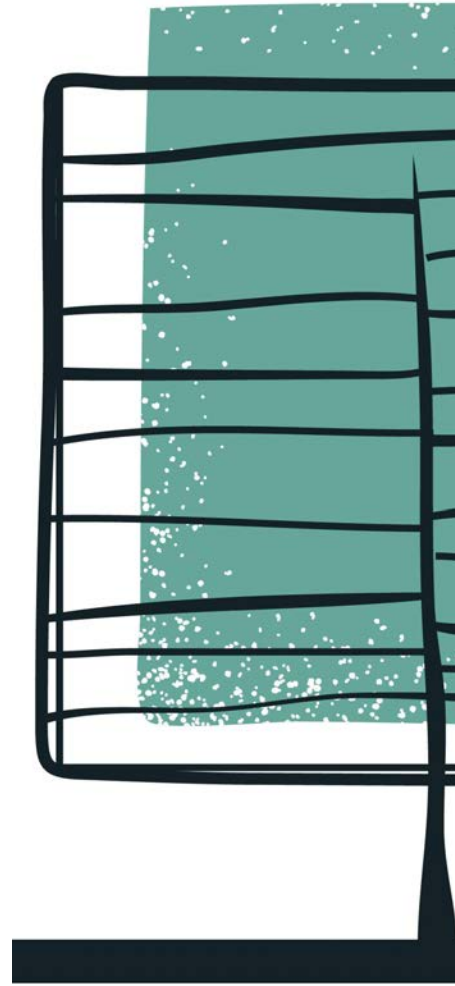




Report No: LTM0045.MS.03

Date: 17/10/2022

Project Address: 2 Park Avenue, Levenshulme, M19 2EE

BS 5837:2012

Method Statement

Inspection Record.

Date of Inspection	Surveyor
10/04/2020	Matthew Lally. FdSc MArborA

Lally Tree Management.

36 Goldsworthy Road, Urmston, Manchester, M41 8US

[T] 07305 740120 [E] matt@lallytreemanagement.co.uk [W] <https://www.lallytreemanagement.co.uk/>

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Revision	Date	Prepared by	Status
Final	08/11/2020	M. Lally	Complete
Amendment 1	20/11/2020	M. Lally	Complete
Amendment 2	20/04/2021	M. Lally	Complete
Amendment 3	17/10/2022	M. Lally	Complete

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Appendix One. Tree Plan

Appendix Two. Tree Protection Fencing

Appendix Three. Special Measures Area

Appendix Four. Construction of Special Surface

Appendix Five. Pile & Beam Foundations

1.0 Discussion

- 1.1 The majority of the root system, of a tree, is in the surface 600mm of the soil, extending radially 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.
 - 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

Before any form of development commences on the site the following works should be undertaken: -

2.1 Tree Works

Tree No.	Proposed Works
T1	No Works Required
T2	No Works Required
G3	No Works Required
T4	No Works Required
G5	No Works Required
T6	Crown lift to 6m on development side of crown
T7	Crown lift to 6m on development side of crown
T8	Crown lift to 6m on development side of crown
T9	No Works Required
T10	No Works Required
T11	No Works Required
T12	No Works Required
T13	No Works Required
T14	No Works Required
T15	No Works Required
H16	No Works Required

2.2 Protective Fencing

- 2.2.1 All fencing used on the site should fully comply with BS 5837:2012 (Trees in Relation to Construction – Recommendations).
- 2.2.2 The fencing should be strong and suitable for local conditions. It should also take into account the degree of construction activity on the site.
- 2.2.3 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 weldmesh panels which should be securely fixed with wire or scaffold clamps.

- 2.2.4 Notices should also be erected on the fencing stating, 'Protected Area - No operations within fenced area'.
- 2.2.5 The positioning of the protective fencing is also very important and should be erected in the proposed location identified in Appendix One. Once the fence has been erected it should never be crossed and particular care should be taken not to store any materials or soil within the protected area.

