

Tree Protection - Method Statement

Site: Approved Scheme at Ashbrow, Huddersfield.

For: Keepmoat Homes

Date: 17th June 2018

Reference: BA6485AMS



Barnes & Associates
Rivermead, Skelton Road, Langthorpe, North Yorkshire, YO51 9BZ
Tel: **01423 322 371** Mobile: **07831 530 563**
enquiries@barnesassociates.co.uk

VALIDATION STATEMENT FOR LPA REGISTRATION

This is an arboricultural method statement describing how the trees will be protected and managed during the development of the site. As outlined in Table B1 of BS5837. It is based on the best available information at this stage in the planning process and may need to be updated in the context of a specific planning condition when the full details are known.

Its purpose is to explain how and when the protection measures should be installed and how they will be maintained for the duration of the development activity.

The following explanations relate specifically to this site and they shall be read in conjunction with the attached plan.

This revolves around two primary protection methods:

Stage 1 Protection - Tree Protection Fencing & Ground Protection - **Highlighted in Red**

Stage 2 Protection - Incursion Methods – **Highlighted in Blue**

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ARBORICULTURAL METHOD STATEMENT FOR THE PROTECTION OF TREES AT ASHBROW, HUDDERSFIELD.

This is an arboricultural method statement describing how the trees will be protected and managed during the development of the site as explained in Table B1 of BS5837. It is based on the best available information at this stage in the planning process and may need to be updated in the context of a specific planning condition when the full detail is known.

Its purpose is to explain how and when the protection measures should be installed and how they will be maintained for the duration of the development activity.

The following explanations relate specifically to this site and they should be read in conjunction with the attached plan. Please note that this plan is not a 'dimensioned tree protection plan' at this stage because as BS5837 advises in Table B1 that this is not required at the planning application stage.

1.0 INTRODUCTION

- 1.1 **Status.** This document takes precedent to all other tree protection documentation in relation to the site to date. This document provides information regarding the timing, type of protection and the manner in which protection and improvements shall be undertaken to improve the chances of tree retention.
- 1.1.1 This document has been prepared in line with '*Trees & Development*' Matheny & Clark (1991), '*Tree Roots and the Built Environment*' Roberts, Jackson & Smith (2006) and the guidelines set out in **BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'**.
- 1.2 **Arboricultural Restrictions.** This Method Statement has been prepared to outline tree protection measures and this document is submitted for approval as part of the Planning Approval.
- 1.3 **The Project.** It details the protection measures for the trees in relation to the development and the construction of the approved site changes.
- 1.4 **General.** This information is to be read in conjunction with the **Tree Protection Plan (TPP)**, Drawing no. BA6485TPP attached to this document as appendix C, and sets out the methodology, design changes and site improvements required to improve the chances of tree retention on site.
 - 1.4.1 Compliance with this method statement will be a requirement of all relevant contracts associated with the development proposals and shall be appended on to all contractors and subcontractor documentation. Attention is drawn to the '*Construction (Design and Management) Regulations 2015*'.
 - 1.4.2 Copies of this document will be available for inspection on site. In addition, copies of the Tree Protection Leaflet '**SUMMARY OF TREE PROTECTION MEASURES**' included as appendix B. These shall be handed out to all site visitors and delivery personnel.
- 1.5 **Tree Protection.** The protection methods will revolve around the need to prevent significant negative changes to the existing soil close to retained trees. To achieve this '**Prevention is Better than Cure**', which is cost effective in comparison to root zone rectification or enforced stoppages.
 - 1.5.1 Appropriate site organisation and management are essential. Protection is to be achieved by establishing a combination of **Construction Exclusion Zones (CEZ) & Tree Precautionary Zones (TPZ)** to protect sufficient rooting volume to sustain growth as recommended in section 5.5.2 BS5837:2012 and are highlighted on the Tree Protection Plan BA6485TPP attached to this document as appendix C.
 - 1.5.2 Protection is required for the commencement of any works on site. I have highlighted the appropriate sequence for protection this is detailed in Table 1 on page 7, which highlights the key phases and the monitoring required. In addition, this information also includes the Tree Protection Plan drawing number no BA6485TPP in appendix C.
 - 1.5.3 Specific protection methods are included in Table 2 on page 11, which highlights the type of protection, installation techniques, improvements and management required. In addition, this information is also included on the Tree Protection Plan drawing number no BA6485TPP in appendix C.
 - 1.5.4 Providing this work is undertaken sensitively, there should be no noticeable negative impacts on the trees. Providing the recommended root zone improvements are undertaken the works should be viewed as a net gain for the condition of the trees, in light of the relative size of the site and the limited areas affected by the proposed site changes, the current constraints and the proposed mitigation.

2.0 DESIGN CHANGES

- 2.1 **Evolution of the Design.** The proposal needs to acknowledge the requirements of the trees and their protection needs. The proposal is located close to and within the trees Root Protection Area's. With several of the changes being located within the **Tree Precautionary Zones (TPZ)**.
- 2.2 **Limiting Risks to Trees.** To help reduce the potential impact of site changes BS5837:2012 recommends in Section 3.7 that a **Root Protection Area (RPA)** is included as a layout design tool. This indicates the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. These distances are included as magenta circles on the Tree Protection Plan BA6485TPP attached to this document as appendix C.
- 2.3 **Design changes:** These are partly a result of works to reduce the overall threat to retained trees, namely changes to the proposed construction techniques and changes to the final materials for sections of the hard surfacing.
 - 2.3.1 The culmination of these changes are detailed in the current plans and aims to help minimise impacts for the existing trees.
 - 2.3.2 The key changes to limit ongoing damage to trees: -
 - I. Form **Construction Exclusion Zones**, to be free from change.
 - II. Form **Tree Precautionary Zones** using ground protection and fencing.
 - III. Substitute traditional construction for Low Impact Methods.
 - IV. Undertake periodic assessment and circulate findings
 - 2.3.3 As the scheme evolves, this may result in further variations to the design and further variations to this Method Statement and additional updates may be required.

