



WE KNOW SERVICES

ARBORICULTURAL METHOD STATEMENT

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REVISION A

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1.0 Discussion

- 1.1 The majority of the root system, of a tree, is in the surface 600mm of the soil, extending radically for distances frequently in excess of the trees height. Beyond the main structural roots (close to the base of the trunk), the root system rapidly sub-divides into smaller diameter roots: off this main system, a mass of fine roots develops.
- 1.2 The shape of the main structural roots develops in response to the need for the tree to have physical stability. Beyond these major roots, root growth and development is influenced by the availability of water and nutrients. Unless conditions are uniform around the tree, which would be unusual, the extent of the root system will be very irregular and difficult to predict. It will not generally show the symmetry seen in the branch system.
- 1.3 The parts of the root system, which are active in water and nutrient uptake, are very fine, typically less than 0.5mm diameter. They are short lived, developing in response to the needs of the tree, with the majority dying each winter. It is essential that conditions in the soil remain conducive to the healthy growth of these fine roots so that the water and nutrients necessary for healthy tree growth can be absorbed.
- 1.4 All parts of the root system, but especially the fine roots, are vulnerable to damage. Once they are damaged, water and nutrient uptake will be restricted until new roots have regenerated. Vigorous young trees will be capable of rapid regeneration but over mature trees will respond slowly, *if at all*.
- 1.5 In order to live and grow, roots need oxygen from the soil. Respiration by the roots and other soil organisms depletes this oxygen and increases carbon dioxide levels in the soil; a correct balance of these gases is normally maintained by diffusion between the soil and the atmosphere. Anything, which disturbs this balance, will affect the condition of the root system.
- 1.6 The factors that most commonly affect this diffusion adversely, and therefore damage roots, are the following: -
 - a) Compaction of the ground, which reduces the space between soil particles. This is particularly important on clay soils. A single passage by heavy equipment on clay soils or storage of heavy materials can cause significant damage;
 - b) Changing soil levels, even for a few weeks;
 - c) Covering the root area with impervious surfaces; and
 - d) A rise in the level of the water table. Roots can tolerate submersion for short periods. But a permanent rise will deplete the soil of oxygen.
- 1.7 Serious damage is often caused during preliminary site works by stripping the topsoil. For this reason, such works should be avoided until protective fencing has been erected.

- 1.8 Excavations in the rooting area can sever roots. As the majority of roots are in the surface 600mm, even shallow excavations can cause damage.
- 1.9 Excavations for foundations, landscaping or service trenches are usually sufficiently deep to sever most of the roots, and it should therefore be assumed that all parts of the root system beyond the excavation would no longer serve the tree.
- 1.10 Excavation or soil stripping which sever or damage the roots may impair the stability of the tree and make it dangerous.

2.0 Method Statement

2.1 Methodology for the Construction of the Car Parking Courtyard

2.1.1 The following methodology supports the drawing indicating the construction of the car park within the RPA of T1 and T3. The methodology is prepared on the basis of the sequence of operations necessary to complete the construction of the car park with the minimum damage to the trees proposed for retention.

- All work within the RPA will be carried out under a watching brief from a qualified arboricultural consultant.
- The surface layer is to be scraped off. This can be done either by hand or by very small machinery.
- Erect protective fencing to the edge of the construction area.
- Spread a sub grade material to fill any small ruts.
- Construct edging using treated timber if required.
- Lay geotextile mat over smoothed area.
- Extend the Geoweb perforated tree root protection system with sufficient overlap such that kerbs can be constructed on top of the Geoweb.
- Fill the voids within the Geoweb with reduced fines Type 1 material working into the site over the top of the Geoweb.
- Lay edgings and surface over the Geoweb such that the construction binds itself together.
- Construct finished surface as required in line with guidance illustrated in **Appendix 2.0**.

2.2 Removal of Existing Hard Standing with RPA

- No hard surface removal within the Root Protection Area (RPA) will occur without arboricultural supervision.
- The initial 'breaking up' of hard standing will be carried out by low impact hand held pneumatic tools.
- Removal of the surface will occur in sections working backwards over the undisturbed surface to avoid movement over exposed ground.
- Any exposed roots will be covered with a good quality top soil to avoid desiccation as the operation progresses.
- Compacted surfaces will be lightly broken up with hand tools to aid water penetration.
- Subsequent removal of arisings /debris will also be carried out by hand.
- No reduction in levels of the underlying soil surface shall occur.
- The underlying soil shall be levelled by the addition of good quality top soil (in accordance with BS3882:2015 (typically 150mm maximum depth);Hand tools only shall be used for any levelling works which will not disturb the underlying soil.