2.3 Additional Precautions Outside Fenced Areas

- 2.3.1 Oil, bitumen, cement or other material likely to cause damage to the tree will not be stacked or discharged within 10m of the trees stem or within the protective area. Also, materials in general will not be stacked or discharged within the exclusion zone.
- 2.3.2 Concrete mixing and washing will not be carried out within 10m of any retained trees.
- 2.3.3 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.
- 2.3.4 Trees that are to be retained will not be used as anchorage for equipment.
- 2.3.5 Notice boards, telephone cables, or other services will not be attached to any part of the retained tree.
- 2.3.6 Care should be taken when using cranes or other equipment near the canopy of the retained trees. Also, any trees to be felled in proximity to the retained trees should be done so with particular care.

2.4 Ground Protection (Special Measures)

- 2.4.1 The dimensions of the ground protection is outlined in appendix one, with a possible design shown in appendix three of this document.
- 2.4.2 For the use of pedestrian-operated plant up to a gross weight of 2 t, interlinked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane can be used as ground protection. Heavier plant will require an engineered design solution based on arboriculturalist advice.

2.5 Access Facilitation Pruning

- 2.5.1 To help with construction of the extension, the crown lifting of T6, T7 & T8 to 6m on the development side will be required.

- 2.5.2 All pruning works will be undertaken in line with British Standard 3998:2010 Tree Work – Recommendations and therefore the Safe Useful Life Expectancy of the trees will not be adversely affected.

2.6 Cellular Confinement System

- 2.6.1 The use of a cellular confinement system will be employed to create the drive that encroaches into the RPAs of T1, T2, G3, T4, T6 & T7 without having a detrimental effect.
- 2.6.2 A proposed methodology and cross-sectional diagram for the construction of the access way can be found in appendix four of this report.

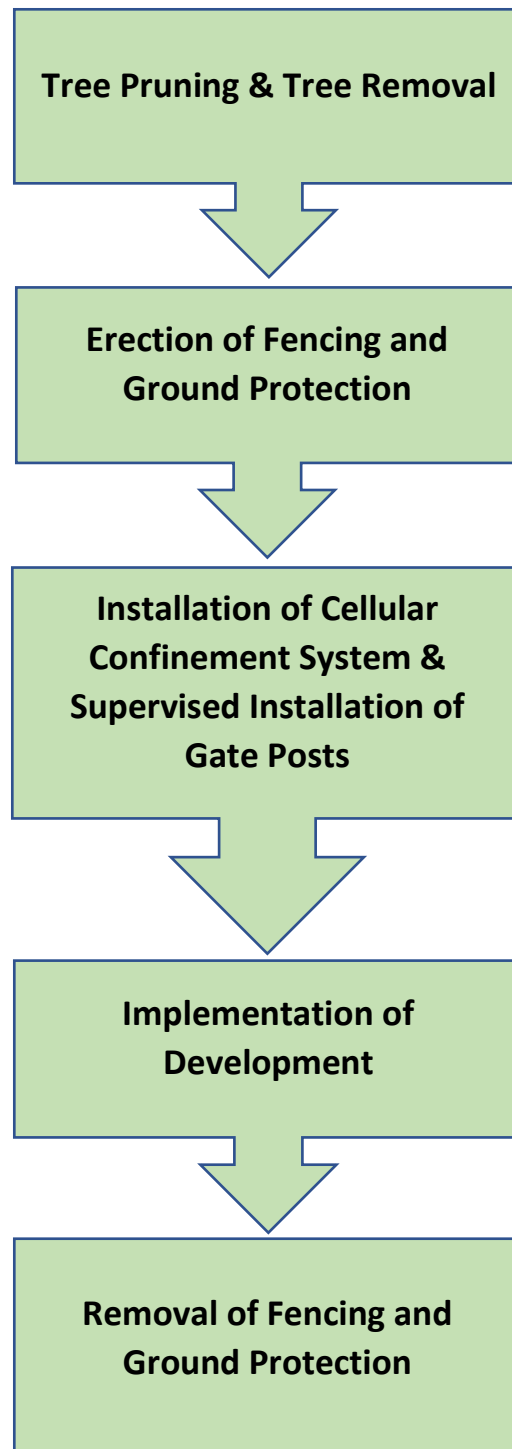
2.7 Installation of gate posts

- 2.7.1 Trial holes for the gate post will be hand dug and supervised by an arboricultural consultant. If roots greater than 2.5cm are encountered, then the hole will be backfilled, and this location will not be used for the gate post. A new trial hole will be dug 30cm from the original until a suitable hole can be dug that is free from roots over 2.5cm.
- 2.7.2 Any root severance of roots less than 2.5cm that is required during the dig will be conducted by an Arboricultural Consultant.

