



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

Arboricultural Report

BS 5837:2012 Tree Survey

& Arboricultural Impact Assessment

Land at:

Netley Central Club, Station Road, Netley

Prepared by: Andrew Southcott

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Ref: AS/WB/0819

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Validation Statement for Local Planning Authority (LPA) Registration

This report is intended to be submitted to Eastleigh Borough Council in support of a planning application. The report contains tree information relevant to the proposed development.

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.

1. INTRODUCTION

1.1 **Instruction:** I am instructed by Whitman Builders Ltd to survey trees that could affect or be affected by the proposal on land at Netley Central Club, Station Road, Netley. 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 planning application for residential development within the site. My instruction is to prepare the following information:

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

1.2 **Information provided:** Drawings AS/WB/0819 TSP and AS/WB/0819 TCP are derived from the following drawings which were supplied to me via PDP Architecture Ltd:

- *06919 Topographic Survey* in DWG format.
- *17887-SK100B/101C Site Layout Plans* in DWG and PDF format.

The topographical survey recorded most tree cover. Where other trees of relevance were recorded, they were positioned by triangulating from fixed points on the supplied plan.

1.3 **Purpose and scope of this advice:** The tree survey and report have been produced both to assist the design 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 intended for use solely by the above client and their agent if applicable, and not for the benefit of any third party. Anyone not directly involved with this site shall not have any rights in connection with it. No part 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 are in addition to arboricultural constraints in this report.
- 1.6 **Status of the trees:** It is not currently known whether any Tree Preservation Orders (TPO) or Conservation Area (CA) designations affect the trees considered within this report. It is advised that before any works are carried out to these trees in future, an enquiry is made to the local authority to clarify any restrictions that may exist.

2. SITE VISIT AND TREE SURVEY

- 2.1 **Site visit:** I visited the site on 9th August 2019, with the weather at the time of survey being changeable but 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:** The site is composed of the existing club and car park, containing no tree cover, and a currently separate triangular parcel of land to the E which is overgrown but appears to be a former orchard. A link between the two parcels will be achieved by utilising part of a currently separate adjacent residential garden. Tree cover in the orchard area was predominantly of small weak and decaying apple trees, many of which were overgrown with bramble and other scrub. Additionally there were a number of self-set sycamore trees growing; and several off-site trees with the potential to have implications on the site were also surveyed. The area covered within this survey measures approximately 0.2ha as shown in Figure 1.

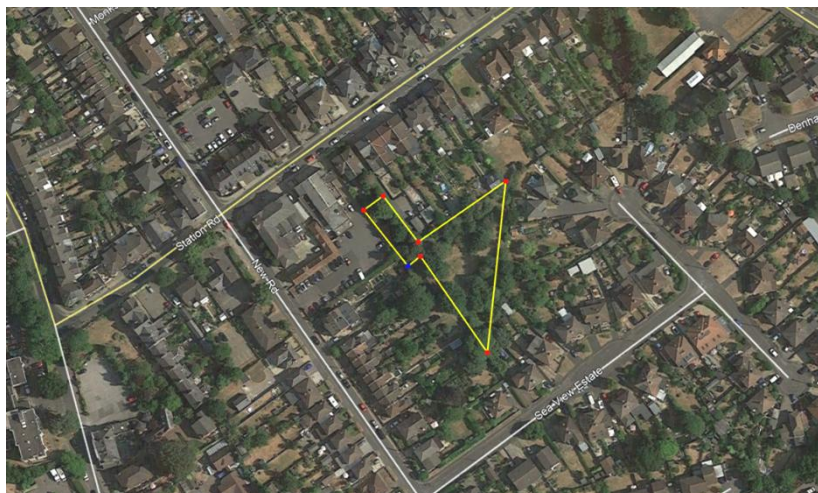


Figure 1. Aerial view showing the site covered within this survey (Google 2019)

2.3 **Data Collection:** Each relevant tree 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; height and orientation of first significant branch
- Life stage, condition and 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).

2.5 **Tree survey:** A total of fifteen individual trees and five groups 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:** The tree cover was predominantly of low quality decaying and unmanaged fruit trees and larger but also low quality self-set sycamore stems; none of which contributed any significant prominence or visual amenity to the wider area. There were several larger and better quality off-site trees also included in the survey, with the single most prominent tree being a mature horse chestnut located near to the S corner of the site.

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 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 any site works.

3.2.3 The current layout proposal as shown on the TCP will not result in any significant impacts to the RPAs of any retained trees. The dwelling footprints will all be clear of the adjacent trees, although the RPA of T14 will partially encroach into new surfacing of the adjacent vehicular access. The scheme must account for any such conflict by ensuring that new surfacing within the RPAs of retained trees will be of a porous nature and constructed using a no-dig, three-dimensional cellular confinement system in accordance with BS5837. This includes avoiding any excavation into the soil to achieve desired levels, other than the removal (using hand tools only) of any turf layer and other surface vegetation to achieve a stable and level working surface. Appendix 6 gives a visual example of this type of construction method suitable for vehicle use.

