



17 Woodside Avenue, Alverstone Garden Village, Isle of Wight PO36 0JD

M 07867 725238 | **E** info@woodsidetrees.co.uk | **W** www.woodsidetrees.co.uk

Arboricultural Report

**BS 5837:2012 Tree Survey, Arboricultural Impact Assessment,
Method Statement & Tree Protection Plan**

Land at:

22 Manor Close, Havant PO9 1BD

Prepared by: Andrew Southcott

Date: 8th November 2017

Ref: AS/PH/1117 (Rev. A)

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Validation Statement for Local Planning Authority (LPA) Registration

This report is intended to be submitted to Havant Borough Council in support of a planning application. For LPA validation purposes, this report contains the following information:

- A full tree survey compliant to the requirements of BS5837:2012 "Trees in relation to design, demolition and construction - Recommendations", undertaken by a competent and qualified arboriculturist.
- A suitably scaled plan with north point showing the site boundaries and the tree survey information.
- An assessment of the impacts of the proposed development on the existing trees, including recommendations of which trees should be removed/retained.
- An Arboricultural Method Statement and Tree Protection Plan showing the measures to be taken to ensure the retained trees are fully accounted for in the planning and execution of the proposed development.

1. INTRODUCTION

1.1 **Instruction:** I am instructed by Mr P. Heaton to survey trees that could affect or be affected by the proposed development at 22 Manor Close, Havant. This report, in compliance with BS5837:2012 "Trees in relation to design, demolition and construction - Recommendations" (herein referred to as BS5837) is required to accompany the submission of a detailed planning application for construction of a detached car port & annexe. My instruction is to prepare the following:

- A schedule of the relevant trees and all tree data as required by BS5837.
- A Tree Survey Plan (TSP), Constraints Plan (TCP) & Tree Protection Plan (TPP)
- An Arboricultural Impact Assessment (AIA) and Method Statement (AMS)

1.2 **Information provided:** Drawings AS/PH/1117 TSP, TCP and TPP are derived from the following drawings which were supplied to me by PDP Architecture llp and assumed to be accurate:

- *28021-PD100 Site & Location Plan* in PDF format.
- *Existing and Proposed Site Plans* in DWG format.

No topographical site plan has been provided, so the trees have been positioned by triangulating from fixed points on the supplied plan. No information has been received in respect of any proposed changes in ground levels or routing of services.

1.3 **Purpose and scope of this advice:** The tree survey and report have been produced both to assist the design & construction process and to support the planning application process. It is intended to demonstrate the site's arboricultural constraints and to make recommendations regarding the potential impact of the proposal on the trees and vice versa. It focuses on all trees that may affect or be affected by the development proposal, whether within the site boundary or off-site.

1.4 Limitations:

1.4.1 The survey was a preliminary assessment undertaken from ground level, and limited by boundaries, vegetation and other features on site. Observations have been made solely for the purposes of assessment relevant to the planning process, and the report is not a condition survey or safety inspection. Where obvious risks have been observed they have been highlighted in the "preliminary management recommendations" of the tree survey schedule, however potential hazards and their severity are likely to change as the site changes. Binoculars, sounding mallet and probe have been used to aid tree assessment; no invasive or non-invasive internal decay detection equipment have been used in assessing the trees. If more detailed inspections are required, this will be highlighted in the recommendations.

1.4.2 The recommendations and conclusions in this report relate only to the conditions found on site at the time of the inspection, as trees are dynamic organisms whose health and condition can change rapidly. The findings are valid for a period of 12 months from the date of report providing the site remains as it stands at present. Any significant changes to the site which may affect the trees (such as building works, changes in levels, hydrology etc.) would require a re-assessment of the trees.