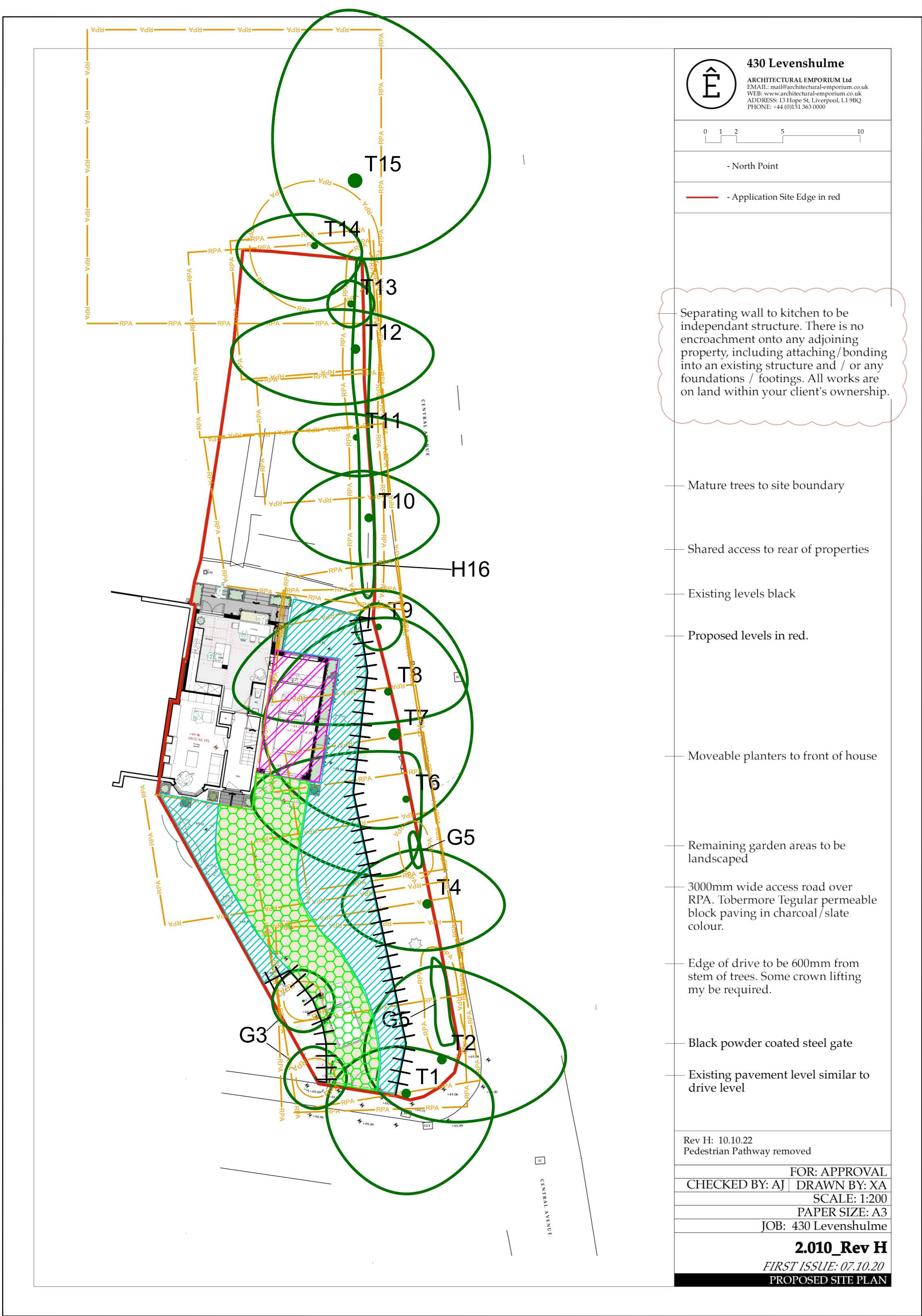
2.8 Pile and Beam Foundations

- 2.8.1 The proposed extension will have a designed foundation to reduce the amount of excavation required for its construction. This can be achieved by constructing the extension with a pile and beam foundation, where the beams are laid above ground level.
- 2.8.2 The smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots and reduces the size of the rig required to sink the piles.
- 2.8.3 Use of the smallest practical piling rig for the proposed piling will be used to reduce pressure on the soil and also to prevent the need for access facilitation pruning.
- 2.8.4 The pile type will be selected that will protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, e.g. sleeved bored pile or screw pile.
- 2.8.5 An example of a pile and beam foundation system is shown in appendix five.