2.3 Methodology for the Fence Installation

- 2.3.1 All vehicle and plant movement to be excluded from the root protection area.
- 2.3.2 Excavation for fence posts within the root protection areas will be carried out under a watching brief from a qualified arboricultural consultant. It will be their responsibility to monitor the effect of the works on adjacent trees and provide ongoing advice on how to avoid or minimise damage as the work proceeds.
- 2.3.3 All holes dug for fence posts will be excavated with as small a dimension as practicably possible.
- 2.3.4 All Digging / excavation within the root protection area (but not within 1 metre of tree stems) will be carried out carefully using hand tools only. Care will be taken to avoid de-barking, breaking, splitting, splintering or shattering roots.
- 2.3.5 Topsoil and subsoil excavated from the post holes will be deposited into separate stacks and kept apart until the backfilling operation commences.
- 2.3.6 If significant roots (over 25mm diameter) are encountered posts will be repositioned. No roots over 25 mm in diameter will be pruned. If roots less than 25mm in diameter are present they will be pruned using an appropriate sharp clean pruning tool such as pruning saw or secateurs and treated with an approved fungicidal sealant.

2.3.7 Fine roots (less than 25mm in diameter) will not be left exposed overnight where there is a risk of frost.

2.3.8 Once fence posts have been positioned with a concrete foundation, backfilling around the post hole will be carried out by hand using the subsoil first. The subsoil will be backfilled into the post holes in layers of no more than 100mm deep and each layer will be gently consolidated by treading the surface. Once the subsoil backfilling has reached the level of the top of the existing subsoil, topsoil backfilling will commence. Topsoil excavated from the post holes will be backfilled into the post holes in layers of no more than 100mm deep and each layer will be gently consolidated by treading the surface. Topsoil will be backfilled into the post holes until original ground level is reached. It is important that no voids are left and that the soil completely surrounds the roots.

2.3.9 Existing ground levels within the root protection area will be maintained.

2.4 Protective Fencing

- All fencing used on the site should fully comply with BS 5837:2012 (Trees in Relation to Construction – Recommendations).
- The fencing should be strong and suitable for local conditions. It should also take into account the degree of construction activity on the site.
- The fencing should be at least 2.3m in height and should be erected with both a vertical and horizontal scaffolding framework capable of withstanding impact, with vertical tubes spaced at a maximum of 3 m. This should support either weldmesh panels which should be securely fixed with wire or scaffold clamps.
- Notices should also be erected on the fencing stating 'Protected Area - No operations within fenced area'.
- The positioning of the protective fencing is also very important and should be erected in the proposed location identified in **Appendix 1.0**. Once the fence has been erected it should never be crossed and particular care should be taken to store any materials or soil within the protected area.
- Where there is a presence of underground services, an alternative arrangement is acceptable using boots to support the vertical sections of the fence and a stabilizer strut mounted on a block tray.

2.5 Ground Protection Measures for Root Protection Areas (RPA) Outside the Protective Fencing

2.5.1 Where access is required within the RPA the following methodology must be followed:

- Mulch must be spread to a depth of 150mm over the dedicated area;

- The mulch must be levelled then covered with boarding. The boarding may be either: scaffold boards laid butted together (Appendix 4.0); or plywood sheets 2440mm by 1220mm at least 19mm thick laid butted together.