- 1.4.3 This report is focused on the site in question and does not assess any possible impacts on neighbouring properties, whether relating to subsidence, heave, or direct tree hazards. Similarly, potential direct or indirect tree root damage to built structures on site is not considered within this report. However, it would be prudent to consider the effects of heave on any property if trees are to be removed.
- 1.4.4 This report is intended for use solely by the above client and their agent if applicable, and not for the benefit of any third party. Any person who is not directly involved with this site shall not have any rights under or in connection with it. All rights in this report are reserved. No part of it may be reproduced in any form without the written consent of Woodside Tree Consultancy.
- 1.5 **Ecological Constraints:** The Wildlife and Countryside Act 1981 and amendments made within and subsequent to the Countryside and Rights of Way Act 2000 provides statutory protection to bats, birds and other species that inhabit or use trees. The protection afforded to such species could impose significant constraints on the use of a particular site, as well as restrict the timing of any works that may be necessary. Any such restrictions would be in addition to arboricultural constraints in this report.
- 1.6 **Status of the trees:** Having searched the Havant Borough Council "My Maps" web page on 7th November 2017, it shows that there are no Tree Preservation Orders (TPO) affecting the site, however the property is within the St Faith's Conservation Area (CA). Where trees are affected by a TPO/CA, work recommended for them within this report may require a formal application/notification process to be followed separately, unless full planning permission is granted and this report constitutes an approved document within the main planning application.

2. SITE VISIT AND TREE SURVEY

- 2.1 **Site visit:** I visited the site on 3rd November 2017, with the weather at the time of survey being overcast which in no way hindered my ability to view the trees satisfactorily. All observations were made from accessible points at ground level, with all measurements except stem diameter being estimated unless otherwise indicated in the Tree Survey Schedule and Notes.
- 2.2 **Site Description:** this site is a long rear garden on level ground, which includes existing vehicular access, parking and a car port off Prince George Street. There are various mainly small-medium size garden trees within the site, and one mature Eucalyptus in the centre of the garden. The site measures approximately 320m². It is bounded to the north and south by neighbouring gardens, to the east by the associated dwelling, and to the west by access drive and public highway as shown in Figure 1.



Figure 1. Aerial view showing the rear garden at 22 Manor Close (Google 2017)

2.3 **Data Collection:** each tree (above 75mm stem diameter) or group was inspected and allocated an identification number as indicated in the Tree Survey Schedule (Appendix 1) and tree survey plan (Appendix 4). They were allocated one of four categories (A, B, C or U) in line with BS5837 recommendations (see Appendix 3) as well as having the following important information collected:

- Species, Height (m) and stem diameter (mm)
- Average crown spread to the 4 cardinal points (m), average canopy clearance (m)
- Height and orientation of first significant branch
- Life stage, Condition & Preliminary management recommendations
- Remaining safe useful life expectancy, Root Protection Area calculations

2.4 **Root Protection Areas:**

2.4.1 In accordance with section 4.6 of BS5837, the stem diameter measurements have been used to calculate the Root Protection Area (RPA), both in terms of radial distance from the tree and as an area in m². The RPA is the area that should ideally remain free from disturbance by adjacent construction works, as it is deemed to be the minimum area around a tree required to maintain sufficient rooting volume to sustain the tree's vitality. Therefore the adequate protection of the roots and soil structure in this area must be treated as a priority.

2.4.2 The calculated extent of the RPA is used to identify any design constraints within the site, and is visually represented on the Tree Constraints Plan (TCP, Appendix 5). The TCP shows the above-ground constraints (i.e. branch spread and relevant shading), and the below-ground constraints (the anticipated extent of significant root spread depicted as the calculated RPAs).

2.4.3 Using the proposed site layout and the TCP, the necessary protective measures have been identified within a Tree Protection Plan (Appendix 6). Further details relating to tree protection are given in Section 4 below.

- 2.5 **Tree survey:** A total of seven individual trees and one group were surveyed and assessed for their suitability for retention. Please refer to appendices 1 & 4 for details of their identity, location and assessment. Please also refer to the Tree Survey Schedule Notes (Appendix 2) and BS5837 Cascade Chart (Appendix 3) for full details of the assessment criteria.