2.9 Summary of Methodology for the Protection of the Trees



Appendix One. Tree Plan



Do not scale this drawing (printed or electronic version).
Contractors must check all dimensions from site.
This drawing is for use on this site only and should be used in conjunction with all relevant consultants drawings.

LEGEND

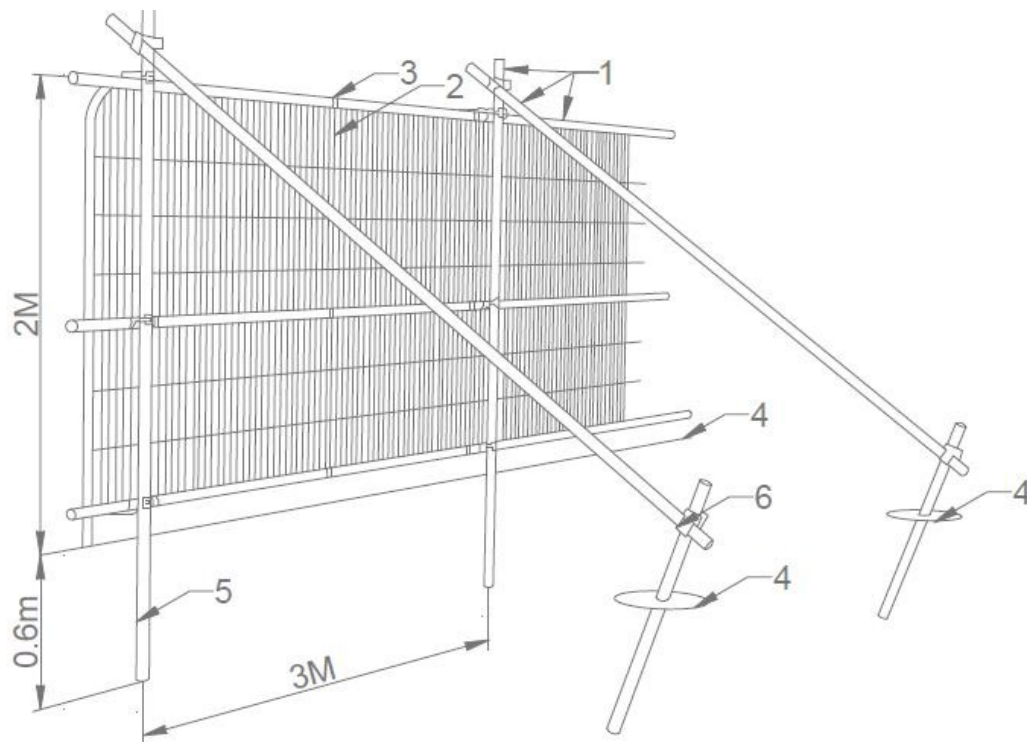
- Retained Trees
- Removed Trees
- Root Protection Areas
- Protective Fencing (Metal)
- Ground Protection
- Piled Foundations & Ground Protection
- Cellular Confinement System



Scale:	1:200 @ A1	Date:	14/10/2022
Job:	LTM0045. Park Rd		
Address	2 Park Ave. Levenhulme		
Client:	Mr and Mrs Douglas-Thorne		
Drawing Number:	LTM.0045.TPP.03		
Drawn by:	Matthew Lally		
TREE PROTECTION PLAN a			

Appendix Two. Tree Protection Fencing

Tree Protection Fencing (BS5837: 2012)



