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Arboricultural Method Statement

for the preservation of trees at

2-20 Winchester Road

Produced for: LMS Winchester Road ltd

Prepared by: Joanna Davies

Date: 14th December 2005

Report Ref: jd/ams/winchestered/05

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1.0 Introduction

1.1 The majority of tree roots exist in the upper metre of soil. Excavations of the soil in the vicinity of trees, to this depth, can be harmful to tree roots and consequently the tree. Tree root systems comprise two main root types, those that anchor the tree in the ground and those that supply the tree with water and elements. Roots that support the tree are woody and those that are involved with the conduction of water and nutrients are non-woody or fibrous. Both types of roots can be damaged directly by severing or crushing. Fibrous roots can die from asphyxiation by soil compaction and/or soil contamination. Trees differ in their tolerance of root loss or disturbance, according to their species and condition or both.

1.3 An assessment of a site's tree stock allows identification of those trees most desirable for retention within any landscape/development. Adopting construction and tree protection techniques that minimise root disturbance, it is possible to achieve the successful integration of structures into a landscape avoiding lasting damage to retained trees and preserving general amenity to the local landscape for future generations.

2.0 Purpose

2.1 The primary purpose of this document is to aid the preservation of retained trees by setting out appropriate working practices, construction techniques and tree protection measures that are to be adopted when the proposed construction is undertaken in the proximity of trees. The success of the document is dependant upon development adhering to the principles set out within, which are to be approved and enforced by the Local Planning Authority.

3.0 Methodology

3.1 This document has been developed in accordance with contemporary, relevant published guidance in relation to construction near trees. References include: British Standard 5837:2005 'Trees in relation to construction - Recommendations'; National Joint Utilities Group 'Guidelines for the planning, installation and maintenance of utility services in proximity to trees' 1995; British Standard 3998:1989 'Tree Work'.

3.2 The successful implementation of the principals set out in this document is dependent upon effective enforcement, supervision and communication with the relevant parties.

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3.3 The methodology follows a logical sequence of events, as shown below. Variations to the sequence could significantly reduce the efficacy of the protection measures.

Stage 1 Inspect site with Local Authority Tree Officer and record site information.

Stage 2 Execute agreed tree works.

Stage 3 Erect Tree Protection Barriers.

The first three stages will be completed **BEFORE** any site works, site preparation or delivery of equipment, materials or machinery.

Stage 4 Erect site signage and height restriction barrier (if required).

Stage 5 Construction of Hard Standing

Stage 6 Demolition of existing structures

Stage 7 Ground works, Foundations, Drainage and Services.

Stage 8 Erection of Scaffolding

Stage 9 Dismantle Tree Protection Fences and Landscaping

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Methods of Construction and Tree Protection

Stage 1

S1.1 A suitably qualified and experienced arboriculturalist will be appointed and retained to supervise and control works in the vicinity of retained trees.

S1.2 A site inspection will be organised and held with the Local Planning Authority (LPA) and the appointed arboricultural supervisor for the developer. A record will be made of the site features including existing tree condition, construction access, drive surfaces, areas of hard standing, proposed location of exclusion barriers, storage and drainage/service routes. Tree works, detailed in Stage 2 below will only proceed following formal agreement from the LPA therefore should be discussed at this stage.

Stage 2

S2.0 Execute Agreed Tree Works

TREE WORKS

Tree No	English Name	Proposed Works	Comments
T1	Lime	Remove	To be replaced
T2	Lime	Remove	To be replaced
G3	Lime	Remove one stem	To be replaced

S2.1 All tree work is to conform to BS 3998:1989 'Tree Work' (with amendments) and to current arboricultural best practice. Tree works are to be undertaken by a professional and specialist arboricultural contractor, who carries the appropriate experience and insurance cover and following formal approval from the LPA

Stage 3

S3.0 Construction Exclusion Barriers

S3.1 The position of the exclusion barriers is indicated on the Tree Protection Plan (TPP) at **Appendix 1**. The position of the barriers is to be marked out with biodegradable marker paint on site and agreed with appropriate representatives from the LPA and Contractor. The barriers will be erected **PRIOR** to any works on site in the vicinity of the trees (including demolition) or

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the delivery of machinery, materials, plant or equipment to the site or any adjacent land thereto.

S3.2 Barriers will comprise a scaffold framework in accordance with Figure 2 of BS 5837:2005 (The BS). The framework will consist of vertical and horizontal scaffolds with vertical tubes spaced at no more than 3m intervals and driven into the ground. Weldmesh panels will be securely fixed on to this framework with wire or scaffold clamps. Tubes will be firmed into holes in the ground made with post-hole boring equipment. Postholes are to be no more than 30% larger than the scaffold tube. Supporting struts will be fixed to the inside of the barrier to ensure maximum rigidity (See Appendix 3).

S3.4 Once the barriers have been properly erected in position, they are to be considered as sacrosanct and are not to be removed or altered in any way without prior approval from the LPA.