3. ARBORICULTURAL IMPACT ASSESSMENT

- 3.1 **General observations:** There are no trees of high quality or public amenity within the site, with most being modestly sized garden plantings. T1 is the most publicly prominent tree, standing individually in the corner of the site nearest Prince George Street. The largest tree is T5, located mid way through the site, being of lower quality with heavily asymmetrical growth. T3 was considered unsuitable for retention in the longer term due to its very poor growth habit and position growing within the current car port and through the roof. Adjacent to this tree was a dead trunk which also grew through the roof.
- 3.2 **Below ground constraints (Root Protection Areas):**
- 3.2.1 This section deals with tree roots, which can easily be overlooked during construction operations due to being hidden and often their importance, and that of the soil around them, is not fully understood. It is essential that the roots remain undamaged during the site preparation and construction phases, as they provide the structural stability as well as transporting water and nutrients throughout the tree. Crucially they cannot perform their functions effectively if the soil structure around them is also damaged, which is why the RPA must be adequately protected.
- 3.2.2 The TCP visually represents the required RPA for each retained tree as a magenta circle centred on each tree stem. It is quite possible, depending on soil conditions and tree species characteristics, that roots will extend beyond this zone, hence this area should be carefully protected during the planning and execution of site works.
- 3.2.3 The proposed layout shows that no building works are planned to overlap any of the RPAs, and no requirement for installation of any impermeable hard surfaces within RPAs. Notwithstanding this, if any new or replacement surfacing is planned for locations that overlap any of the RPAs, then it will need to be of a porous nature and constructed using a cellular confinement system appropriate to the loading. All new hard surfacing within any of the RPAs should be installed using a no-dig method, in accordance with BS5837. This includes careful removal of existing surfacing or vegetation, and avoiding any excavation into the soil to achieve desired levels.
- 3.2.4 To ensure that all RPAs are adequately protected from other potentially damaging actions such as storage of materials/plant etc., the full extent of the RPAs not covered by existing hard surfacing would normally require protective fencing and/or temporary ground protection for the duration of site works. Details pertaining to the placement of protective barriers are given in Section 4 and shown on the TPP at Appendix 6.
- 3.2.5 The planning for any required underground services should take into account the TCP to avoid any damage to the tree roots.

- 3.2.6 By ensuring that the above recommendations are followed, I do not consider that there will be any significant impact on retained trees from this proposal.

3.3 **Above ground constraints (branch spread & shading):**

- 3.3.1 Trees in close proximity to buildings can pose some constraints, both real and perceived. Actual constraints occur where branches can conflict with new elevations, either now or in future. For this reason newly planted trees as well as younger existing trees need to be fully accounted for in the design and layout planning. Other significant constraints that are often overlooked include shading, leaf litter and damage from falling branches. However it should also be remembered that some shading can be desirable to reduce glare and provide comfort during hot weather.

- 3.3.2 This proposal is primarily for a car port, however there is also a first floor annexe which does warrant further consideration of any potential above-ground arboricultural impacts. This proposed development is comfortably clear of all existing tree canopies, and canopy spread is not likely to impact upon the building from any future growth due to the ample existing clearances. Similarly, the largest tree adjacent to the access point already has good vertical clearance for vehicles, and the small ash tree can be pruned as required to provide greater clearance without resulting in any loss of larger limbs. Overall, future growth to any of the garden trees can reasonably be managed to maintain required clearances without any detrimental impact on their health or amenity. Canopy spreads are therefore not considered to be a significant current or future constraint.

- 3.3.3 The positioning of the development mid way between the retained tree cover ensures that direct shading of the annexe by the trees will not be an issue. Shading arcs for the nearest larger trees have been shown on the TCP, and indicate that at no time during the day will there be any significant shading of the annexe or its roof lights and dormer window. By removing T5 to facilitate this proposal, it will also result in more light reaching the rear garden space between the annexe and the main dwelling. Therefore shading is not considered a significant issue on this site, and the retained trees will in fact provide beneficial screening of this development from neighbouring gardens as well as public viewpoints to the west.

3.4 **Trees to be retained:**

- 3.4.1 Of the 7 individual trees and 1 group surveyed, 5 individuals are to be retained, including the best quality tree (T1) and all trees likely to provide most screening value of the development as viewed from rear elevations of the neighbouring properties.
- 3.4.2 Access to the development site during preparation and construction phases must be managed to protect retained trees. Sufficient space should be available on this site for construction plant and materials outside the required protective barriers, however if any conflicts are foreseen then alternative arrangements must be made, in consultation with the project arboriculturist and local authority.
- 3.4.3 Tree protection on development sites is of paramount importance if trees are to be retained successfully. The stress caused by development near existing trees can, if provision for adequate protection is not made, be a significant strain leading to

severe damage and even death. It is important to note that although trees will appear healthy during and on completion of a development, the full effects of below ground damage may not become apparent for another five years or more.