Key

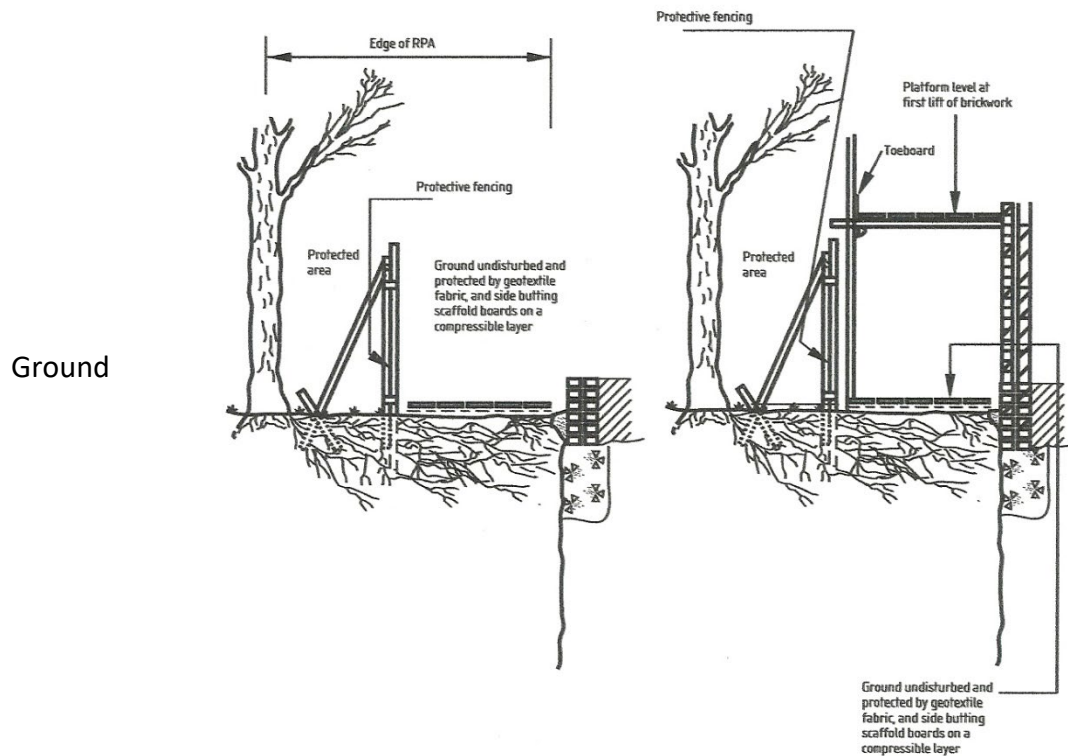
- 1 Standard scaffold poles
- 2 Heavy gauge 2m tall galvanised tube and welded mesh infill panels
- 3 Panels secured to upright and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6m)
- 6 Standard scaffold clamps

Protective fencing Notice to attached to fencing



Appendix Three. Special Measures Area

Special Measures Area (pedestrian)



protection and scaffolding within the RPA (taken from BS5837:2005)

Ground protection and scaffolding within the RPA (taken from BS5837:2005)

Interlinked plastic boards with a layer of chip can be used as ground protection.

The below picture courtesy of Ground Guards (<http://www.ground-guards.co.uk/solutions/tree-root-protection/>) illustrates a possible method.