S3.5 Clear notices are to be fixed to the outside of the fencing with words such as **'PROTECTED AREA – NO ACCESS AND NO STORAGE OR WORKING WITHIN THIS AREA'**.

S3.6 All personnel using the site including site managers, agents, supervisors, operatives and other relevant personnel are to be informed of the role of the exclusion barriers and their importance. A copy of the Tree Protection Plan will be displayed on site at all times during construction.

S3.7 It may be necessary to remove existing shrubs and other vegetation from under the canopy of trees or remove lower branches prior to erecting the fencing. This is particularly relevant in case of G3. Any works of this nature are to be carried out by hand conform to the principals set out in BS 3998.

S3.8 Where it has been agreed that vehicular or pedestrian access for construction operations can be located within the RPA a combination of barriers and ground protection should be adopted. For temporary pedestrian access the installation of a single thickness of scaffold boards over a compressible layer laid on to a geotextile or supported by scaffold may be sufficient. However for vehicular access a system based on that detailed in stage 5 should be adopted.

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Stage 4

S4.0 Erect Site Signage and Height Restriction Barrier

S4.1 BEFORE the delivery on site of any equipment, materials and machinery or any construction processes commence, site signs indicating the layout of the site, parking facilities, traffic movements and cleaning points, delivery areas and compounds, site offices and welfare facilities. The signs will be positioned prominently at the entrance to the site.

S4.2 A height restriction barrier will be required at Fellows Road to protect T4 and T5 once the new access point is created. Vehicles higher than the barrier will need to obtain prior permission so access can be arranged. Details in the Traffic Management section of the General Method Statement should indicate the controls on vehicle heights.

Stage 5

S5.0 Construction of Hard Surfaces

S5.1 This section relates to the construction of hard surfaces, for example, roads and paths, parking areas and bases for bicycle or bin stores, within the RPA of retained trees.

S5.2 With reference to BS 5837 clause 11.8, where the construction of permanent hard surface is approved within the RPA of retained trees, a non-dig design should be used to avoid root loss caused by excavation. Such designs might include the use of three dimensional cellular confinement systems as an integral part of the sub-base so as to ensure load dissipation. Surfaces of this nature should be site specific and dependant on engineer and arboriculturalist advice. A typical example is included at Appendix 4. Alternative methods would include the use of mini-piles supporting a slab or similar bridging the RPA.

Stage 6

S6.0 Demolition of Existing Structures

S6.1 Reasonable prior notice will be given to the LPA in writing as to the date of commencement of any demolition adjacent to retained trees. This is to allow the LPA the opportunity to ensure that all tree protection is in place

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S6.2 In the proximity of the trees, where adequate space is not available between trees and buildings to be demolished, demolition will be carried out inwards within the footprint of existing buildings.

S6.3 The removal of existing hard surface including kerb stones will be carried out by hand tools or appropriate light machinery within the RPA.

Stage 7

S7.0 Ground works, Foundations, Drainage and Services

S7.1 Ground works will include site and land preparation for first stage construction. Spoil, including soil and rubble, taken from the land outside of the exclusion barriers will be removed from site and not stored against any tree fencing. The existing hard standing will be maintained to permit easy access to and from the site for the removal of ground spoil.

S7.2 Re-routing of services to accommodate tree planting trench will be carried out at this stage.

S7.2 **Construction of Foundations**

S7.3 With particular reference to the construction of the northwest corner of the Winchester Road building, where the basement has been pulled back away from G2, foundations will be of a piled type, where limited excavation will be required.

Stage 8

S8.0 Erection of Scaffolding

S8.1 Scaffolding to enable reasonable construction of the buildings will be erected. Pruning, prior to site works will facilitate this, whilst ensuring reasonable distances between outer branches are maintained away from the elevation.

Stage 9

S9.0 Dismantling Exclusion Barriers and Temporary Ground Protection

S9.1 In order to implement final surface treatments and landscaping works, it will be necessary to dismantle the exclusion barriers. Supervision of this exercise and control of the landscaping thereafter will be administered by the appointed Arboricultural Supervisor.

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S9.2 A minimum of seven days notice will be given to the LPA prior to the dismantling of the barriers.

S9.3 Under no circumstances will the soil levels be altered after the protective fencing has been removed.

Stage 10

S10.0 **Replacement Tree Planting**

S10.1 All landscaping will avoid soil re-grading and disturbance within the tree protective areas. Any hard landscaping within tree protection distances will conform to the principles set out in Appendix 4.

S10.2 A trench will be excavated as shown on the TPP in order to accommodate replacement trees. The trench is to be lined with root barriers in order to direct roots down and away from services, curbs and final surface treatments. The trench will be backfilled with an appropriate growing medium. See Appendix 6 for further details.