2.6 Additional Precautions

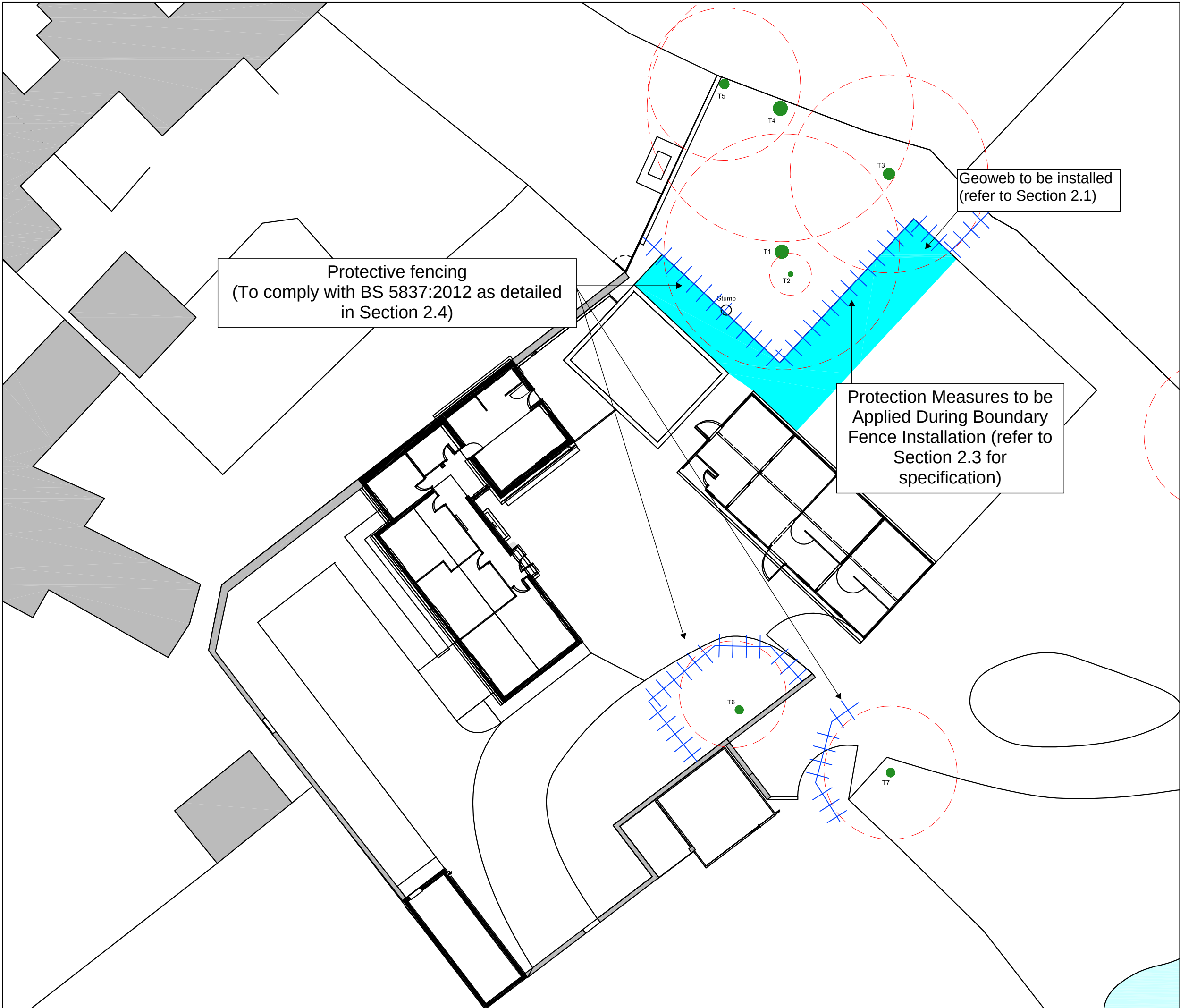
- Oil, bitumen, cement or other material likely to cause damage to the trees will not be stacked or discharged within 10m of a tree stem.
- Concrete mixing and washing will not be carried out within 10m of any retained trees.
- Fires will not be lit beneath the foliage or in a position where the flames could extend to within 5m of the foliage, branches or trunk. If the fire is large then this may necessitate a distance of at least 20m.
- Trees that are to be retained will not be used as anchorage for equipment.
- Notice boards, telephone cables, or other services will not be attached to any part of a retained tree.
- Care should be taken when using cranes or other equipment near the canopy of the retained trees.

2.7 Soft Landscape Works within the RPA

- Heavy mechanical soil cultivation techniques should not be carried out within any RPA. Any cultivation should be carried out by hand to minimise damage to tree roots.
- Existing ground levels within the RPA should be maintained.

Appendix 1.0

Tree Plan



-  Root protection area
-  Geoweb
-  Tree protection fencing

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Site Address:
Trevalyn Wood, Manor Lane,
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Drawing Title:	Drawing No:	
Tree Protection Plan	19/00080/MS	
Date:	Scale:	Drawn by:
17.02.2020	1:300@A3	MS

Note: Dimensions are not to be scaled from this drawing. All written measurements are to be checked on site by the contractor. Copyright WeKnow Services.
Note: All rights described in Chapter IV of the Copyright Design & Patents Act 1988 have generally been asserted.