Appendix Four. Construction of Special Surface

METHODOLOGY FOR THE CONSTRUCTION OF CAR PARKING

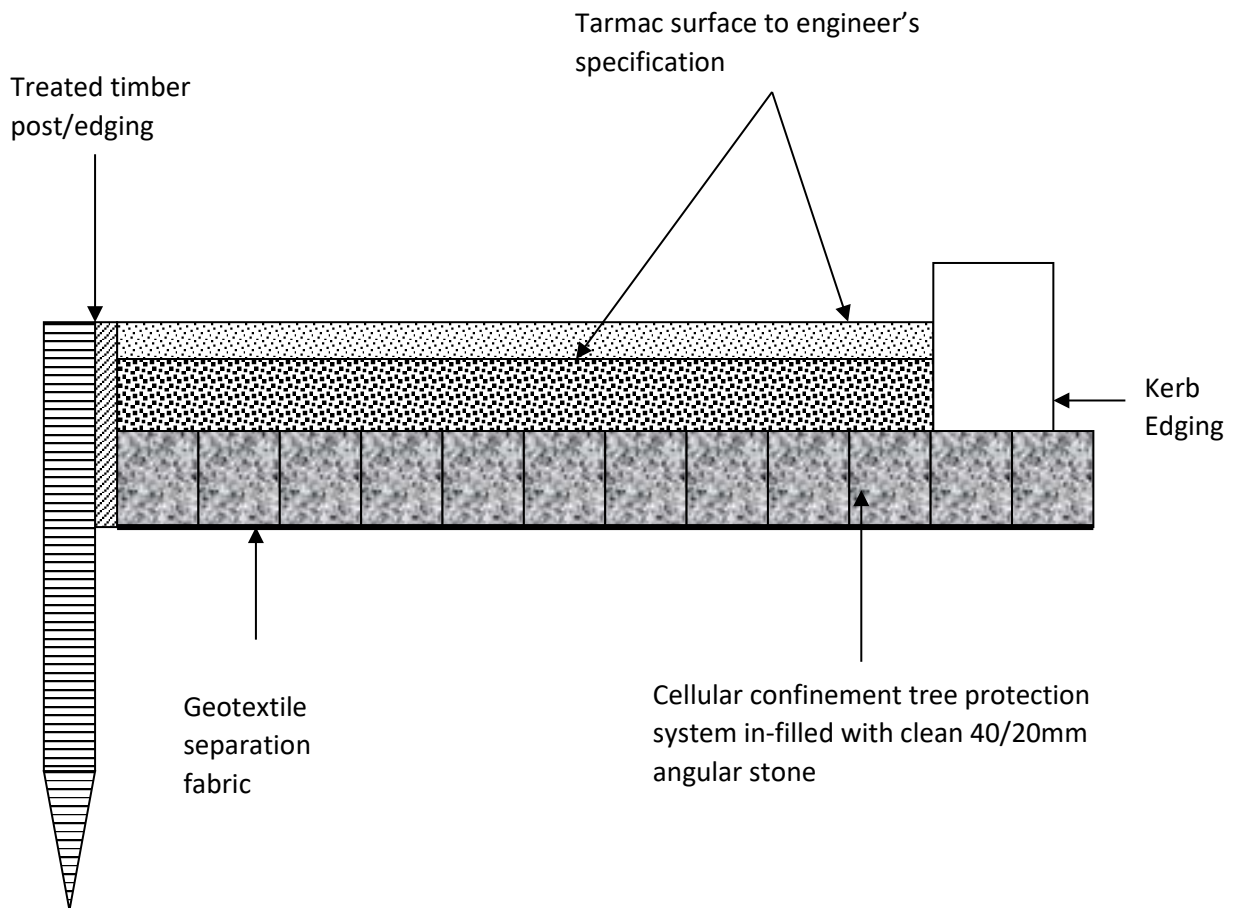
The following methodology supports the drawing indicating the construction of the driveway. The methodology is prepared on the basis of the sequence of operations necessary to complete the construction of the driveway with the minimum damage to the trees proposed for retention.

- Surface layer 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 over the length of the driveway 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 over the area of the driveway 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 kerbs and surface over the Geoweb such that the construction binds itself together.
- Construct finished surface as required in line with guidance illustrations below.