3.0 SEQUENCING

- 3.1 **General.** This method statement aims to provide sufficient information to provide a high level of confidence in the outcome for trees retained during the development. It sets out a series of parameters for construction activity (e.g. Where service routes and/or construction activity should not occur), based on the Root Protection Areas and the physiological needs of the trees.
- 3.1.1 It takes a precautionary approach towards tree protection and shall be adopted during any operations, including access proposed within the Root Protection Areas (or crown spread where this is greater). Whilst providing methods to ensure minimal risk of adverse impacts on retained trees.
- 3.1.2 This Method Statement indicates protection for the principal elements of the development which should be appropriate to typically address the following areas of work: -
- Installation of temporary ground protection.**
 - Installation of new hard surfacing – materials, design constraints and implications for levels.**
 - Preparatory works for new landscaping.**
- 3.1.3 Where, elements are not included explicitly you must contact the Project Arborist to enable the formation of suitable protection, incorporating relevant information from other specialists as required.
- 3.2 **Phasing of Development:** The phasing will typically be governed by operational constraints and may be subject to change. The Project Arborist must be informed of any changes that may result in either design or sequence changes.

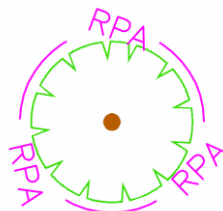
- 3.2.1 Each Phase of the development is expected to follow broadly the sequence given in Table 1 'Development Sequencing', and will be subject to site meetings at commencement, followed by signing off, of the protective measures and tree friendly construction methods in addition to ongoing appraisal.

Table 1 – Development Sequencing & Site Supervision Schedule.

Construction Phase	Supervision Required
PHASE 1 PRE DEVELOPMENT STAGE Pre-commencement site meeting between LPA, client, site manager and Project Arborist, to confirm the final design and location of protective measures, to include: -	• Approved Tree Removals to provide space. • Approved Tree pruning to improve safety. • Tree protection measures to be installed. • Location of site compound, WC, materials storage and waste. • <u>Phase I to be signed off.</u>
PHASE 2 DEVELOPMENT STAGE Subject to regular monitoring by Project Arborist & meetings at the beginning of high risk operations such as: -	• Site Clearance. • Ground works within or close to CEZ. • Development within the CEZ. • Completion of development. • <u>Phase II to be signed off.</u>
PHASE 3 FINAL DEVELOPMENT STAGE Subject to visits by project arboriculturist at the beginning of high risk operations such as: -	• Final level grading. • Landscape operatives briefed by Project Arborist. • <u>Phase III to be signed off.</u>
PHASE 4 POST DEVELOPMENT STAGE Periodic visits by project Arborist to the end of the condition period to manage tree population transition into the landscape.	• Periodic Tree health & Risk assessment. • Remedial tree work and plant health care advice. • <u>Phase IV information to be circulated.</u>

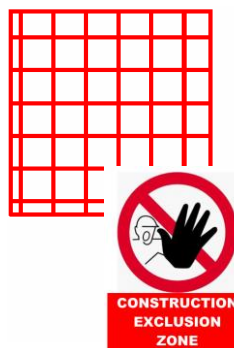
3.2.2 Following site meetings information regarding the tree protection measures will be circulated to interested parties to ensure the continuity of tree protection is maintained.

3.3 **Retained Trees.** Trees that needs to be protected throughout the approved scheme are highlighted with a green canopy, complete with a magenta circle to represent their minimum Root Protection Area (RPA) as shown opposite and on the Tree Protection Plan BA6485TPP.

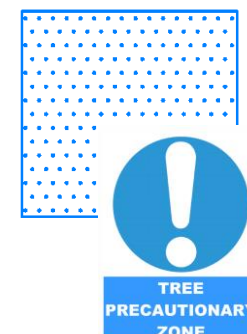


3.4 **Reducing Risks to Retained Trees.** Trees can be damaged during the construction process. These foreseeable risks to the retained trees can be readily defended through the creation of a **Construction Exclusion Zone (CEZ)** and controlling activity within the area close to the Root Protection Areas of retained trees by establishing a **Tree Precautionary Zone (TPZ)** as detailed below.

3.4.1 The location of **Construction Exclusion Zone's** is indicated by the wide red line representing the position of Tree Protective Fencing and signage as shown below and located on the Tree Protection Plan BA6485TPP.



3.4.2 **Tree Precautionary Zone's (TPZ)** indicate areas that require work within the **Root Protection Area** and these are indicated by the blue dot hatching and signage as shown opposite indicates the location of the Tree Precautionary Zones on the Tree Protection Plan BA6485TPP. Examples of ground protection and low impact construction methods and materials are included both on the plan and within this report.



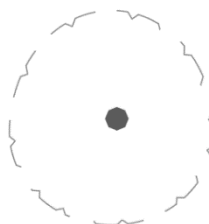
4.0 ARBORICULTURAL WORKS

4.1 **Tree Works:** Based upon the current supplied drawings, tree works are required to help to both improve the immediate site safety and to simplify ongoing site management. Ideally, such tree works shall be carried out before commencement of other site operations, including erection of protective fencing. To improve the condition of the trees, recommendations have been included in the original tree survey; these works need to be undertaken prior to the start of the fencing operation.