- 3.5 **Tree works:** Aside from the required removals (see 3.6 below), no other tree works are necessary in order to facilitate the proposal. If any minor work is desired in order to manage existing tree cover and improve garden clearance, then this can comfortably be achieved through minor pruning as required. Any such works should be kept to a minimum, and be carried out by competent and insured arboricultural contractors, in accordance with BS3998:2010.
- 3.6 **Tree removal:** T3, T5 and G1 will require removal in order to facilitate this proposal; please see Figure 2 for views of these trees. T3 is a very poor specimen growing from within the current car port structure and due to its structurally and visually weak condition is recommended for removal regardless of any development (a BS5837 category U tree). T5 and G1 are all low quality category C trees. T5 has a leaning and unbalanced growth habit, and being a Eucalyptus is of typically vigorous growth and has quickly outgrown its garden location. G1 consists of a cluster of small diameter stems growing close to the boundary fence, with weak growth habit and poor form. None of the trees to be removed are of any significant public amenity or landscape value, and could comfortably be replaced with better quality specimens in more suitable positions to result in a net enhancement of amenity value in the longer term.



Figure 2. Trees to be removed (L-R): T3 growing through car port, G1 adjacent to boundary fence, and T5 leaning Eucalyptus further back within the rear garden

4. ARBORICULTURAL METHOD STATEMENT

4.1 **Tree Works:** All required works as detailed above should be carried out prior to commencement of construction works.

4.2 Protective fencing in accordance with BS5837:

4.2.1 Before the commencement of any construction works on site, protective fencing shall be erected to the positioning shown on the TPP. These shall be erected and maintained in position to clearly define the 'Construction Exclusion Zone' around retained trees. The positioning of the protective fencing will then be agreed by the LPA Arboricultural Officer, and adhered to throughout the project.

4.2.2 The extent of protective fencing seeks to encompass as much of the unsurfaced RPAs of adjacent trees as possible, whilst providing required access and realistic working areas, and taking account of the existing surfaced vehicular access & parking area which will remain in normal use.

4.2.3 Vertical barriers must be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around retained trees. In most cases fencing should consist of a scaffold framework, well braced to resist impacts, with vertical tubes spaced a maximum of 3 metre intervals. An alternative but robust specification is also given in Appendix 7 of this report and on the TPP.

4.2.4 Signs shall be affixed to the fencing to inform on-site contractors of the importance of the fencing barriers (Appendix 8). Examples are also provided on the TPP.

4.2.5 The RPAs enclosed within tree protective fencing should be treated as sacrosanct and the following guidelines should be adhered to at all times:

- NO mechanised excavations
- NO movement of construction traffic or parking of vehicles
- NO excavation by any means without arboricultural site supervision
- NO lowering or raising of levels (except removal of grass sward/surface layer, using hand tools)
- NO storage of building materials, excavated soil, chemicals or fuels
- NO fires to be lit in close proximity to trees

4.2.6 It must also be remembered that RPAs outside the fencing and beneath existing hard surfacing (as is the case at the site access between T1-2) are still subject to similar precautions at all times. There must be NO excavations, raising or lowering of levels, storage of chemicals or fuels, or any fires lit in proximity to trees. The TPP also highlights this precautionary approach to the access and parking area.

4.2.7 Fences must only be removed following agreement of the Local Authority or project arboriculturist to confirm on-site construction activity has been completed.

4.3 Temporary ground protection:

4.3.1 The unfenced area of RPAs for T1 and T2 are all protected by existing hard surfaced drive and parking area which will continue to be in normal use for residents vehicles,

however additional ground protection is provided as requested by the LPA for the exposed area of T1 in order to prevent any possible soil contamination from storage of materials etc.