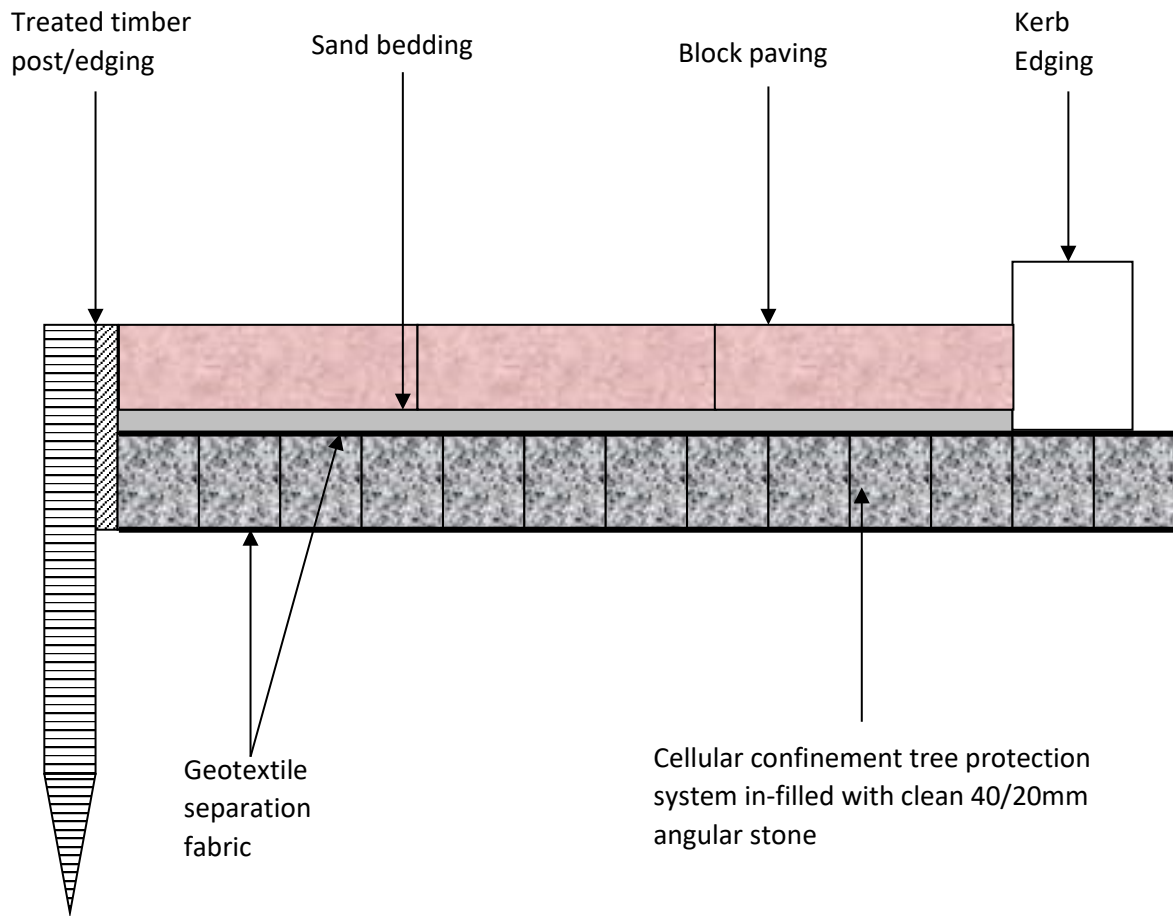
GEOWEB BASED CONSTRUCTION – (INDICATIVE ONLY)