4.2 **Tree Pruning to enable construction.** No specific pruning is required to provide space.

4.2.1 However, based upon the original tree survey several trees have been identified as offering an elevated risk to site users and neighbours and some improvement works are required in addition to more general pruning to maintain clearance for vehicles, which is a current site requirement.

4.3 **Tree removals to facilitate construction.** The redevelopment of the site does require the removal of trees. These are shown a light grey dashed line canopies, as indicated opposite.



4.4 **Arboricultural Works:** All arboricultural operations shall be subject to the following conditions:

- No vehicles shall be allowed to enter areas to be protected by fencing.
- Works undertaken on site will need to adopt ground protection as detailed within this Method Statement.

- All works shall be carried out in accordance with the BS3998:2010 Recommendations for Tree Work and /or the *European Tree Pruning Guide* - European Arboricultural Council (English Version).
- Contractors shall undertake work in strict accordance with current arboricultural best practice.
- Contractors shall ensure that any pruning works accord with current target pruning methodology.
- Contractors shall abide by all relevant legislation for health and safety, including highway requirements, including the New Road & Street Works Act 1991 for works in proximity of highways, and The Working at Heights Regulation 2004.
- Works shall be planned to avoid times when birds are nesting, and be aware that a bat survey may be needed on significant tree hollows.
- The works shall be timed to avoid times when the soils are excessively wet to limit the risk of compaction within the Tree Precautionary Zone.

5.0 TREE PRECAUTIONARY ZONE

- 5.1 **Sequencing:** Before the commencement of any works on site (other than those set out in the schedule of tree works contained in this document), protective fencing shall be erected in the positions shown on the Tree Protection Plan BA6485TPP attached to this document as appendix C.
 - 5.1.1 Once the fencing is in place it shall be inspected and signed off by the project arboriculturist and the local planning authority shall be notified in writing.
- 5.2 **Tree Protection:** Retained trees need to be protected from the potential damage of the development process as this has the potential to damage trees irreparably. Protection requires the establishment of a Construction **Exclusion Zone (CEZ)** and controlling activity within the area close to the Root Protection Areas of retained trees by establishing a **Tree Precautionary Zone (TPZ)** to protect sufficient rooting volume to sustain growth as recommended in section 5.5.2 BS5837:2012.
 - 5.2.1 The locations of Construction Exclusion Zones are indicated by the wide red line representing the position of Tree Protective Fencing and the area of red net hatching as shown below and located on the Tree Protection Plan BA6485TPP attached to this document as appendix C.
 - 5.2.2 Access, within the **Construction Exclusion Zone** represented by the red line to show the position of Tree Protection Fencing and signage both are shown opposite. The position of these areas is detailed on the Tree Protection Plan BA6485TPP attached to this document as appendix C. Examples of protective fencing types are included on the plan and shown in table2 below.

- 5.2.3 The blue dot hatching indicates the location of the **Tree Precautionary Zone**. These areas are shown on the Tree Protection Plan BA6485TPP attached to this document as appendix C. Examples of ground protection and low impact construction methods and materials are included on the. Principally, protection of retained trees will limit excavation and minimise soil level changes.
- 5.3 **Restrictions.** The design and access requirements for the site show that the Construction Exclusion Zones needs to be set back in several places. I have highlighted these areas as **Tree Precautionary Zones (TPZ)** shown on the Tree Protection Plan BA6485TPP attached to this document as appendix C.
 - 5.3.1 Specific fencing protection methods are detailed in Table 2 (below) and Ground protection methods are included in Table 3 (below), which are required to ensure a reasonable chance of tree survival.
 - 5.3.2 This information can become outdated as the scheme progresses or designs change and typically will need to be refined to include input from other professionals such as building control, structural engineer, highway engineer and the site manager.
 - 5.3.3 Tree protection will need to be installed following the initial tree works and before the onset of any demolition or ground works. The CEZ & TPZ should remain in position for the whole of the construction and demolition phase.
 - 5.3.4 To avoid disturbance to the physical protection, it is essential to make allowance for, and plan, all construction operations, which will be undertaken near trees and may need to be adjusted to meet the specific phases of the development process, with protection methods differing at Demolition, Construction & Practical Completion.

Table 2 -Tree Precautionary Zone (TPZ) Management within the Root Protection Area (RPA).