Appendix 2.0

Construction of Special Surface

METHODOLOGY FOR THE CONSTRUCTION OF HARD SURFACING WITHIN ROOT PROTECTION AREAS

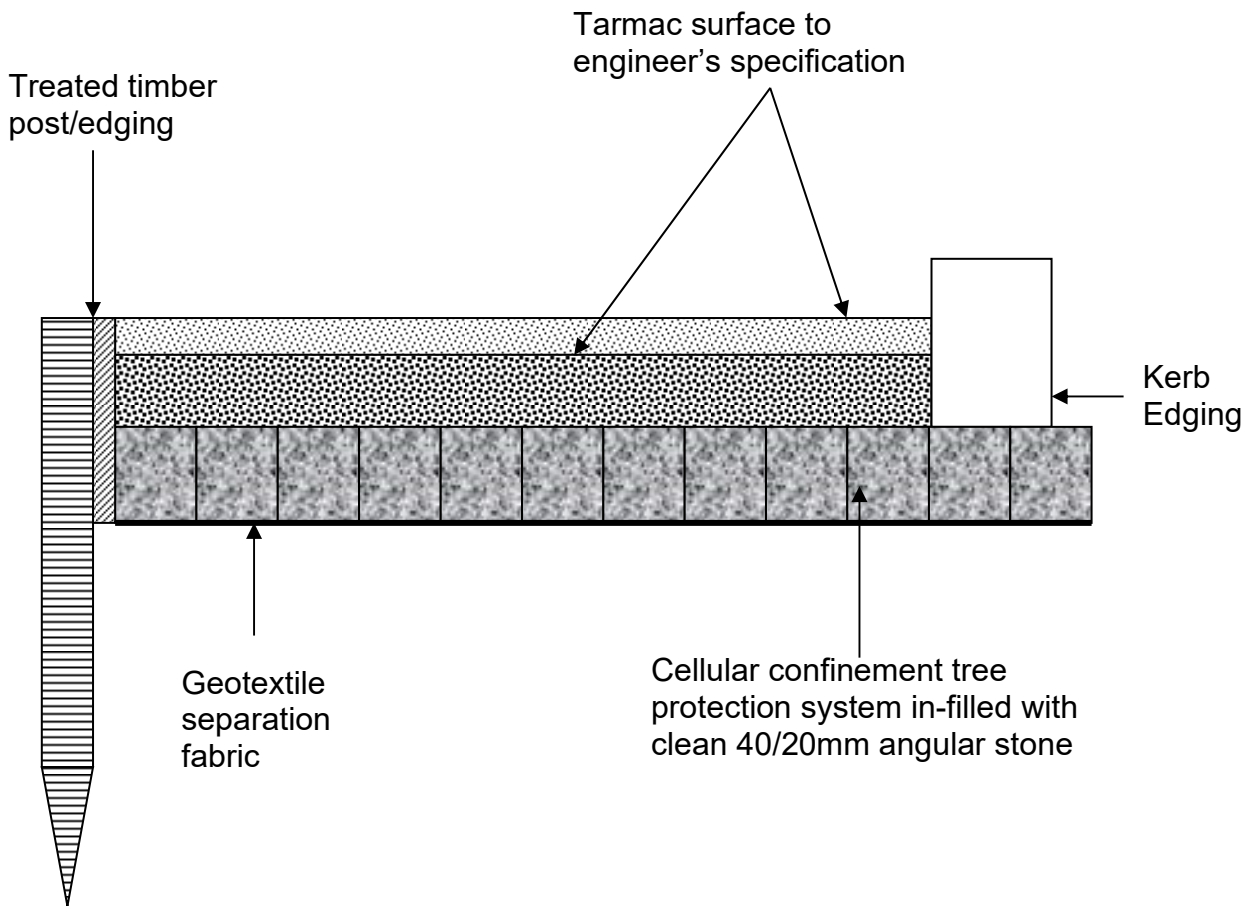
The following methodology supports the drawing indicating the construction of the car park within the RPA of T1 and T3. The methodology is prepared on the basis of the sequence of operations necessary to complete the construction of the car park with the minimum damage to the trees proposed for retention.