- 4.3.2 Where temporary ground protection is indicated on the TPP during the construction phase, then the system must be fit for purpose and capable of supporting the expected loads to avoid rutting, compaction and damage to the soil structure; in accordance with BS5837. The system will need to support the weight of construction vehicles, and examples of such systems using interlocking ground mats are given at Appendix 9, as well as being shown on the TPP.
- 4.3.3 The soil beneath any protection system must remain undisturbed and will be protected with a porous geotextile membrane to prevent possible soil contamination. On top of this and below the surface protection, a layer of sand or woodchip should be laid on the fabric (thickness to manufacturers specification) to further cushion and spread the load, and to infill any depressions to provide an even surface.
- 4.3.4 The ground protection measures shall be installed before commencement of construction activity and before the arrival of plant machinery or materials. They shall remain in place until all heavy construction activity is complete.
- 4.4 **Avoiding above-ground tree damage:** Care shall be taken when planning site operations in proximity to retained trees to ensure that any wide or tall loads, or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to trees.
- 4.5 **Site access, contractors car parking, site huts and storage:** The site will be accessed via the adjacent existing hard surfaced drive. All contractor's vehicles will be parked either off site or within the site on the existing hard surfaced parking area. No vehicles, materials, spoil, plant, site huts or welfare facilities shall be located on unsurfaced ground within the RPA of any retained trees.
- 4.6 **Installation of underground services within RPAs:**
 - 4.6.1 All underground services should be positioned to avoid conflict with any RPA. If, for whatever reason, installation of underground services has to pass within RPAs, the Local Authority must be notified prior to any tree protection barrier removal.
 - 4.6.2 Trenching, for the installation of underground services, severs any roots present and may change the local soil hydrology in a way that adversely affects tree health. Particular care will be taken in the routeing and methods of installing underground services. Wherever possible, they should be kept together and sensitive methods of excavation used. Where services are to pass within the RPA, detailed plans showing the proposed routeing will be drawn up in conjunction with an arboriculturist.
 - 4.6.3 Reference can be made to National Joint Utilities Group publication (NJUG10) for guidance, but any approach must be approved by the Local Authority Tree Officer.

4.7 **Hard landscaping within RPAs:** If any new hard landscaping is planned within any of the RPAs, the following precautions should be followed:

- Removal of existing vegetation will be carried out by hand. Turf may be removed using a mechanical turf stripper or by hand.
- Hard surfacing used within RPAs should be permeable and gas porous. Paving slabs and block paving are available with built-in infiltration spaces between the slabs or blocks, and should be laid dry jointed on a sharp sand foundation to allow air and moisture to penetrate to the rooting area.
- Bitumen paving can consist of porous or impermeable material. As the pores in tarmac paving will become blocked, the use of the material must be limited in extent to no more than 20% of the RPA.

4.8 **Soft landscaping within RPAs:**

- 4.8.1 Ground preparation must be carried out sensitively to ensure root damage is minimised. At no time is any heavy plant to be used within any RPA. Removal of existing surfacing will be carried out manually, and a rotovator shall not be used within any RPA to prepare the soil. Any levelling will be done using hand tools.
- 4.8.2 Should the soil be compacted or have a poor structure which may hinder the development of any new planting, soil decompaction techniques may be used upon consultation with the project arboriculturist. No works will be carried out within any RPA if the soil moisture is of a level likely to allow compaction to occur.
- 4.8.3 Any new planting should be carried out individually to minimise root disturbance (i.e. no 'trench' planting).

5. CONCLUSIONS

- 5.1 The design proposals for the construction of a car port within the garden of 22 Manor Close, Havant, have been assessed in accordance with BS5837:2012. It is my opinion that the trees identified for retention can be afforded due respect and provided with adequate protection, to ensure their safe and healthy retention during and following the development.
- 5.2 As long as an appropriate scheme of tree protection is followed, as proposed in the TPP, I believe that the trees can be retained without undue stress on their long-term health. Contractors working on site should be briefed regarding the importance of tree protection and adhering to all points within this document and the TPP. Those working on site should have access to these documents at all times.

Andrew Southcott BSc (Hons) ACIEM
8th November 2017



Appendix 1 - BS5837: 2012 Tree Survey Schedule

(please see attached schedule dated 03.11.2017)