Protection Methods	Required	Phasing & Schedule
BARRIER – TSP TREE STEM PROTECTION VERY HIGH RISK AREAS 		<u>TSP – TREE STEM PROTECTION.</u> To be protected from impact damage by Boarding or Plywood Boxes constructed clear of the stem. Boxes are to contain compressible material to absorb shock loading. To be located where vehicles may come into direct contact with existing trees. ▪ <u>To be installed before plant or vehicles enter the working area in area</u> ▪ <u>To installed where a High likelihood of contact the main stem is likely.</u>
BARRIER – TPF1 TREE PROTECTION FENCING HIGH RISK AREAS 		<u>TPF1 - TREE PROTECTION FENCING.</u> This is to be provided by Braced Harras Fencing or solid panels. Post-holes shall be excavated by powered hand auger or low ground-pressure plant working of ground protection or outside the Precautionary Zone. ▪ <u>Tree Protection Fencing (TPF1) installed to protect trees prior to excavation or soil movement</u> ▪ <u>Installed in High Risk Areas during Demolition and Build Phase.</u>
BARRIER – TPF2 TREE PROTECTION FENCING MODERATE RISK AREAS 		<u>TPF2 - TREE PROTECTION FENCING.</u> This is to be erected as a temporary barrier to protect areas designated for later construction or landscaping the Precautionary Zone. This shall consist of Heras type panels mounted onto rubber/concrete 'boots' as shown opposite. ▪ <u>Tree Protection Fencing (TPF2) To be installed before plant or vehicles enter the working area</u> ▪ <u>Installed in Moderate Risk Areas.</u>
BARRIER – TPF3 TREE PROTECTION FENCING LOW RISK AREAS 		<u>TPF3 TREE PROTECTION FENCING.</u> This is to be erected as a visual barrier to protect areas designated for no or later construction. Consisting either stock fencing, post and rail fencing, Chestnut Pale fencing or Orange Extruded Plastic Netting. ▪ <u>Tree Protection Fencing (TPF3) installed to protect trees prior to excavation or soil movement.</u> ▪ <u>Installed in Low Risk Areas.</u>
SITE MONITORING - PROJECT ARBORICULTURIST		▪ <u>Assessment to be undertaken as outlined in Table 2 Site Supervision Schedule</u> ▪ <u>Findings circulated to all interested parties throughout the active project.</u>

Table 3 - Tree Precautionary Zone (TPZ) Management within the Root Protection Area (RPA).

Protection Methods	Required	Phasing & Schedule
GROUND PROTECTION - GP1 - HEAVY PLANT 		NO DIG - GROUND PROTECTION GP1 If access for Heavy Plant access is required within the RPA across grass, exposed soil or works are undertaken outside the existing hard surfacing near retained trees. Several methods can be used including: ▪ Compacted stone infill within a 3D Geotextile support. ▪ Trackways installed with compressible sub-surface. ▪ Void forming Crate Systems protect the soil around the tree roots.
GROUND PROTECTION – GP2 - PEDESTRIAN & LIGHT PLANT 		NO DIG - GROUND PROTECTION GP2 If access for Pedestrians & Light Plant Heavy is required within the RPA, across grass, exposed soil or works are undertaken outside the existing hard surfacing near retained trees. Several methods can be used including: ▪ Scaffolding to create a deck ▪ Proprietary Boarding installed with compressible sub-surface. ▪ Void forming Crate Systems protect the soil around the tree roots.
GROUND PROTECTION – GP 3 - PEDESTRIAN 		NO DIG - GROUND PROTECTION GP2 If access for Pedestrians is required within the RPA, across grass, exposed soil or works are undertaken outside the existing hard surfacing near retained trees. Several methods can be used including: ▪ Proprietary Boarding installed with compressible sub-surface.
SITE MONITORING - PROJECT ARBORICULTURIST		▪ Assessment to be undertaken as outlined in Table 2 Site Supervision Schedule ▪ Findings circulated to all interested parties throughout the active project.

6.0 PROHIBITIONS WITHIN & NEAR TREE PROTECTION ZONES

- 6.1 **General:** Other than works detailed within this method statement or approved in writing by the local Planning Authority, no works, including storage or dumping of materials shall take place within the exclusion zones defined by the protective fencing.
- 6.2 Inside the exclusion area of the fencing, the following prohibitions shall apply: -

- No linear mechanical excavation whatsoever.
- No excavation by any other means without arboricultural site monitoring.
- No hand digging without a written Method Statement having first been approved in writing by the Project Arborist.
- No lowering of levels for any purpose (except removal of grass sward using hand tools).
- No construction of a sealed hard surface (except where agreed with the Project Arborist).
- No storage of plant or materials.
- No storage or handling of any chemical, including cement washings.
- No vehicular access.
- No fire lighting.

- 6.3 In addition to the above, further precautions are necessary adjacent to trees: -

- A 10m separation distance shall be observed between any tree and substances injurious to tree health, including fuel, oil, bitumen, cement (including cement washings), builders' sand, concrete mixing and other chemicals.
- No fire shall be lit such that flames come within 5m of tree foliage; this shall be taken to mean a fire separation distance of 20m from any tree's canopy.

- 6.4 No works shall commence until appropriate protection has been installed and signed off by the Project Arborist:

Tree Protection Fencing shall before the development activities including	
▪ Site Clearance ▪ Groundworks ▪ Plant Delivery ▪ Materials Delivery ▪ Demolition	▪ Soil Stripping ▪ Construction Works ▪ Utility installation ▪ Hard surfacing ▪ Landscaping