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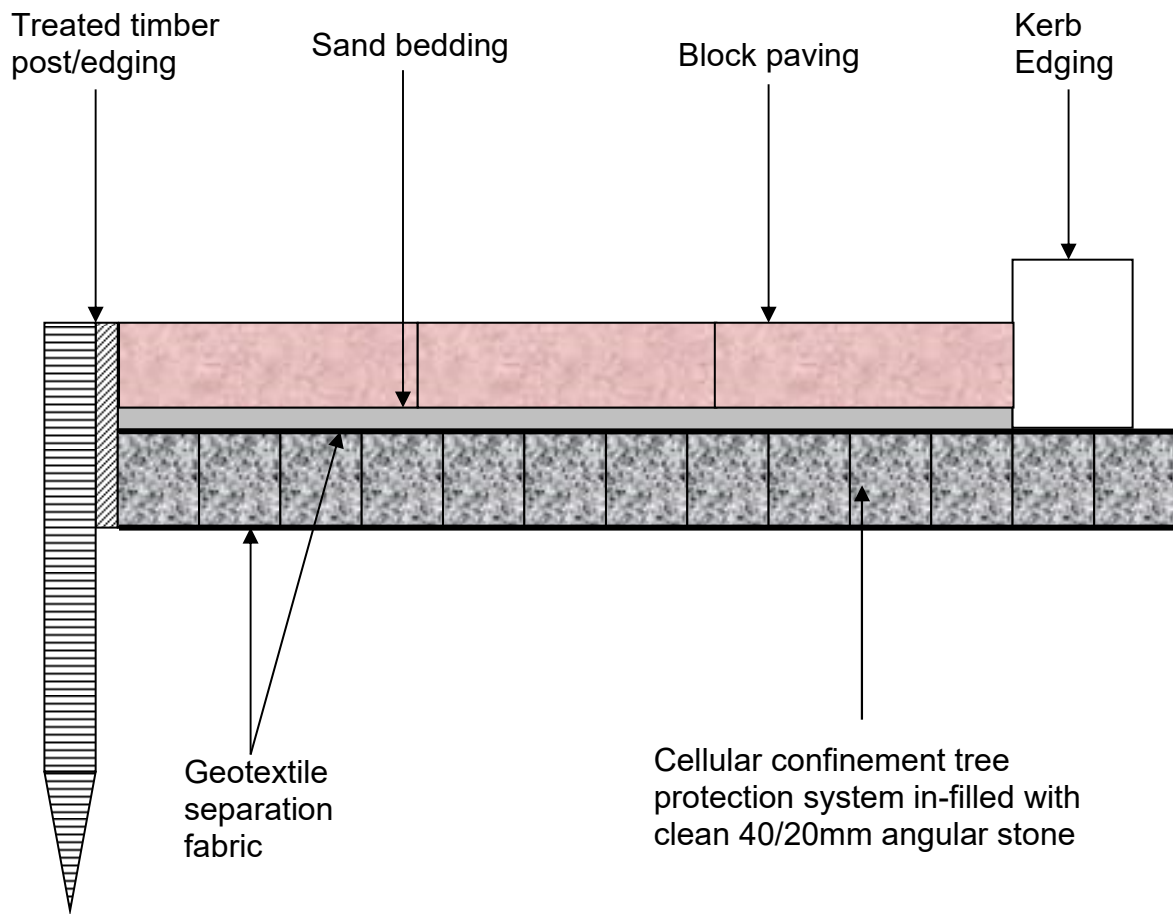
Geoweb Based Construction – (Indicative Only)