4.0 Care During Construction

4.1 In order for tree and root protection measures to work effectively, all personnel associated with the construction process will be familiar with this Method Statement and the principles of tree protection contained herein and the TPP. A copy of the document will be retained on site at all times.

4.2 If 360-degree excavators are to be used during construction, at no time is the excavating arm to encroach over the position of the tree protection fence. Operation must always be in a way that avoids contact with lower branches.

4.3 No fires are to be lit on site at any stage during the construction process.

5.0 Tree Protection and Storage of Materials

5.1 All materials for construction purposes are to be carefully stored in designated storage areas to be agreed with the LPA. Care (enforced by supervision and site monitoring) will be taken to avoid the leakage or leaching of noxious materials into the soil such as fuels or lubricants.

5.2 No materials will be stored or left stacked in positions around the site other than within the storage compound area.

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6.0 Supervision and Reporting (Tree Protection and Preservation)

6.1 It is key to the long-term preservation of the retained trees that effective control of parts of the development is administered by an agreed mechanism.

6.2 Prior to the commencement of works on site (including demolition works), key times for specialised supervision are identified. The supervision will incorporate a record of the site appraisal identifying any areas of concern and action that might be required in respect of tree protection. An Arboricultural Site Inspection Record is to be sent to the Local Authority's Tree Preservation Officer giving details of tree protection and action taken. An example is included here as **Appendix 5**.

7.0 Key times for Supervision/Inspection

i) Prior to and on completion of tree works
ii) During and on completion of Tree Protection Fencing
iii) During the course of demolition (including removal of light structures)
iv) During construction phases
v) During the dismantling of tree Protection Fence
vi) During landscaping the ground that fall beneath the canopy of the tree(s)
vii) Practical completion

8.0 Communication Details

8.1 Equally as important as the physical measures of protection is communication. The completed table below should be retained by all relevant parties and available on site at all times.

Local Authority

Tree Manager:	Contact Officer:
Tel:	Tel:
Planning Dept.	
Tel:	
Tree Adviser:	
Tel:	

Main Contractor	Arboricultural Supervisor
Name:	Name: Joanna Davies
Tel:	Tel: 020 86871214
Site Agent:	Mobile: 07968021337
Tel:	Company Name/Address ACS Consulting, Grosvenor Suite 5 Justin Plaza 3, 241 London Road Mitcham, CR4 4BE
Site Supervisor:	
Tel:	Fax: 020 86872456

9.0 Compliance

9.1 In order to demonstrate the highest levels of commitment to landscape preservation and care during development it is appropriate to agree to self-regulation. As such, the statement below demonstrates that commitment. A signed copy of the Method Statement will be held on file with the relevant parties.

9.2 The developer/contractor or its agents hereby agree to comply in full with the principles set within this Method Statement.

Signed _____

Dated _____

For and on behalf of Developer/Contractor _____

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Appendix 1

T.006 to be removed and replaced with LBC approved species

6m radius non-dig construction method to be utlisied refer to ACS report dated 14/12/05

T.005

T.004

A

C

Install temporary protective barrier around trees T.004 & T.005 in accordance with Aboriculturists recommendations, refer to ACS report dated 14/12/05

T.002 to be removed

T.001 to be removed

B

N

G3

Install temporary protective barrier to tree G3 in accordance with Aboriculturists recommendations, refer to ACS report dated 14/12/05

WINCHESTER ROAD

Indicative of planting trench to accommodate proposed new tree planting, refer to ACS report dated 14/12/05

DO NOT SCALE FROM THIS DRAWING.

ALL DIMENSIONS TO BE CHECKED ON SITE.

ALL OMISSIONS AND DISCREPANCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY.

PLANNING RESUBMISSION	DEC '05	TG	A
	Date	Check	Rev

P L A N N I N G

SQUIRE AND PARTNERS

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www.squireandpartners.com

Project
2 -20 Winchester Road
NW3

Drawing
Proposed Tree Protection

Drawn	Date	Scale
SH	DEC 2005	1:125@A3 1:250@A3
Job number	Drawing number	Revision
04041	SK_102	A

Original Drawing Size A1

Appendix 2

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TREE SURVEY SCHEDULE

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Site: Winchester Road
Date: 7th June 2005