7.0 TREE PROTECTION METHODS

- 7.1 **General:** Retention of trees on this site is subject to statutory protection by Planning Condition/s and in some cases Tree Preservation Orders. Damaging them is a criminal offence and is contrary to planning conditions, that if breached could lead to all work on the site being stopped by the local planning authority.
- 7.1.1 Hereafter, the above listed operations are collectively referred to as **‘development’**. Once installed, permanent Tree Protection Fencing shall not be taken down or relocated at any time without the written approval of the Project Arborist. Prior to the start of the fencing operation, the Site Agent & Project Arborist shall walk fence-lines to identify locations where access facilitation pruning is required. The project arboriculturist shall prepare a specification for this work and shall oversee its satisfactory completion.
- 7.2 **Protection of Trees.** The approved scheme has the potential to harm trees and requires defending through the tree protection. In general, tree protection requires a combination of **Tree Protective Fencing** and / or **Ground Protection**, examples of which are included in table 3 and table 4 and detailed in this document.
- 7.3 Changes to the soil or construction within the Root Protection Area can be undertaken only when changes to the design, materials and techniques that can help sustain normal tree growth. Retained trees need to be considered as part of any site changes and protected from the potentially negative effects of alterations or construction.
- 7.4 **Inspection:** Tree protection shall be subject to regular inspection by the project arboriculturist and the results of the findings will be circulated to all interested parties.
- 7.5 **Maintenance:** All Tree protection shall be maintained in good, robust and effective condition until all development has been completed. It shall then only be removed once all plant, materials and site compounds have been removed.
- 7.6 **Signage:** To inform site personnel of the purpose of the fencing, information notices shall be fixed to the fencing at approximately 10m intervals on all TPF. A specimen is provided for copying in appendix A of this Method Statement.
- 7.7 **Information:** To provide site personnel with additional information regarding tree protection, a leaflet shall be issued to all staff at the time of their site induction. Spare copies of this leaflet shall be available in the site office as replacements. A specimen leaflet is attached at appendix B of this Method Statement for copying.
- 7.8 **Avoiding damage to stems and branches.** Care shall be taken when planning site operations in proximity to trees to ensure that 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 injury to them and might make their safe retention impossible.
- 7.8.1 Consequently, any transit or traverse of plant in proximity to trees shall be conducted under the supervision of a banks man; to ensure that adequate clearance from trees is at all times maintained. In some circumstances, it may be impossible to achieve this, necessitating tree pruning. This is known as ‘access facilitation pruning’. This shall be kept to the **barest minimum** necessary to facilitate the development and shall be carried out strictly in accordance with the standards laid out in section 2.
- 7.8.2 Pruning operations **shall only be undertaken by suitably qualified and experienced professional arborists**, working according to a specification prepared by the **Project Arborist**, and the appropriate national standards of the Arboricultural Industry. **Under no circumstances shall construction personnel undertake any tree pruning operations.**

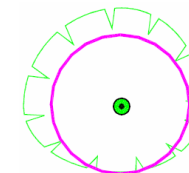
8.0 SOFT LANDSCAPING WITHIN THE TREE PRECAUTIONARY ZONE (TPZ)

- 8.1 **General:** The preparation of any landscaping works within in the TPZ shall be carried out under the supervision of the **Project Arborist**, with final details being agreed during the site meeting prior to commencement of the third phase of the development.
- 8.1.1 Where landscaping is proposed within the CEZ, work shall be undertaken by hand or specialised methods of cultivation that avoid the severance of roots i.e. The use of Compressed Air – Air Spades.
- 8.1.2 Works shall be limited to minor works to amend the difference within the final landscape levels.
- 8.1.3 More significant changes shall remain distinct and not be graduated across the root zone of the retained trees.
- 8.1.4 Care shall be taken to avoid excessive build-up of mulch as these can affect the physical characteristics of the soil. Organic mulches should be a maximum depth of 50mm. Mulches that are liable to cap, consolidate, or degrade into an impermeable layer should not be used.
- 8.1.5 Planting within the CEZ, shall adopt the use of small containerised stock such as P9's which can be planted using a hand trowel and require planting holes of only 100mm x 100mm x 100mm or the adoption of bare root material which can be slit planted in hollows orientated to run away from the tree. Adoption of this material and methods will significantly reduce the need for excavating large planting holes.

9.0 INCURSIONS WITHIN TREE PRECAUTIONARY ZONE

- 9.1 **Protection Methods.** Within this section are a series of specific guidelines which outline protection methodologies to be adopted throughout the development phase as detailed on the Tree Protection Plan BA6485TPP attached to this document as appendix C, or as directed by the project Arborist.
- 9.1.1 The reference code for each methodology within the report is related to the individual Incursions (CEZ & TPZ incursions) detailed on the Tree Protection Plan BA6485TPP attached to this document as appendix C.
- 9.2 **Ambiguities.** Any points that are unclear from the plan or require variation due to changes in site layout, sequencing or design should be confirmed with the project arborist prior to commencement.
- 9.3 **Protection.** The principal protection to occur within the **Construction Exclusion Zone (CEZ)**, which shows the minimum Root Protection Area as shown on the Tree Protection Plan BA6485TPP is attached to this document as appendix C.

- 9.4 Details of the Minimum Root Protection Area are also on the Tree Protection Plan BA6485TPP as a magenta line around each of the trees, as shown opposite.



- 9.5 Protection includes a Construction **Exclusion Zone (CEZ)** to protect sufficient rooting volume to sustain growth as recommended in section 5.5.2 BS5837:2012, highlighted with red tree fencing or Blue Hatching on the Tree Protection Plan BA6485TPP attached to this document as appendix C, as shown opposite.
- 9.6 The protection sequence will follow broadly the sequence outlined in Table 4 below.

All Tree Protection Fencing to be installed & Signed off prior to any of the following taking place:

- Plant and materials delivery
- Demolition
- Soil stripping
- Construction works
- Utility installation
- Landscaping

Table 4 – Sequence for tree Protection during Development.