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

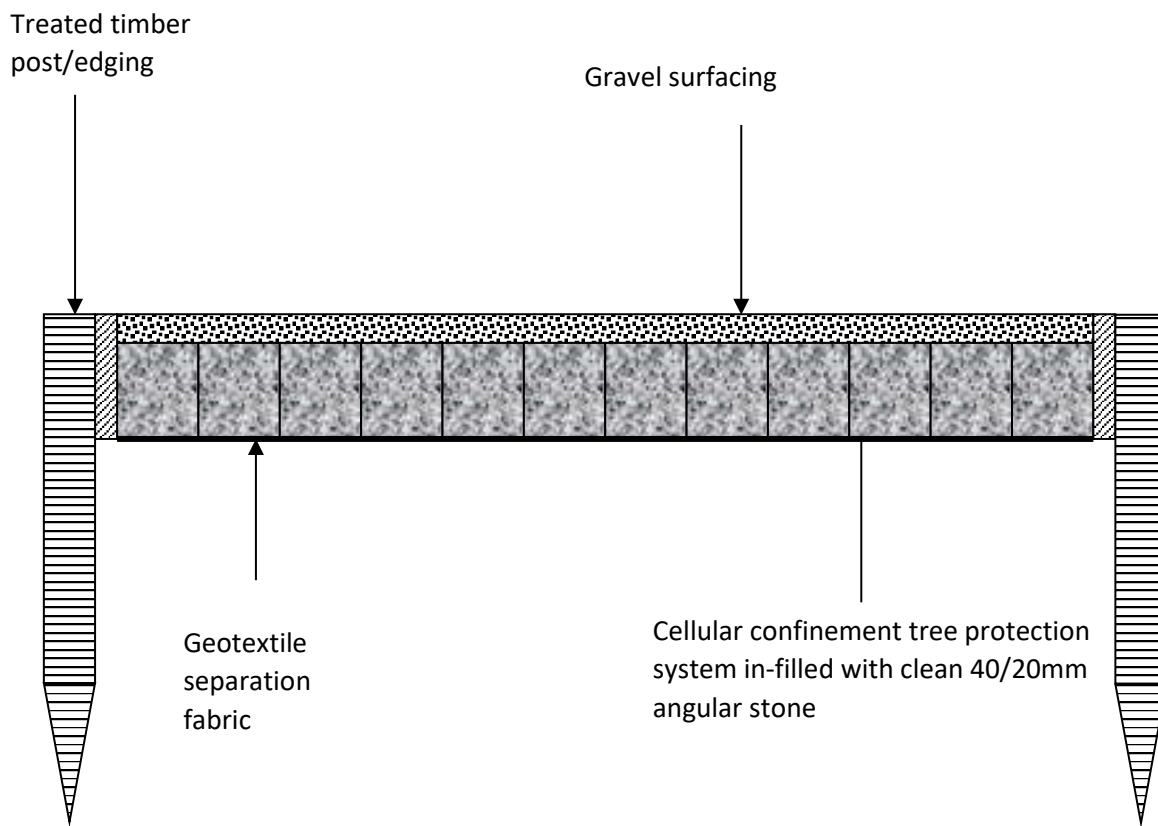
Tarmac Surface



Block Paved Surface



Gravel Surface



Appendix Five. Pile & Beam Foundations

**ABBAY PYNFORD
FOUNDATION SYSTEMS LIMITED**

**TREE ROOT PROTECTION SERVICE
METHOD STATEMENT**

Introduction

Abbey Pynford Piling & Foundations Limited have been asked to quote for the installation of the Housedeck piled foundation system

.
Due to the proximity of trees to the location of the proposed development, it is proposed to use the Tree Root Protection Service (TRPS) during the installation of the foundations.

This document outlines the possible extent of works involved with the TRPS.

It is intended that this document is used in conjunction with the site specific Arboriculturist's Method Statement. On receipt of that document, its site specific requirements will be adopted by Abbey Pynford and incorporated into this method statement.



Hand augering is undertaken at all pile positions within the Root Protection Area, if roots greater than 20mm diameter are found the pile is moved and the new position re-augered. Our in-house design department then re-analyse the slab design to ensure the new position is adequate.



The ground surface is protected with a breathable geotextile membrane. Over this cellweb is pegged out and the pockets filled with pea shingle to provide a permeable low bearing pressure working surface.



A typical piling rig used on a Tree Root Protection Service project. The rig is custom designed to have a very low bearing pressure, equivalent to a 12 stone man wearing size 10 shoes. The power pack (in back of photo) is left outside the root zone, leaving just the lightweight piling rig operating on the site.



Each pile position is sleeved using a polythene coated cardboard tube to prevent concrete from the pile leaching into the root zone



The clear void is created using our proprietary collapsible void formers known as Deck Support Units. These are laid under the footprint of the building.



Perimeter jacks are laid around the edge of the footprint to allow fine level adjustments to be made.



The Deck Support Units are covered with marine ply to provide the formwork for the concrete slab.



The completed deck. Pile overlays made of a flexible material prevent concrete from the slab pour leaching onto the ground surface. Similarly the aluminium strips between the sheets of ply prevent concrete reaching the ground surface.



The slab prior to the concrete pour. The reinforcement steel, service ducts rising up through the slabs and the stainless steel edge detail can all be seen. The edge is levelled to a high tolerance by means of perimeter jacks.



Concrete is poured to a fine finish producing a slab with a very high tolerance. After 7 days of curing the Deck Support Units are removed.



This picture shows the finished voided system. The piles supporting the slab can be seen as well as the clear void the Housedeck system leaves. The pea shingle and cellweb under the slab are also visible and the geotextile membrane which prevents materials entering the void can be seen attached to the underside of the slab.