Appendix 2 - Tree Survey Explanatory Notes

- 1 **Height** describes the estimated height of the tree from ground level, to nearest 0.5m (nearest 1m where total height exceeds 10m). Where practicable a clinometer is used to aid accuracy.
- 2 **Stem diameter** is the diameter of the main stem(s) measured in millimetres (to nearest 10mm) at 1.5m above ground level in accordance with Annex C of BS 5837:2012. Stem diameter may be estimated where access is restricted or the trunk is covered in ivy. Estimated dimensions are suffixed with a hash (#).
- 3 **Branch spread** refers to the approximate crown radius in metres (rounded up to nearest 0.5m) from the centre of the trunk at the four cardinal points.
- 4 **Crown clearance** is the average height in metres (to nearest 0.5m) of crown clearance above adjacent ground level. Where access is restricted this may be estimated.
- 5 **Height & direction of first limb** in metres above ground level where relevant; section 4.4.2.5 of BS5837 states this should be recorded to fully inform on potential ground clearance issues.
- 6 **Age Class** is as follows: **Y** = young trees up to 10 years old; **SM** = semi-mature trees less than 1/3 life expectancy; **EM** = early-mature trees 1/3 to 2/3 life expectancy; **M** = mature trees over 2/3 life expectancy; **OM** = over-mature trees in decline; **V** = veteran tree possessing certain attributes relating to veteran trees.
- 7 **Physiological Condition** is either: **Good** (trees with only a few minor defects and in good overall health); **Fair** (trees with minor, but rectifiable, defects or in the early stages of stress from which it may recover); **Poor** (trees with major structural and/or physiological defects such that it is unlikely the tree will recover in the long term); **Dead** (this could also apply to trees that are dying and unlikely to recover). This part of the assessment is essentially a snapshot of the trees' general health based on its appearance, vigour, and presence of any potential symptoms of poor health.
- 8 **Structural Condition** includes consideration of a range of factors including the presence of fungal fruiting bodies, cavities, decay and damage, condition/movement of soil around the tree base, growth habit, biomechanical related defects.
- 9 **Preliminary Management Recommendations** are focused on what is relevant in terms of the proposed development, as well as any obvious major issues that need addressing. The survey is not a condition or safety inspection so should not be relied upon as such.
- 10 **Estimated Remaining Contribution** is the approximate number of years the tree will continue to make a beneficial contribution without the need for oppressive arboricultural intervention, categorised as **<10**, **10-20**, **20-40** and **>40**.
- 11 **BS Category Rating** refers to BS 5837:2012 Table 1. This relates to tree/group quality and value, where **A** are trees of high quality with an estimated remaining life expectancy of at least 40 years, **B** are trees of moderate quality with an estimated remaining life expectancy of at least 20 years, **C** are trees of lower quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. Category **U** relates to trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. The sub-category refers to the value type, where **1** is mainly arboricultural, **2** is mainly landscape and **3** is mainly cultural including conservation, historic and commemorative.
- 12 **Root Protection Radius** is a radial distance measured from the trunk centre, giving the radius of an equivalent circle. It is calculated using the formulae described in paragraph 4.6.1 of BS 5837: 2012 and is indicative of the minimum rooting area that should remain undisturbed in order for a tree to be successfully retained.
- 13 **RPA area** is the minimum area in m² which should remain undisturbed (up to a maximum area equal to a circular radius of 15m).

Appendix 3 - BS5837 Cascade Chart for Tree Categorisation

Category & definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Trees in such a condition that they cannot realistically be retained as living trees in the context of current land use for >10yrs	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees; - Trees that are dead or showing signs of significant, immediate and irreversible decline; - Trees infected with significant pathogens affecting health or safety, or very low quality trees suppressing trees of better quality. <i>NOTE: these trees can have existing or potential conservation value making retention desirable</i>			DARK RED
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of >40yrs	Particularly good examples of their species, esp. if rare or unusual. Those that are essential components of groups or formal or semi-formal arboricultural features (e.g. principal avenue trees)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture).	LIGHT GREEN
Category B Trees of moderate quality with an estimated remaining life expectancy of >20yrs	Trees that might be included in category A but are downgraded because of impaired condition such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit category A designation.	Trees present in numbers, usually growing as groups or woodlands such that they attract a higher collective rating than they might as individuals. Trees occurring as collectives but situated so as to make little visual contribution to the area.	Trees with material conservation or other cultural value.	MID BLUE
Category C Trees of low quality with an estimated remaining life expectancy of >10 years, or young trees with a stem diameter <150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary landscape benefits.	Trees with no material conservation or other cultural value.	GREY



Appendix 4 - Tree Survey Plan

(please see attached plan - drawing no. AS/PH/1117 TSP)