Construction Phase	Key Elements to be Agreed	Phase Sign Off & Reporting
<u>PHASE 1 - PRE-DEVELOPMENT STAGE</u> Pre-Commencement site meeting between Site Agent, Client and Project Arborist and occasionally LPA, to confirm the final design and location of protective measures. To be undertaken before any Demolition, Site clearance, Groundworks or Construction.	- Access, Protection, Methods & Materials - Tree pruning to improve safety & enable access. - Location & method of Tree Protection measures and the creation of the Construction Exclusion Zones (CEZ). - Location of site compound, WC, materials storage, soil heaps and waste. - Protection methods and material changes within the Tree Precautionary Zones (TPZ).	Record of meeting circulated to interested parties. Protection methods to be SIGNED OFF by Project Arborist following installation and BEFORE COMMENCEMENT of the project. Record site inspection circulated to interested parties.
<u>PHASE 2 - DEVELOPMENT STAGE</u> Specific meetings at the beginning of high risk operations such as: Construction, soil changes or trenching within the Precautionary Zone. Where design changes require access into the Construction Exclusion Zone. Random site inspection.	- Protection methods and techniques. - Equipment for groundworks. - Areas to adopt low impact excavation. - Preventing soil changes. - Confirming, access and material changes within the Tree Precautionary Zone. - Confirming, access and material changes within Construction Exclusion Zone.	Record of meeting circulated to interested parties. Protection methods to be SIGNED OFF by Project Arborist BEFORE COMMENCEMENT. Record of site inspection circulated to interested parties.
<u>PHASE 3 - FINAL DEVELOPMENT STAGE</u> Subject to visits by Project Arboriculturist at the beginning of high risk operations. Landscape operatives briefed by project arboriculturist.	- Sequence of Tree Protection removal. - Areas of Cultivation & Soil Level changes. - Methods of cultivation. - Materials & storage.	Record of meeting circulated to interested parties. Landscaping to be SIGNED OFF by Project Arborist BEFORE COMMENCEMENT Record of site inspection circulated to interested parties.
<u>PHASE 4 - POST DEVELOPMENT STAGE</u> Tree Health Assessment visits by Project Arboriculturist to identify response of trees to site changes.	- The health state of the retained and new trees. - Identify, site amelioration or works to help improve or maintain tree health and safety	Record of site inspection circulated to interested parties.

PROTECTION METHOD - TREE STEM PROTECTION

Tree Stem Protection ref. TSP

Protection Method - Creation of the Tree Stem Protection Box.

Potential Risk: Very High Risk - The trees stem may be irreparably damaged through impact damage.

Proposed Control: Establish a permanent barrier preventing access to the stem for the duration of the project.

Method:

- Prior to the start of the fencing operation, the site agent & Project Arboriculturist shall walk fence-lines to identify locations where access facilitation pruning is required.
- Unmade ground to be protected with anti-compaction boarding during construction of fencing see Precaution **GP1**.
- Boxes shall not be fixed directly to the tree stem with any kind of solid brace. If they were, then any collision movement would be transmitted directly to the tree; which we are trying to avoid.
- Boxes shall be supporting and if possible anchored into the ground. Where boxes are on soft ground post-holes shall be excavated by powered hand auger or low ground-pressure plant (e.g. Bobcat or similar working from outside the TPZ). The postholes shall be lined with an impermeable membrane to protect tree roots in the adjacent soil from concrete leachate.
- On hard surfaces where anchorage is not possible, they need to be heavy with extra weight placed at the bottom edge this could consist of railway sleepers or water filled bollards as shown opposite. There must be space between the tree trunk and box edges to allow for some movement of the box without pressuring the tree. It is then hoped that if a vehicle contacts the box it will resist the collision and only move if this becomes excessive.
- Where a high risk of contact exists, the stem shall be wrapped with a compressible material such as rubber matting to absorb direct impacts.
- As an alternative to water filled bollards further protection can include a robust wooden bumper rail into the design to act as an alternative.



PROTECTION METHOD - TREE PROTECTION FENCING – TPF 1

Protection Method - Permanent Tree Protective Fencing.

Potential Risk: High Risk - The Essential rooting area of the trees may be irreparably damaged through compaction, excavation, soil level changes or contamination.

Proposed Control: Establish a permanent barrier preventing access to the root Protection area for the duration of the project.

Method:

- Prior to the start of the fencing operation, the site agent & Project Arboriculturist shall walk fence-lines to identify locations where access facilitation pruning is required.
- Unmade ground to be protected with anti-compaction boarding during construction of the fencing.
- With the exception of post-holes, **NO** excavation shall be permitted within TPZ.
- Post-holes shall be excavated by powered hand auger or low ground-pressure plant (e.g. Bobcat or similar working from outside the TPZ). The postholes shall be lined with an impermeable membrane to protect tree roots in the adjacent soil from concrete leachate.
- Alternatives to the traditional post support shown in photograph 1 includes Duex Fencing panels shown in photograph 1 or the Heras Steadfast system shown in Photograph 2, can be used where this can be pinned into position using road pins and where these can be fitted with an **Anti-Tamper Coupler** to provide additional security, these couplers can only be removed with the use of the specialist tool.
- In high intensity areas, security tokens may be used to prevent removal.