Depth of confinement system variable according to use- refer to manufacturer

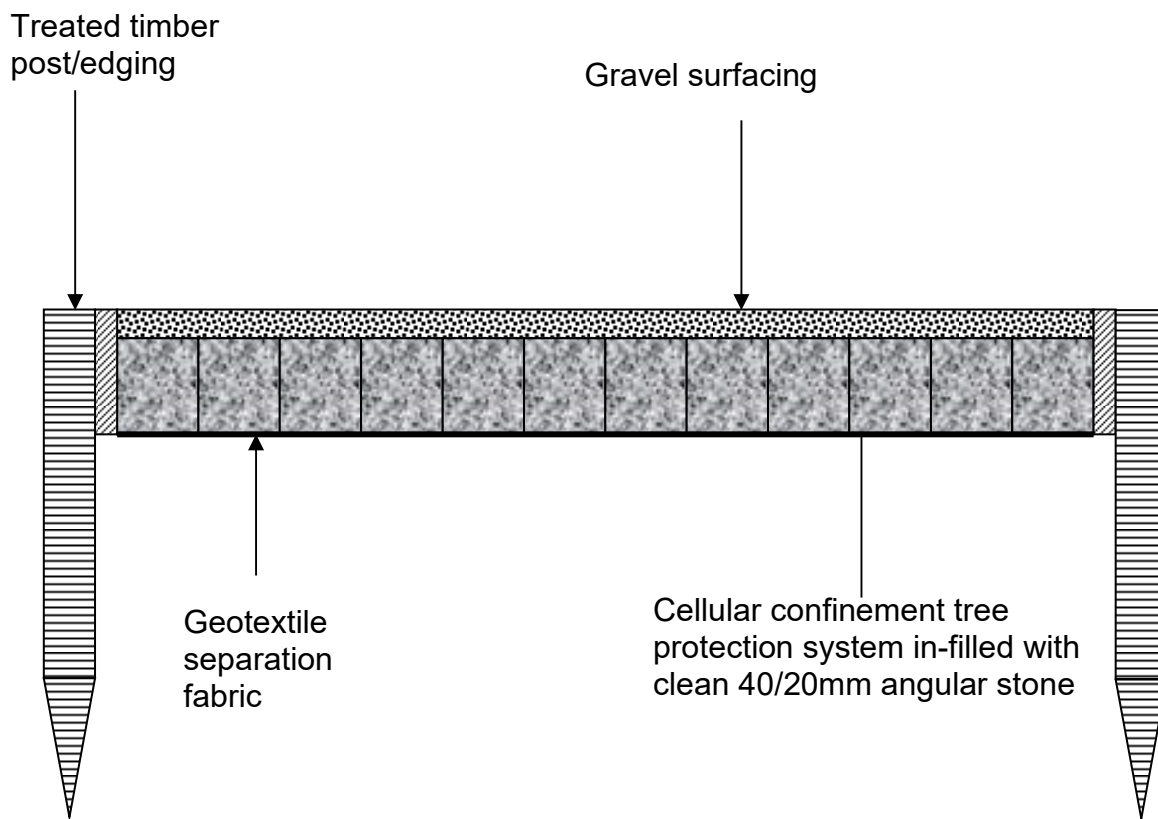
Tarmac Surface



Block Paved Surface

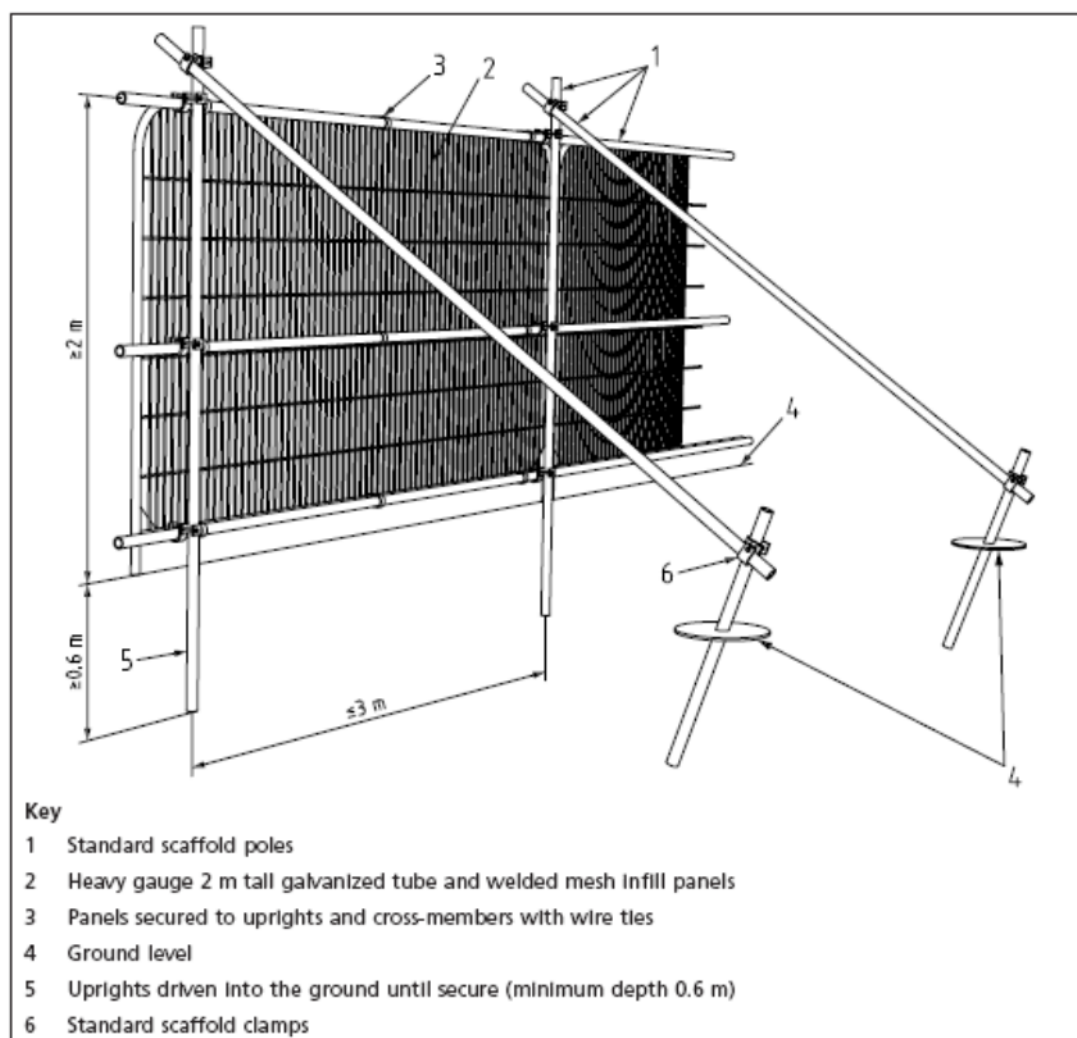


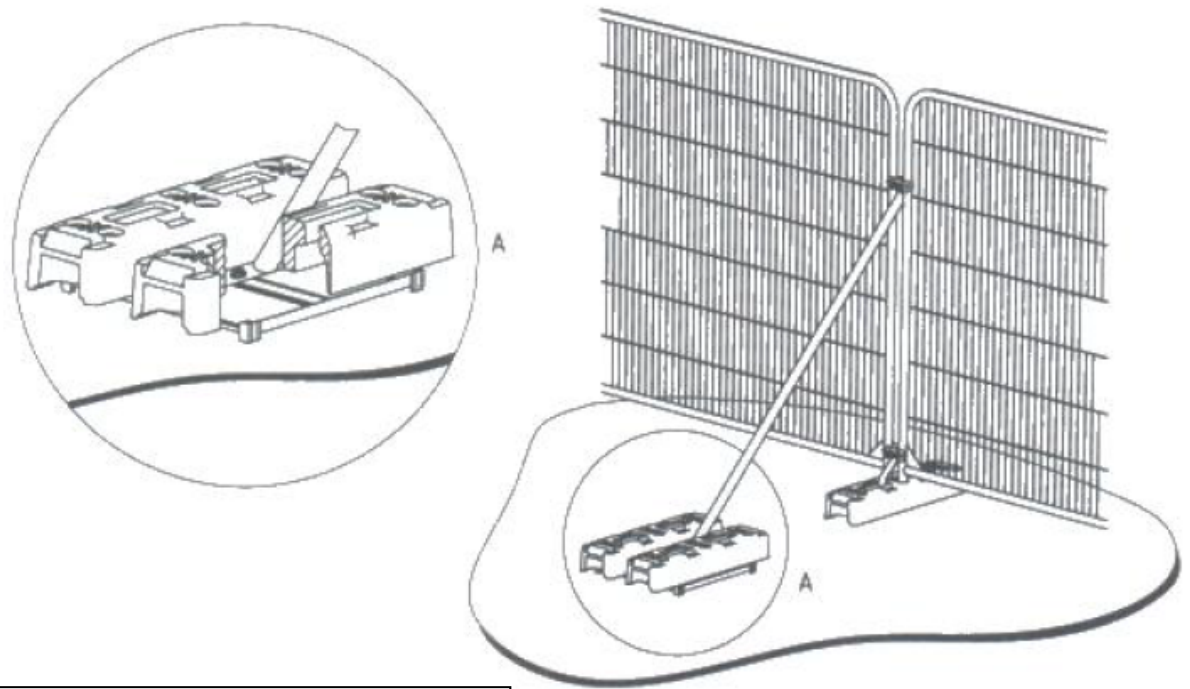