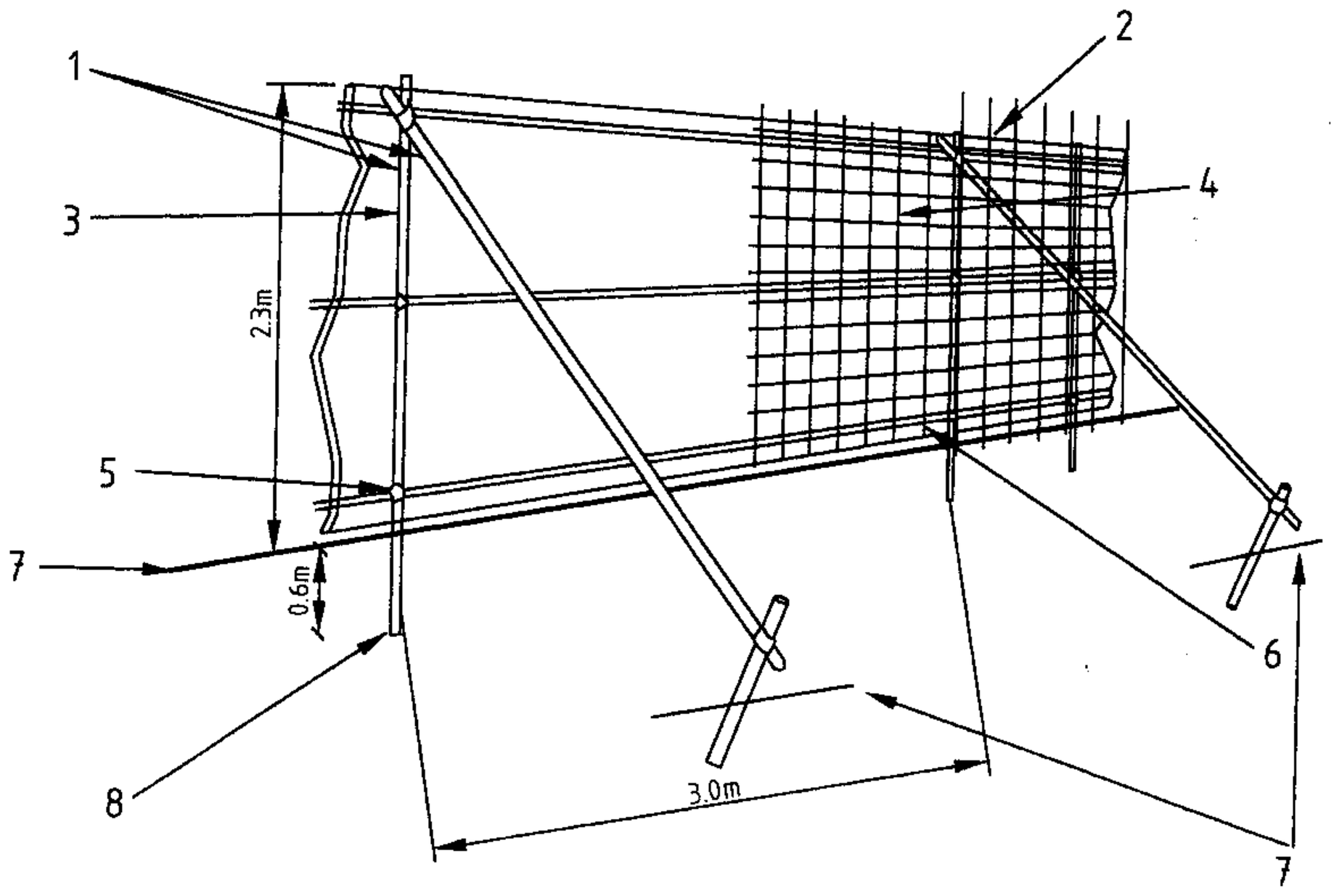
Surveyor: JD
Ref: jd/winchester/05

Tree No.	English Name	Height	Crown Spread	D.B.H	Vigour	Age	Prot Zone	B.S. Cat.	F.G.P	Comments
001	Lime, Common	15	2	55	N	M	6	B	MH	Heavily reduced recently
002	Lime, Common	14	2	55	N	M	6	B	MH	Heavily reduced recently
G03	Lime, Common	16	6	55	N	M A/M	4.5/6	B	MH	Foliage low over footpath
004	Plane, London	17	7	65	N	M	6	B	MH	Low tight forked branch Foliage low over footpath Old pollard
005	Plane, London	16	6	60	N	M	6	B	MH	Dead wood Foliage low over footpath Old pollard
006	Lime, Common	12	4	30	N	M A	4.5	C	HH	Decay at 1st bifircation

Notes:

1 Height describes the height of the tree from ground level.
2 The crown spread refers to the radius from the trunk centre and is expressed as an average of NSEW aspect. Notes are made when necessary.
3 DBH is the diameter of the trunk at 1.5m from ground level.
4 Vigour is described as Normal, or Low and refers to the general condition of the tree.
5 Age range is represented as Y-young, MA -Middle Aged, M-mature, OM-over mature.
6 BS5837:1991 Table 1 Protection zone, measured as a radial distance from the trunk centre. Within this area surrounding the tree, it is preferred land is to remain completely undisturbed.
7 BS Category refers to BS 5837 where A category is most desirable and D category is least desirable (remove).
8 Future Growth Potential describes the tree's potential to increase in size in conjunction with its estimated life expectancy and is indicated as Low, Medium or High together with Low <10yrs, Medium 10-30yrs and High >30yrs e.g. L/M. This assessment is species related.