Appendix 5 - Tree Constraints Plan

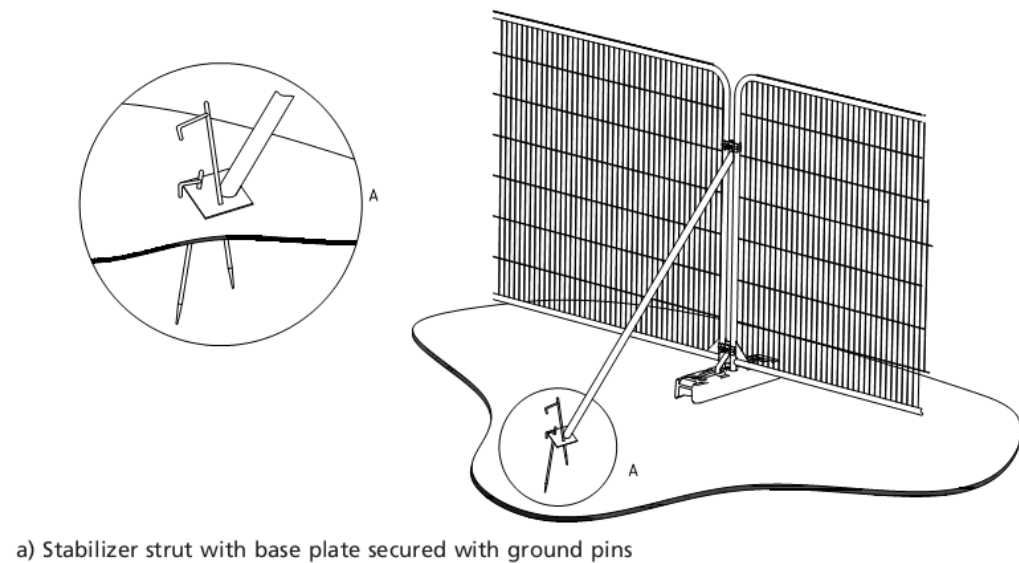
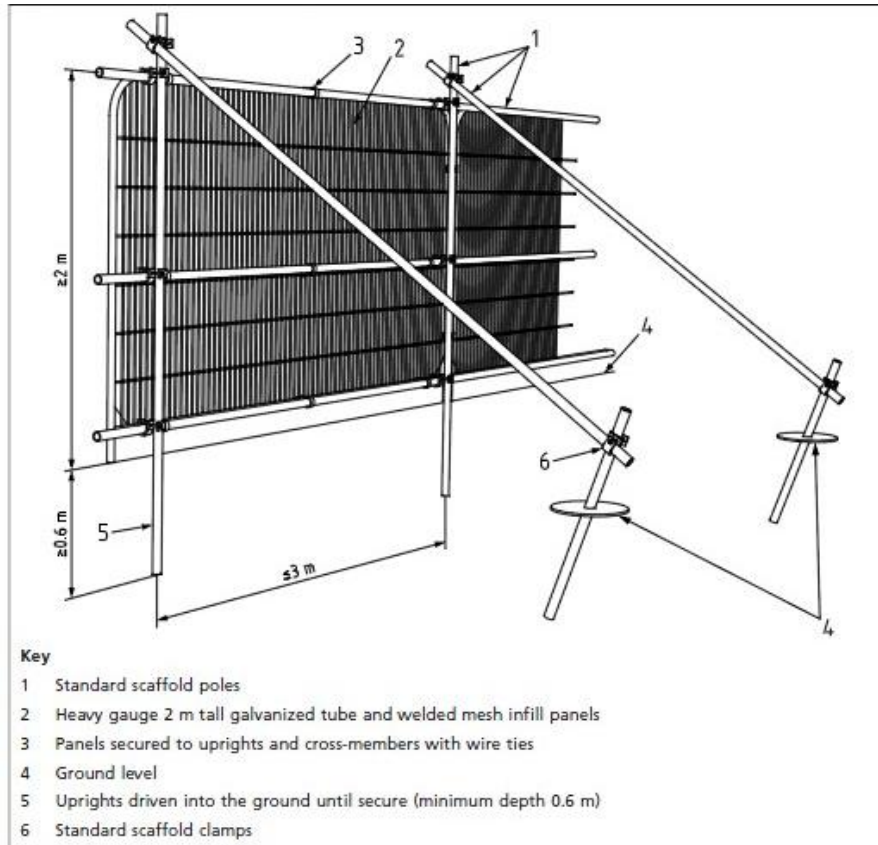
(please see attached plan - drawing no. AS/PH/1117 TCP)



Appendix 6 - Tree Protection Plan

(please see attached plan - drawing no. AS/PH/1117 TPP)

Appendix 7 - Tree Protection Fencing in accordance with BS5837



Default specification for protective fencing (left) and recommended alternative specification (right)

Appendix 8 - Tree Protection Fencing Signage



Appendix 9 - Example Specifications for temporary ground protection systems, using interlocking ground mats

Ground-Guards

GreenTek

Ground protection and site access system

Ground-Guards are an "Instant Roadway" system of lightweight plastic panels, capable of taking vehicles of up to 50 tonnes weight.