Gravel Surface



Appendix 3.0

Tree Protection Fencing

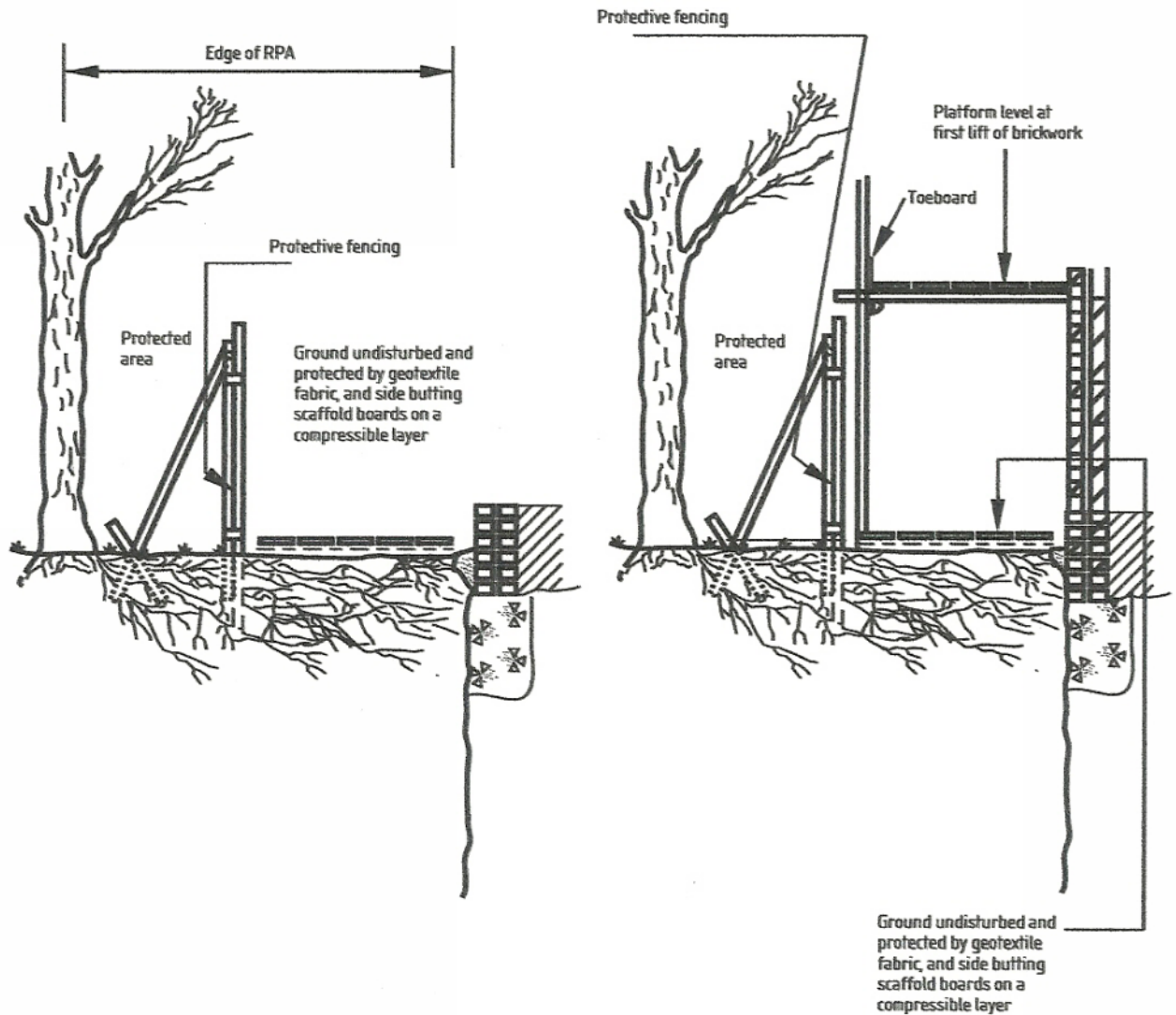




Fencing arrangement in the presence of underground services- vertical sections mounted in boots and stabilizer strut mounted on block tray

Appendix 4.0

Ground Protection Measures



The scaffold boards may be substituted for plywood sheets (e.g. 2440mm by 1220mm) of at least 19mm thickness and laid on 150mm depth mulch in order to spread the load of any high points on the original surface.