Appendix 3



1 Standard scaffold poles

2 Uprights to be driven into the ground

3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps

4 Weldmesh wired to the uprights and horizontals

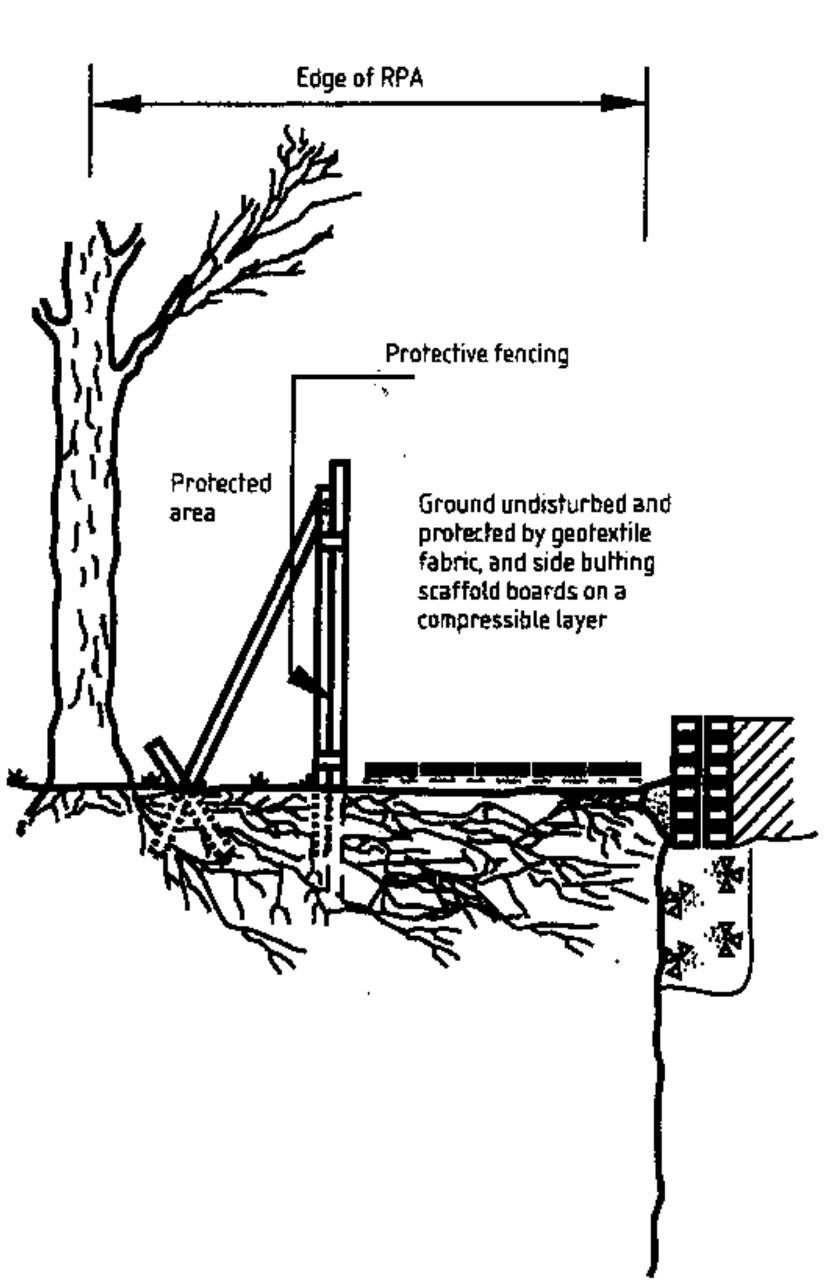
5 Standard clamps

6 Wire twisted and secured on inside face of fencing to avoid easy dismantling

7 Ground level

8 Approx. 0.6 m driven into the ground

Figure 2 — Protective barrier



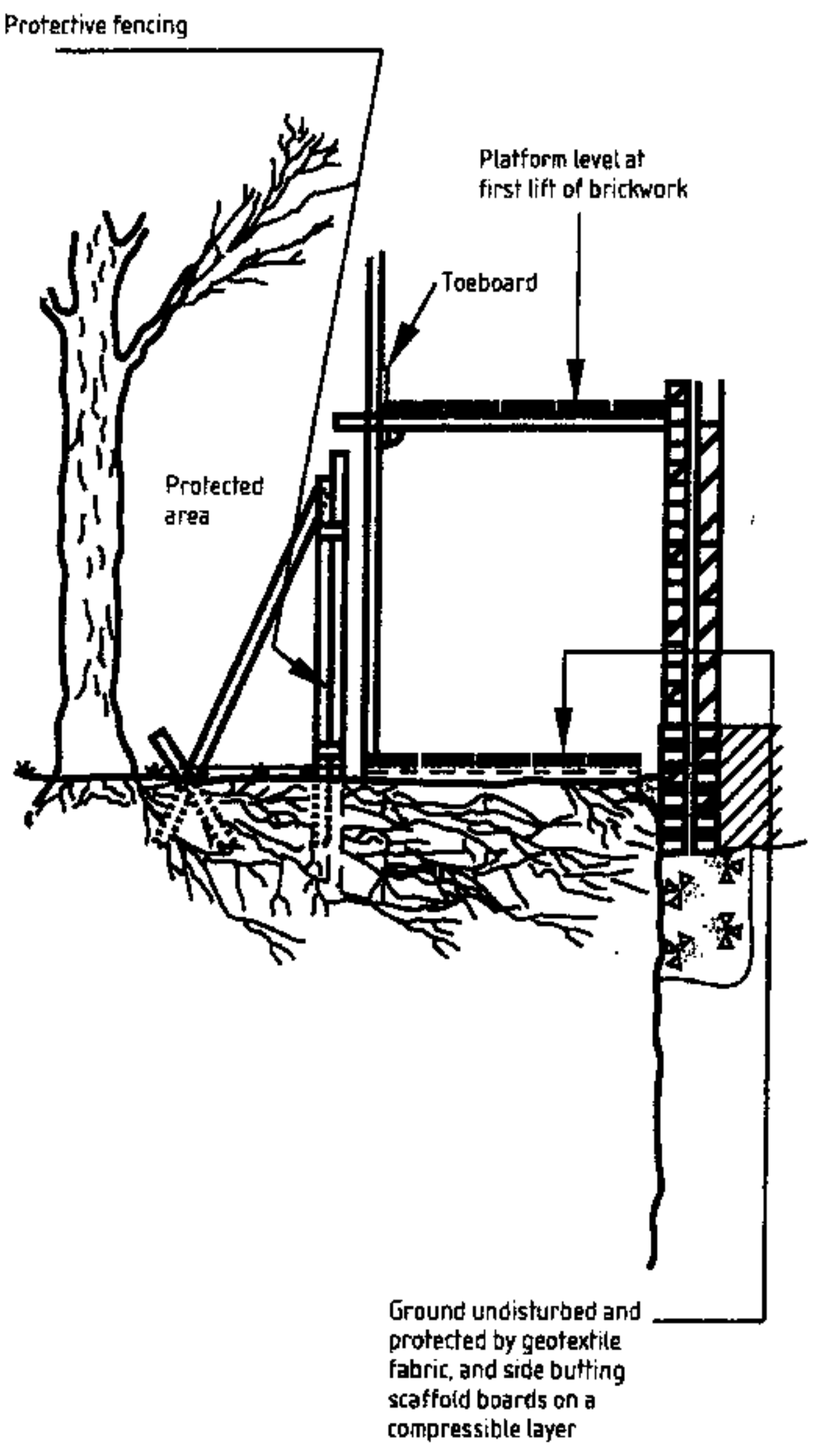


Figure 3 — Scaffolding within the RPA

Appendix 4

Cell Web – Load Dissipating Material – Specification and Details

When considering avoiding damage to tree roots, the risk of oxygen depletion caused by compaction of subsoil's, site clearance damaging the root source and type of reinforcement are areas where current guidance is limited, however our proposals read in conjunction with BS 5837: 2005 will provide an acceptable solution.

Other risk factors are:

- Creating an impermeable surface
- Causing a rise in the water table due to construction
- Increasing ground level
- Contamination of subsoil's

1. Compaction

When looking at site conditions and use, the following information should be considered to enable a load bearing structure capable of supporting traffic to be proposed:

- Californian Bearing ratio (CBR) – Standard test method for measuring soil strength
- Soil types
- Water table
- Maximum load (vehicles)
- Acceptable rut depth
- Reinforcement type — Cellweb Cellular Confinement
- Type and Depth of engineered infill material — Clean, angular. Usually 40mm to 20mm.

2. No dig

2.1.	Remove surface vegetation	Use a suitable herbicide suitable for the specific vegetation and not harmful to the tree root system
2.2.	Place geotextile separation filtration layer	Use a Fibretex F4M non woven Goetextile over the prepared sub-grade. Overlap dry joints by 300mm.

2.3.	Cellular Confinement System	Expand the Cellweb over the geotextile and anchor open during infilling
2.4.	Edge restraint	Where edging blocks or stone are to be used the mix into which they are set will be laid directly onto the geo-textile membrane over the supporting base.

3. Cellular Confinement and Backfill Material.

The three dimensional cell structure, is formed by ultrasonically welding polyethylene (perforated) strips / panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and the cell wall, increasing the stiffness of the system

No fines angular granular fill (typically 40-20mm) within open cell

The use of cellular confinement reduces the bearing pressure on subsoil's by stabilising aggregate surfaces against rutting under wheel loads. Comparisons between cellular confinement and traditional aggregate and grid-reinforced structures demonstrate a 50% reduction in construction thickness.