3.2.4 To ensure that RPAs are adequately protected from other potentially damaging actions such as storage of materials/plant, temporary site buildings, changes in levels etc., their full extent which is not covered by existing hard surfacing should have protective fencing and/or temporary ground protection erected in line with BS5837 for the duration of site works. Once the scheme is approved, it is possible that details pertaining to the placement of protective barriers will be required as a condition of any planning approval.

3.2.5 No details are given for underground services, therefore the planning of these should take into account the TCP to avoid any damage to the tree roots.

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 a degree of shading can be desirable to reduce glare and provide comfort during hot weather.

3.3.2 The TCP shows that the retained tree canopies will be clear of the proposed development, with just a limited overhang of T14 over the new turning/access drive. This tree has good existing vertical clearance and only small diameter branching overhangs the site, and if necessary could reasonably be crown lifted to provide additional clearance. Future growth resulting in conflict with any of the development is likely to be minimal if any, and can reasonably be managed with minor pruning without any detrimental impact on the health or amenity of the trees. Canopy spreads are therefore not considered to be a significant future constraint.

3.3.3 The positioning of the boundary/off-site trees to the S & E of the site gives the potential for some possible shading conflict with the nearest dwellings and their rear amenity spaces. Therefore, BS5837-compliant shading constraints are shown on the TCP for relevant trees. This shows that none of the dwellings themselves will be impacted by tree shade, and only small parts of several rear gardens would be affected. Shading impacts will be limited to mornings and the middle of the day for parts of plots 3, 5 and 7; with shading moving away later in the afternoon. Even during times when shade is cast onto the garden, most of the amenity space, including that nearest the dwellings, will be shade-free. Therefore by taking all factors into account it is considered that this layout will meet BS5837 recommendations for gardens having direct sunlight for at least a part of the day.

3.4 **Trees to be retained:**

3.4.1 Access to the site during preparation and installation phases must be managed to protect the existing trees being retained. Sufficient space will be available on this site for construction plant and materials outside the RPAs. However if any conflicts are foreseen then alternative arrangements must be made, in consultation with the project arboriculturist and local authority.

3.4.2 Tree protection on development sites is of paramount importance if trees are to be retained successfully. The inevitable 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 of a tree. 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 five years or more after the works have finished.

3.5 **Tree removal:**

3.5.1 All internal trees will require removal in order to facilitate the scheme, including several adjacent to the boundaries (trees to be removed are shown dashed grey on TCP). Most of these trees are either small poor quality fruit trees or self-set sycamores, and are either low suitability for retention (Category C), or unsuitable for retention regardless of development due to poor condition (Category U); these trees should not be considered as a significant constraint upon the proposal. In addition, T13 is also proposed for removal due to the constraints that it presents for site access. This tree is located adjacent to the proposed site access point, and would have approximately 50% of its RPA affected by required vehicular access which is also where all new services would be routed into the site. The tree has a low, dense, spreading and asymmetrical crown from three main limbs dividing just above ground level. This results in a lack of stature and prominence in the wider area, and limited visual amenity value at closer quarters (see Figure 2), with some large decay columns and further pockets of decay within the densely ivy-clad main limbs. Its low crown would also require larger limbs on its W-SW sides to be reduced to facilitate required highways clearance for access. In consideration of these factors, it is concluded that the long term visual amenity of the site would be better served by replacing this tree with several better quality specimens planted nearby.



Figure 2. Close up view of T13 showing asymmetrical and visually poor appearance (left), and view from further away showing low overall crown and lack of prominence in surrounding landscape (right)

- 3.5.2 In order to mitigate all removals, a suitable landscaping scheme would be required to replace the trees with a number of better quality specimens located throughout the site; thereby contributing to a net enhancement of amenity value in the longer term.

4. CONCLUSIONS & RECOMMENDATIONS

- 4.1 The design proposals for residential development on land at Station Road, Netley have been assessed in accordance with BS5837:2012 "Trees in relation to design, demolition and construction - Recommendations". It is my opinion that the trees identified for retention can be afforded due respect to ensure their safe and healthy retention during and following the development process.
- 4.2 The tree removals necessary to facilitate the proposals are not considered significant in terms of public amenity value, and can be adequately mitigated via a suitable landscaping scheme.
- 4.3 As long as recommendations for arboriculturally sensitive methods of new surfacing within the RPAs are implemented, as well as there being a robust scheme of tree protection to prevent conflict with below ground constraints, I believe that the trees highlighted in this report can be retained without undue stress on their long-term health. Once the scheme has been approved, the project arboriculturist can prepare a Tree Protection Plan and Arboricultural Method Statement to inform contractors of the necessary protective measures before any works commence on site.

