geocell is an ideal solution for providing ground reinforcement with tree protection areas. It confines fill material within its strong flexible cell structure in order to provide a stable base for traffic and an even load distribution (Figure 3 and 4). A big advantage of Terram Geocell over other products is that the geotextile material is permeable and allows lateral movement of air and water.

Terram Geocell is suitable for permanent woodland trails, paths, driveways, roads and parking areas.

It may also be used as temporary ground reinforcement where access to a site is limited by the presence of trees. Once operations on site are completed the temporary surface can easily be removed and the ground left undamaged.



No ground reinforcement: Unreinforced soil becomes compacted and rutted by vehicle loads



Geocell ground reinforcement: Forces are spread Laterally reducing loads on the underlying soil





Figure 4. Static loading tests of up to 300kN/m2 revealed only minimal deflection (<5mm) of the surface of filled Geocell



# Getting the design right

Every application will be slightly different so it is important to have the input of an engineer and arboriculturist together in order to design the right solution for an installation near to trees. The Arboriculturist will be able to advise on tree protection issues and the engineer will be able to specify details such as cell depth, fill type (Figure 5) and load bearing capacity.

For example, the design of a pedestrian footpath may be less rigorous than that of an access road that may have to withstand the load of a heavy crane or lorry.

But there are some principles that should be considered in every application (see Figure 6):

- The ground must be protected at all stages during installation there is no point in installing a ground protection system where soil or roots have already been damaged by other site activities
- Terram Geotextile should be used underneath the Geocell to prevent fill materials penetrating the soil
- The fill material should be granular and should permit water and air flow
- Any edgings should be carefully designed to avoid excavation and root severance
- A permeable and gas-porous wearing course should be installed above the Geocell
- In most case the driveway or parking area should not exceed 20% of the root protection area.

If correctly designed and installed the Geocell cellular confinement system should allow paths, drives and parking areas to be located within a tree's protection zone, thus enabling development that might not otherwise be permitted by local authorities.



Figure 6. Components of an above-ground load bearing platform suitable for vehicles

Terram Ltd, Mamhilad, Pontypool, Gwent NP4 0YR, United Kingdom

Cellular Confinement Systems 1 June 2006

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## Example installation Driveway construction

- 1 Remove grass and other vegetation and the upper organic layer Of soil by hand digging. Arisings should be wheel-barrowed out of the tree protection area. Machinery (even low ground pressure tracked vehicles) should not be used due to the danger of soil compaction
- 2 Small depressions may be filled with sharp sand
- 3 Lay out Terram Geotextile over the driveway area
- 4 Lay out Terram Geocell and carefully peg in place
- 5 Fill the cells working from the area furthest from the trees first. Further filling should be carried out using the filled Geocell as a platform
- 6 Install a permeable wearing course, e.g. porous tarmac, block paviours on a sharp sand base (a further layer of Terram above the filled Geocell will be needed in this case to prevent the sand mixing with the granular fill below).

### Conclusion

BS5837 Trees in Relation to Construction and APN1 allow the careful development of paths, drives and roads within the root protection area of trees provided an above-ground, no-dig construction is used.

The use of Terram Geocell as a ground reinforcement Platform is Therefore and Ideal solution that can facilitate such development near to tree which might not otherwise be permitted due to fears of damage to soil structure and tree roots.

### Further reading

BS 583: 2005 Trees in relation to construction – Recommendations. British Standards Institution.

Dobson, M. (1995): Tree Root Systems. Arboriculture Research and Information Note 130/ARB/95. Arboricultural Advisory and information Service, Farnham.

Patch, D. and Dobson, M. (1996). Driveways Close to Trees. Arboricultural Practice Note 1. Arboricultural Advisory and Information Service, Farnham.

Nicholson, R. (2001). APN1, BS5837 & PPG 3, Guidance for Trees: Conflict or Complement? Arboricultural Journal 25, 361-376.

Products	Panel size	Depth	Cell
Available			Diameter
Erocell 22/20	5.0m x 10.1m	200mm	220mm
Erocell 25/15	7.0m x 10.0m	150mm	250mm
Erocell 25/10	7.0m x 10.0m	100mm	250mm

The cell depth and diameter is dependent upon specific site conditions

Recommendations for use are a guide and purchasers must determine the suitability of the product for their intended use. Terram Ltd assumes no liability for claims beyond the replacement value of the product.