4. Surfacing Options

Block Paving:

5.1. Lay second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections

5.2. Lay sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.

5.3. Place block paviors as per manufacturers instructions.

Tarmac:

Place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing courses.

Loose Gravel:

5.4. Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections

5.5. Place decorative aggregate to required depth

NOTE: A treated timber edge should be provided to restrict gravel movement.

Grass Blocks:

5.6. Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections

5.7. Place 50/50 rootzone bedding layer to the required depth

5.8. Lay recycled Duo Block 500 Grass Protection System infilled with 50/50 rootzone mix.

5.9. Seed as per architects instructions.

(Alternatively the Grass Blocks may be infilled with gravel.)

Budget Costings

Cellweb 75mm Std Cell	2.56m x 8.1m	5.00/m2
Cellweb 100mm Std Cell	2.56m x 8.1m	6.00/m2
Cellweb 150mm Std Cell	2.56m x 8.1m	9.20/m2
Cellweb 200mm Std Cell	2.56m x 8.1m	11.40/m2
Cellweb Staking Pins	12mmx 750mm	0.78/each
Cellweb Stapler	Item	55.00 each
Cellweb Staples	5000 / Box	28.50 each
Fibretex F4M Geotextile	5m x 100m	0.70/m2

Tree Root Protection using Geoweb Cellular Confinement

Special Products Division
Bloomfield Road, Farnworth, Bolton, BL4 9LP
Tel: (0)1204 862222 Fax: (0)1204 793856
Email: groundeng@cooperclarke.co.uk

CLARKE

Geoweb applications:

- Access Roads
- Pipe Support
- Rail / Road Base Stabilisation
- Tree Root protection
- Vegetated Slope Stabilisation
- Non vegetated slope protection
- Channel / River lining
- Coastal protection
- Retaining Walls

Sizes:

Standard Cell
Panel Size 6.1m x 2.4m
Cell Height 100mm
150mm
200mm

Large Cell
Panel Size 12.2m x 2.4m
Cell Height 100mm
150mm
200mm

Geoweb Benefits:

- Fast & simple installation
- Lightweight construction
- Cost savings
- Flexibility
- Environmental benefits
- cellular Strength
- versatility
- CAD design facility

Inner core strength of Geoweb cellular confinement can reduce traditional reinforcement thickness by as much as 50%.

In the case of a geocell system used to confine the near surface zone of a low cohesive soil under concentrated loads for tree root protection, such as vehicular traffic, the Geoweb cellular confinement system provides a load transfer mattress (Fig.1) so preventing direct load on up-protected tree roots.

Fig 1

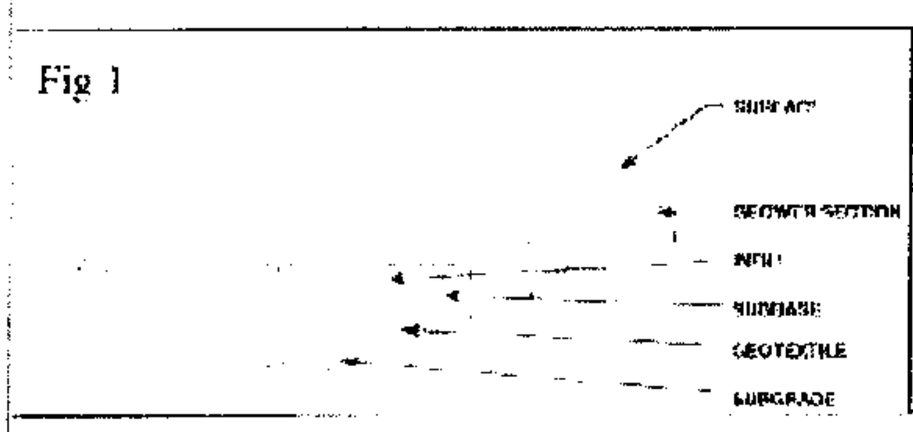
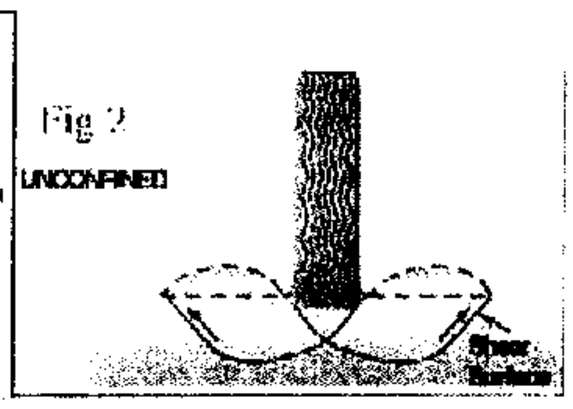
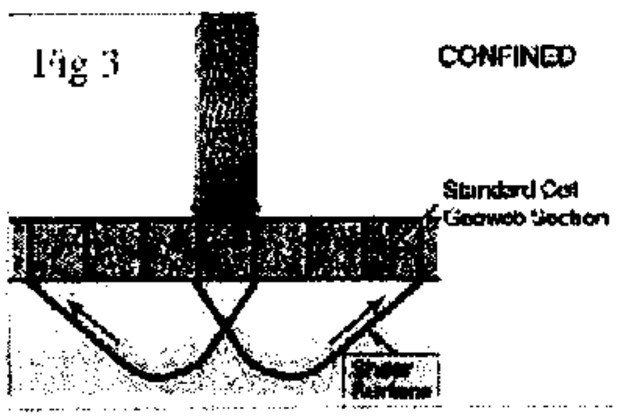