Andrew Southcott
Woodside Tree Consultancy
16th August 2019

Appendix 1 - BS5837: 2012 Tree Survey Schedule

Tree No.	Species	Height (m)	Stem Diameters (mm)								Branch Spread (m)				Crown Clearance (m)	Height & direction of 1st signif. limb	Age Class	Physiological Condition	Structural Condition	Preliminary Management Recommendations	Est. Remaining Contribution (yrs)	BS5837 Category Rating	Root Protection Radius (m)	RPA (m²)
			Single Stem	2-5 stems					5> stems		N	E	S	W										
				Stem 1	stem 2	stem 3	stem 4	stem 5	Mean Dia.	No. Stems														
1	Oak	11	350								4.5	4.5	4.5	4.5	3	3r	SM	F	Small boundary tree, balanced compact crown of good form, ivy clad.		20-40	B1	4.2	55.4
2	Sycamore	10	380								3.5	3.5	3.5	3.5	2	2r	SM	F	Self-set, tight included forks, self-set against boundary fence.		10-20	C1	4.56	65.3
3	Sycamore	10	300								3	3	3	3	2	-	SM	F	Self-set, dense small diameter branching.		10-20	C2	3.6	40.7
4	Sycamore	9	300								4	4	4	4	2	2.5s	SM	F	Self-set, dense small diameter branching.		10-20	C2	3.6	40.7
5	Sycamore	9	230								3	3	3	3	2	2.5r	SM	F	Self-set, small with tight co-dom fork.		10-20	C2	2.76	23.9
6	Apple	5	340								2	2	2	2	2	2r	EM	P	Extensive decay, dense ivy, some dieback.		<10	U	-	-
7	Sycamore	9		# 150	150	150	150	150			3	3	3	3	4	1.5r	SM	F	Off-site in adj garden, multi stem from 1.5m.		10-20	C2	4	50.9
8	Ash	9	# 380								4	4	4	4	3	2r	SM	F	Off-site in adj garden, dense ivy, garden screening value.		10-20	C2	4.56	65.3
9	Apple	6		190	150						3	3	3	3	2	1r	EM	F	Unmanaged orchard tree, deadwood & decay, ivy clad, still fruiting.		10-20	C2	2.9	26.5
10	Apple	8		410	310						4	4	4	4	1	1r	EM	F	Unmanaged orchard tree, deadwood & decay, ivy clad, still fruiting.		10-20	C2	6.2	119.5
11	Apple	7		370	310	200					3.5	3.5	3.5	3.5	2	1r	EM	F	Unmanaged orchard tree, deadwood & decay, ivy clad, still fruiting.		10-20	C2	6.3	123.5

12	Horse chestnut	13	800							11	11	11	11	2	2r	M	F	Very large spreading off-site tree partially overhanging site.		40>	A1	9.6	289.5
13	Sweet chestnut	11		370	480	510				4	7	7	7	2	1r	M	F	Large boundary tree, multi stem from 1m, low asymmetrical crown, some large decay columns, ivy clad, deadwood.		20-40	B2	9.5	283.8
14	Sycamore	# 11	# 350							4	4	4	4	3	3r	SM	F	Off-site and inaccessible, thin dense ascending branching.		10-20	C1	4.2	55.4
15	Cypress	# 12	# 400							4	4	4	4	2	-	SM	F	Off-site & inaccessible, set well back within garden but plotted for poss RPA constraints, good balanced form.		20-40	B1	4.8	72.4
G1	Apple & pear	av. 5	av. 150							2	2	2	2	1	-	EM	P	Small weak unmanaged orchard trees, decay, ivy & bramble clad, very poor vigour.		<10	U	-	-
G2	Apple & sycamore	av. 5	av. 200							3	3	3	3	1	-	EM	P	Mostly small weak unmanaged orchard trees, decay, ivy & bramble clad.		10-20	C2	2.4	18.1
G3	Apple	av. 5	av. 200							3	3	3	3	1	-	EM	P	Mostly small weak unmanaged orchard trees, decay, ivy & bramble clad.		10-20	C2	2.4	18.1
G4	Sycamore	av. 13	av. 400							7	7	7	7	3	1r	SM	F	Self set along boundary fence, multi stem, some very poor with inclusions, cavities, ivy, dwd, decay.		10-20	C2	3 - 7.9	28.3 - 195
G5	Sycamore	av. 11	av. 250							5	5	5	5	2	3r	SM	F	Cluster of self-set stems, some tight included forks, ivy, dwd.		10-20	C2	1.8 - 4.2	10.2 - 55.4

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/WB/0819 TSP)



Appendix 5 - Tree Constraints Plan

(please see attached plan - drawing no. AS/WB/0819 TCP)

Appendix 6 - Example Specification for a 'No-Dig' Three-dimensional Cellular Confinement System (Terram Geocell)