The instructions contained here are a general guide only and therefore cannot cover all aspects involved or all possible uses of Terram Cellular System. If you are not experienced in carrying out projects of the type Terram Cellular System is designed for, you should seek advice from someone appropriately qualified. Any recommendations or suggestions (including design guidance) given by or on behalf of Terram on the use of its products for particular applications are given in good faith and (unless otherwise agreed) free of charge, but it remains your responsibility to ensure the use is appropriate and the product correctly installed. Terram, its agents and employees, accept no responsibility for guidance or advice given. Terram guarantees that this product is in accordance with its specification and if not Terram will at its option supply replacement product or reimburse the price paid for it. This states Terram's entire liability, all other liability and responsibility is excluded. THIS DOES NOT AFFECT THE STATUTORY RIGHTS OF A CONSUMER.

### 4. Barksavers Specification



# BarkSavers™

Armored blankets for trees

### **BENEFITS**

- Protection when a fence installation is not possible
  - o Construction along roadways where there are street trees nearby



### A feasible protection alternative

o Especially when combined with aeration and vertical mulching to alleviate soil compaction

### Trunk injury prevention

 $\circ\;$  Avoids wounds that can impede the transport of food and water and cause irreparable harm to tree health.

### Breathable inner cushioning layer

o Inner layer breaths to allow air flow while protecting the bark from injury.

### Unique two-layer design

- Consists of a flexible cushioning wrapped around the trunk, and a rigid outer shell strong enough to withstand the toughest blow
- Available in all sizes to fit your diameter needs

P. O. Box 441 • South Hadley, MA 01075 866.777.8733 (Toll free) • 413.467.7313 (Fax) www.treesnewengland.com



# BarkSavers™

Armored blankets for trees

## **PRODUCT SIZING**

Size Description	Inside Diameters	Overall Height	No. of Straps	Approx. Cost *		
	(mm)	(m)				
Small BS <sup>™</sup>	300	1.2	2	£11.85		
Medium BS <sup>™</sup>	400	1.5	2	£21.50		
Large BS <sup>™</sup>	500	1.8	2	£30.30		
Extra Large BS <sup>™</sup>	600	1.8	3	£46.75		
(*Based on retail, non-bulk product pricing- + deliver & vat per metre.)						

# **DESIGN & CONSTRUCTION**

Trees New England LLC no longer manufactures **BarkSavers**™. Our goal is to provide a re-usable tree protection alternative for architects, builders, contractors, and planners when protective fencing is not an option. Trunk protection at minimal is best especially where other remediation alleviations will be carried out after the completion of the project. We only ask that you credit our Company with the design of the product when **BarkSavers**<sup>™</sup> is used in specification or when in use.

OUTSIDE: Rigid HDPE corrugated pipe

- Protects the bark against injuries from the outside
- Can be purchased from
- metro-flow limited

The Barn, Church Farm, Church Lane, Stockbury, Kent, ME9 7RD

Tel: 01795 843866 Fax: 01795 841701 www.metro-flowltd.co.uk/metro\_twin.htm



INSIDE: Flexible, cushioning protection of fibre/felt carpet padding

• Protects the bark against injuries from inside the pipe

FASTENER: Strap-on construction made of Tree Chain Lock Ties and Lock/Bolt

○ Fastens the BarkSavers<sup>™</sup> firmly to the tree



# BarkSavers™

Armored blankets for trees

## MATERIALS NEEDED TO CREATE A BARKSAVERS<sup>™</sup>

Drainage Pipe Inside Diameter x Height	Carpet Padding (sq metres)	Chain Lock Ties	No. of Ties	No. of Locks/ Bolts
300mm x 1.2m	1.25	1.00m	2	3
400mm x 1.5	1.75	1.25m	2	3
500mm x 1.8m	2.70	1.75m	2	3
600mm x 1.8m	3.60	2.25	3	3

## CONSTUCTION

Cut drainage pipe with a saws all, a circular saw or with a hack saw
 a. Each section of pipe will be cut twice to form 2 halves



Whole Pipe



**Cut Pipe** 

- b. Label on one end of the pipe TOP. This will make the ease of refitting pieces together more easily.
   If making a quantity, label with a number and then top. For eg: TOP – 1 Store same numbers together.
- 2. Cut Chain Lock Ties to specified length, set aside quantity of Locks needed per tie.
- 3. Cut fibre/felt carpet padding to specified length





**BarkSavers**<sup>TM</sup> Armored blankets for trees

## INSTALLATON

- 1. Wrap trunk with carpet padding
- 2. Wrap carpet padding with both halves of split BarkSavers<sup>™</sup>
   Protects the bark against injuries from inside the pipe
- 3. Wrap Chain Lock Ties around at the top, another piece in the middle, and a third piece at the bottom
- 4. Connect the Chain Lock Ties with the Locks/Bolts
   o Acts as security measure



BarkSavers<sup>™</sup> doing their job!