Fig 2



In contrast to two-dimensional geogrids used with layers of granular fill *(unsuitable for tree root protection due to pre-rutting required to provide tensile strength)* The Geoweb mechanism prevents unconfined rutting of subsoil's (Fig.2) by confining the infill materials within the hoop strength thereby increasing the infills shear strength. The load redistribution that occurs within the confined zone (Fig 3) is complex and involves three-dimensional interaction between the infill material and the cellular structure. Vertical stress applied to the infill induces a horizontal active pressure at the perimeter of the cell.

Fig 3



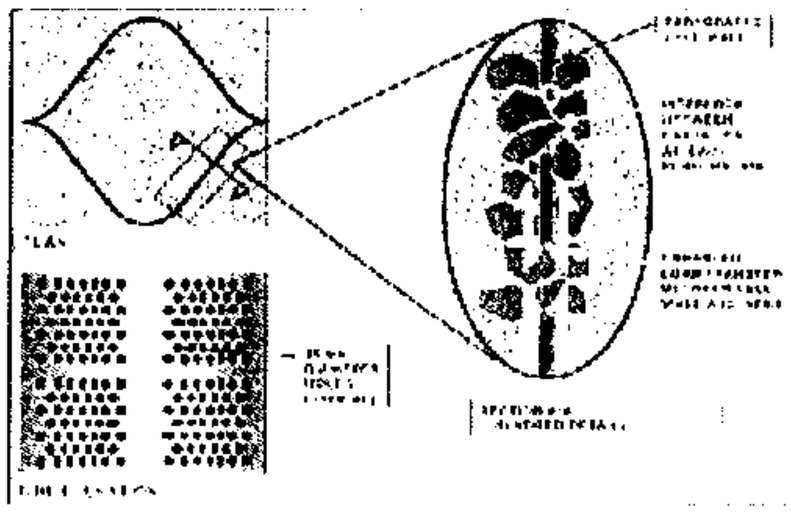
The infill-wall interface friction transfers load into the cell structure which in turn mobilises resistance in surrounding cells. It is also evident that cells which surround a loaded cell offer greater passive resistance due to lateral strain in the vicinity of the load. The combined effect of these mechanisms produces a composite mattress with high flexural stiffness and load support capabilities within the Geoweb layer.

Fig 4

Fig 5

The use of a non woven geotextile beneath the Geoweb cellular mattress acts as a separation / filtration layer (Fig.4). The placement of Geoweb on cohesionless subsoil's with a free draining granular infill requires the separation function of a Polyfelt TS50 geotextile (Fig.5). The geotextile fabric is laid over the prepared subgrade prior to the expansion of the Geoweb mattress. This prevents the mixing of fill material with subgrade while allowing free drainage.

The perforated cellular wall structure provides mechanical interlock for infill materials increasing the shear strength properties while allowing intercell lateral free-drainage through perforated cell walls. Flow rates tests undertaken by the British Textiles technology Group (BTTG) have proved a lateral reduction in flow rate of 10% between unconfined fill and fill confined within the cell wall construction.



Appendix 5

ARBORICULTURAL SITE INSPECTION

SITE:		PERSONNEL INFORMED ON SITE:
CLIENT:		
SITE AGENT:		
DATE:		
INSPECTED BY:		

TREE PROTECTIVE FENCING IS DESCRIBED AS:

- in place ☐
- in wrong location ☐
- partially in wrong location ☐
- not in place ☐
- in need of re-erection ☐

COMMENTS/ACTIONS:

WITHIN THE AGREED EXCLUSION AREA:

- all is clear ☐
- minor debris exists ☐
- excessive debris exists ☐
- materials/equipment are stored ☐
- works are being undertaken ☐
- works/excavation have been undertaken ☐

COMMENTS/ACTIONS:

OTHER WORKS:

TYPE OF WORKS	COMMENTS/ACTIONS:

SIGNED:

_____

(For and on behalf of ACS Consulting)

SIGNED:

_____

(For and on behalf of developer or main contractor)

Appendix 6

Fig. 1: Shows confined tree pit direct roots down with root barriers. This form of planting can be extended in length to accommodate numerous trees in one trench.

Fig.2: Indicates pattern of root growth as a result of root barriers, as trees mature.