Introduction The GreenTek Ground-Guards have become established as a proven alternative to the conventional method of stripping and stoning-up access roads on construction sites. By using this roadway system, ground damage and reinstatement work are minimised. This is an ideal method to use where there are tree roots under the surface as it avoids the need for excavation.

Applications The Ground-Guards site access system is designed to form temporary roads, car parks and footpaths. It is suitable for protecting grassed areas from erosion and rutting during construction projects and for the protection of tree roots where site access routes need to pass close to trees.

Green issues Ground-Guards are a very environmentally friendly product. They:

- Protect sensitive ground from erosion
- Are made from 100% recycled plastic, which is itself fully recyclable
- Provide a sustainable alternative to using up sheets of plywood for ground protection purposes

DESCRIPTION

The Ground-Guards site access system consists of virtually indestructible, lightweight plastic boards which clip together without tools to quickly form temporary roads, car parks and footpaths. They are made from 100% HDPE recycled plastic and are guaranteed unbreakable by vehicles of up to 50 tonnes.

These track mats can be easily moved around the site by just two people, without the need for a crane lorry. Ground-Guard mats are available with a choice of different tread patterns. The "Standard" tread pattern creates a track way with a high level of traction for vehicles, whilst the "walk" pattern is designed for pedestrian walkways and event flooring.

Ground-Guards are also available with one side smooth which is ideal for trenching and utilities work as it enables the spoil to be easily backfilled into the trench afterwards. When being used to protect tree roots, a base layer of Ground-Guard sheets should be covered by a cushioning layer of 150 mm of wood chippings. The Ground Guard



trackway is then laid over the top of this in the normal way.
Dimensions Ground-Guard mats are available in sizes ranging from 1829 mm (6') x 610 mm (2') to 2438 mm (8') x 1219 mm (4'), with a choice of different tread patterns.

SUPPLY

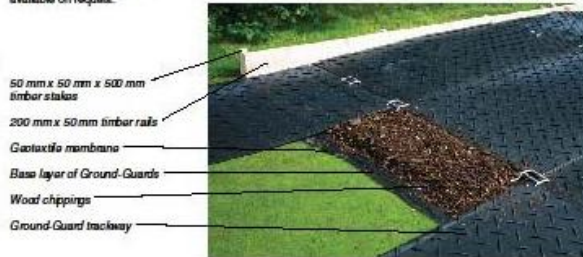
GreenTek both supplies and hires Ground-Guards direct to construction companies nationally.

SERVICES

Ground Guards provide technical advice to specifiers and contractors. Brochures and samples are available on request.



Ground-Guard trackways may be used with a cushion of woodchips to protect tree roots



Greenward Engineering
GreenTek
Manor Farm
Otley Road
Adul
Leeds
LS16 7AL

Tel: +44 (0)113 267 6000
Fax: +44 (0)113 267 2222
Email: info@ground-guards.co.uk
Website: www.ground-guards.co.uk
Contact: Phil Ellis
rps no: 21329

EuroMat® Heavy Duty Temporary Access Mat



Heavy Duty Temporary Access Mats

Supporting loads up to 80 tonnes, EuroMat® is the ultimate heavy duty man-handleable mat for temporary roadways and work areas. EuroMat® is essential for the construction, civil engineering and ground work industries.

Incredibly Tough & Flexible

Made from tough 100% recycled or virgin high density Polyethylene (HDPE), EuroMat® is the market leader for temporary access and ground protection over soft or sensitive ground. EuroMat® significantly reduces damage to heritage and eco-sensitive areas, avoiding the need for reinstatement once the project is complete.

Fast & Efficient Installation

Weighing just 35kg EuroMat® is ideal for both short and long term projects. Incorporating strategically positioned handholds, EuroMat® is man-handleable and easy to off load and deploy by a two man team.

Chevron Traction® Surface

EuroMat's chevron traction® surface comprises of a broken pattern of rugged nubs which substantially improves the grip and forward motion of plant or vehicles and reduces side way slippage, even in the most challenging weather or ground conditions. Optional hi-vis markings and cats eyes can be incorporated into EuroMat® for additional safety at night.

Logistics

Lighter in weight than conventional wood or steel alternatives, EuroMat® also offers the environmental benefit of more mats being loaded per wagon and in turn reducing transportation costs and carbon emissions.

*Compression tested at National Physical Laboratory, UK