They're not just BS1 BarkSavers<sup>™</sup> really do work

P. O. Box 441 • South Hadley, MA 01075 866.777.8733 (Toll free) • 413.467.7313 (Fax) www.treesnewengland.com

### 5. MultiTrack Ground Guards Specification



0 CRANES SPECIALIS

EQUIPMENT

NEEDEI

RAPID INSTALLATION Lay approximately 50 mats per hour.\*

### TOUGH

Virtually indestructible HDPE polymer supports all vehicle types.

EASY TO HANDLE Lightweight 39kg mats easily handleable with two workers.

### **MULTI-TREAD**

Roadway, Walkway and Smooth tread options cater for various vehicular and pedestrian needs.

ENVIRONMENTALLY FRIENDLY Made from 100% recycled plastic and fully recyclable.

### **GUARANTEED UNBREAKABLE**

Lifetime guarantee against breakage by vehicles up to 120 tonnes (T&Cs apply).

\*FAST, EASY, ECONOMICAL Install approximately 50 mats per hour with a team of 3 plus forklift driver.

www.ground-guards.co.uk +44 (0) 113 267 6000 info@ground-guards.co.uk

267 6000 Ground-Guards

	Mu	ltiTrack	
T NO TH	E UNBRE	KABLE ORIGINAL	百熟熟
2 00	Material:	Special blend of HDPE recycled plastic, fully recyclable	Watch this short video to see MultiTrack in action.
A DECEMBER OF THE OWNER	Overall Size:	2435 x 1215 x 13mm (plus treads)	- Children
MARK SALE OF	Surface Area:	2.95m <sup>2</sup>	A DESCRIPTION OF THE PARTY OF T
Multifrace mats are the strongest in their cotogory	Weight	39ke	建运行建筑
	Tread Options	Roadway, Walkway and Smooth, or a combination	
	Connectors:	10 joining points.	
· Section of the sect	1	A choice of standard clip joiners,	Roadway
using a Humilitiani		low profile joiners or bolted joiners,	Walkway
S. P.Y. MI	-	plus anchor pins	Smooth
	Packed in:	Stillage of 25 mats	Sinootii
	Stillage Pack	Weight: 1105kg	
		Dimensions: 2550 x 1260 x 900mm	
Standard no-tools joniers	Fire Rating:	UL94 HB	
	Slip Testing:	BS7976 part 2	
All a	Deflection:	Tested on varying CBR ground conditions us	ing a 300mm diameter steel
1 3 A	-	platen with 6 tonnes load to simulate the pr	essure of an HGV wheel
Ser of		Ground CBR 11.35%: Deflection 17.68mm	ř
	1	Ground CBR 8.58%: Deflection 20.41mm	i i
		Ground CRP 4% · Deflection 22.00mm	Y.
Low sentile summers for		Ground Core Server Denection 22.00mm	
indiversity plus trotted primees	Guarantee: MultiTrack temporary ro for life against breakage (Uniformly Distributed Lo	ofway mats are guaranteed up to 120 Townes UDs.	ANDIEC
	It is the user's responsible capacity of the ground, a within the weight that the supporting. Ground-Gue whatsoever for any dans from the ground conditio products are used.	Into a assess the boad-bearing ind to only operate with ides ground is capable of safety dys, tics or injury arising ms on which these	EAKABLE
	MultiTrack mats are not purposes. Damage cause (e.g. cuts by digger bucke beneath the mass is not o	suitable to use for bridging d by mechanical equipment to an sharp protinuions overed by this guarance.	round-guards.co.uk

NoAr 25 mills

Ground-Guards +44 (0) 113 267 6000 info@ground-guards.co.uk

# Appendix F

Drawing no: 7007-D-AIA

- Arboricultural Impact Assessments
  - Arboricultural Method Statements
    - Tree Constraints Plans
  - Arboricultural Feasibility Studies
    - Shade Analysis •
    - Picus Tomography
- Arboricultural Consultancy for Local Planning Authority
  - Quantified Tree Risk Assessment •
  - Health & Safety Audits for Tree Stocks
    - Tree Stock Survey and Management
      - Mortgage and Insurance Reports
        - Subsidence Reports •
        - Woodland Management Plans
          - Project Management
            - Ecological Surveys •