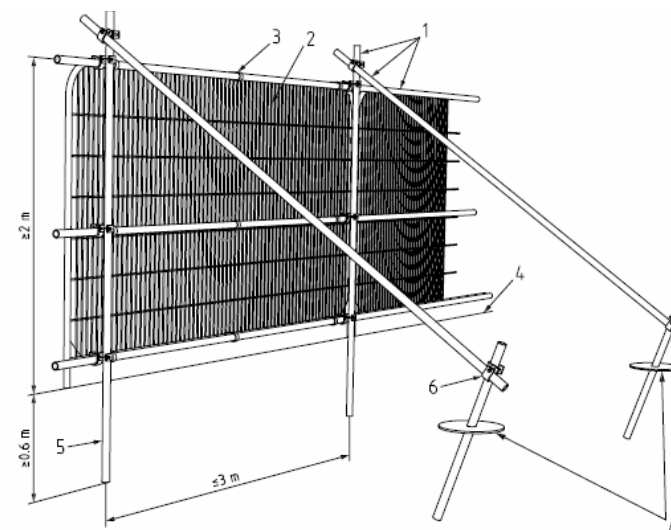


Diagram 1

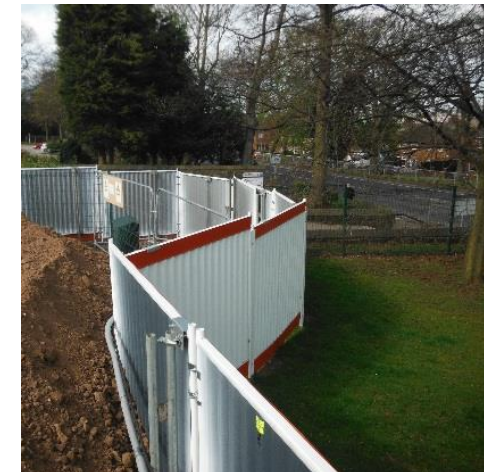
Key

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

Photograph 1



Photograph 2



PROTECTION METHOD - TREE PROTECTION FENCING - TPF 2

Protection Method - Temporary Tree Protective Fencing.

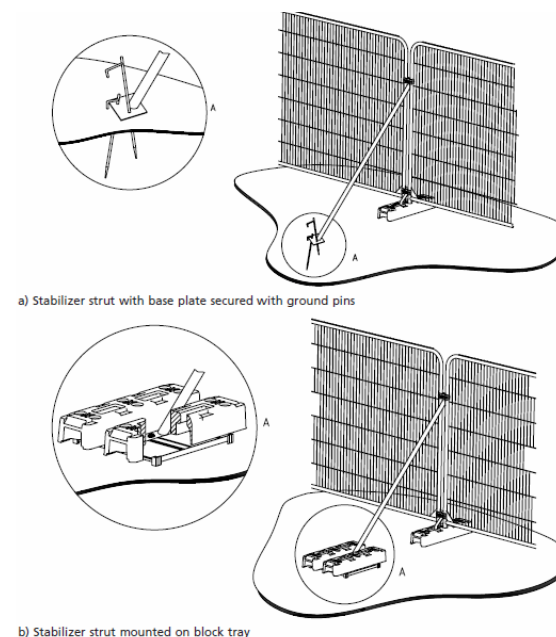
Potential Risk - High to Moderate Risk - The Essential rooting area of the trees may be irreparably damaged through compaction, excavation, soil level changes or contamination.

Proposed Control - Establish a barrier preventing access to the root Protection area for the duration of the project until access is required.

Method:

- o Prior to the start of the fencing operation, the site agent & Project Arboriculturist shall walk fence-lines to identify locations where access facilitation pruning is required.
- o Unmade ground is to be protected with anti-compaction boarding during construction.
- o TPF2 is to be erected as a temporary barrier to protect areas designated for later construction within TPZ, which shall consist of Heras type panels mounted onto rubber/concrete 'boots' as shown in diagram 1.
- o TPF2 is to be erected as a temporary barrier to protect areas designated for later construction within TPZ, which can consist of Chestnut Pale mounted onto a Timber frame.
- o Type 2 TPF may be removed to facilitate approved construction within TPZ; any such construction shall proceed strictly in accordance with this Method Statement.
- o In high intensity areas security tokens may be used to prevent removal.

Diagram 1



Photograph 1



PROTECTION METHOD - TREE PROTECTION FENCING – TPF 2

Protection Method - Permanent Tree Protective Fencing.

Potential Risk – Moderate to Low Risk - The Essential rooting area of the trees may be irreparably damaged through compaction, excavation, soil level changes or contamination.

Proposed Control - Establish a barrier preventing access to the root Protection area until permanent protection is established or until practical completion.

Method:

- Prior to the start of the fencing operation, the site agent & Project Arboriculturist, shall walk fence-lines to identify locations where access facilitation pruning is required.
- Unmade ground is to be protected with anti-compaction boarding during construction.
- TPF3 is to be erected as a barrier to protect areas designated for later construction within TPZ, which shall consist of Chestnut Pale fencing or similar mounted onto a timber frame shown in photograph 1.
- Alternatively, TPF3 is to be erected as a temporary barrier to protect areas designated for later construction within RPA, which shall consist of Orange Extruded Plastic Netting, supported on ground pins as shown in photograph 2.
- TPF3 is to be erected as a temporary barrier to protect areas designated for later construction; any such construction shall proceed strictly in accordance with this Method Statement.

Photograph 1



Photograph 2



GROUND PROTECTION - LARGE PLANT GROUND PROTECTION – GP1

Protection Method - Temporary vehicle/ large Plant Ground Protection within or close to TPZ.

Potential Risk – High Risk - The essential rooting area of the trees may be irreparably damaged through compaction, excavation, soil level changes or contamination.

Proposed Control - Establish a temporary surface above the existing soil level to reduce compaction of the soil.

Method:

- Type 1 TPF to be installed in accordance with the Tree Protection Plan.
- To enable Vehicle Traffic within the TPZ the following methods must be adopted, with the agreement of the Project Arboriculturist or LPA.
- For wheeled or tracked construction traffic exceeding 2t gross weight, a system (e.g. Proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected to will need to be adopted.
- For short-term protection, plant/vehicle movements within the TPZ the installation of ground protection in the form of a single thickness of an appropriate boarding protection should be pinned into position on top of a compressible layer laid onto a geotextile. Alternatively, the use of a proprietary panelled vehicle support system such as TrakMats, Potatreack, Duradeck, Ground Guards or CellWEB similar shall be used as shown in photograph 1. Alternatively, a roll out metal track road such as Eve Trackway, Access 1 or Fieldtrack as shown in photograph 2, will need to be used to prevent localised compaction or erosion.
- The position of the barrier may be shown within the TPZ at the edge of the agreed working zone but the soil structure beyond the barrier to the edge of the TPZ should be protected with ground protection.
- Each section of Ground Protection shall be constructed from a point supported by the previously installed section and at no time will free access to the TPZ be allowed.
- Hollows within the ground shall be filled fine grit sand to create a level surface and avoid the weight being transferred through a small area.

Photograph 1



Photograph 2



GROUND PROTECTION - SMALL PLANT GROUND PROTECTION – GP1

Protection Method – Pedestrian foot traffic & Small Plant Ground Protection within TPZ.

Potential Risk – High Risk - The essential rooting area of the trees may be irreparably damaged through compaction, excavation, soil level changes or contamination.

Proposed Control - Establish a temporary surface above the existing soil level to reduce compaction of the soil.

Method:

- Type 1 TPF to be installed in accordance with the Tree Protection Plan.
- To enable Foot Traffic and Scaffolding within the TPZ a system of supportive boarding will be required as detailed in the section Ground Protection on Tree Protection Plan.
- For pedestrian movements within the TPZ the installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile, or supported by scaffold, may be acceptable as shown in Photograph 1. Alternatively, a modular sheeting system such as DuraDeck or Ground Guard panels or similar as shown opposite in photograph 2 can be used.
- The position of the barrier may be shown within the TPZ at the edge of the agreed working zone, but the soil structure beyond the barrier at the edge of the TPZ should be protected with ground protection.
- Each section of Ground Protection shall be constructed from a point supported by the previously installed section and at no time will free access to the TPZ be allowed.
- Hollows within the ground shall be filled with grit sand to create a level surface and avoid the weight being transferred through a small area.
- It is essential that all construction is non-invasive within TPZ.

Photograph 1



Photograph 2



GROUND PROTECTION – PEDESTRIAN GROUND PROTECTION – GP3

Protection Method – Pedestrian Foot Traffic Protection within TPZ.

Potential Risk – High Risk - The essential rooting area of the trees may be irreparably damaged through compaction, excavation, soil level changes or contamination.

Proposed Control - Establish a temporary surface above the existing soil level to reduce compaction of the soil.

Method:

- Type 1 TPF to be installed in accordance with the Tree Protection Plan.
- To enable Foot Traffic and Scaffolding within the TPZ a system of supportive boarding will be required as detailed in the section Ground Protection on Tree Protection Plan.
- For pedestrian movements within the TPZ the installation of ground protection in the form of a single thickness of scaffold boards or Plywood above a compressible layer laid onto a geotextile, or supported by scaffold, may be acceptable as shown in Photograph 1. Alternatively, a modular sheeting system such as DuraDeck or Ground Guard panels or similar can be used.
- The position of the barrier may be shown within the TPZ at the edge of the agreed working zone, but the soil structure beyond the barrier at the edge of the TPZ should be protected with ground protection.
- Each section of Ground Protection shall be constructed from a point supported by the previously installed section and at no time will free access to the TPZ be allowed.
- Hollows within the ground shall be filled with grit sand to create a level surface and avoid the weight being transferred through a small area.
- It is essential that all construction is non-invasive within TPZ.

Photograph 1



TPZ INCURSION - HARD SURFACE REMOVAL & DEMOLITION.

TPZ Incursion ref.	HSR
Nature of incursion:	Hard Surface Removal and demolition within both the TPZ and the TPZ.
Potential Risk:	High Risk Trees maybe irreparably damaged through excavation and ground level changes within the TPZ.
Proposed Control:	Adopt the use of low impact excavation.

Method

- Services will need to be installed in line with the guidance contained within the National Joint Utilities Guidelines (NJUG volume 4, issue 2, 19/11/2007) for the installation of services close to trees. Types 1 TPF to be installed in accordance with the Tree Protection Plan.
- TPF to remain in situ throughout.
- Unmade ground to be protected with built-up Ground Protection GP1 anti-compaction boarding during the construction process.
- Tree protection measures will remain in place until work commences and when removed all personnel to be working within the area are to be made aware of the extent and nature of the area.
- The initial 'breaking up' of any surface should be carried out preferably by hand. If this is not possible, low impact pneumatic tools may carry out the removal of the surface.
- Removal of the surface will occur in 2m strips working from undisturbed surface. This will enable any roots exposed to be covered with a good quality topsoil to avoid desiccation and the ground to be 'made good' as the operation progresses, avoiding the need for excessive travel on exposed ground.
- Where practicable subsequent removal of debris will be carried out by hand. Should mechanical means be required due to the size of the debris, then a small (1.5 ton) digger may be used providing that, when picking up debris, no tines/teeth from the bucket does not cause any damage to the underlying soil surface. Once left with manageable size pieces, hand removal will be used. Where the digger is employed, it will only travel on the undisturbed hard surface (within the TPZ), clearing debris as it progresses out of the TPZ.
- No reduction in levels of the underlying soil surface will occur.
- The underlying soil may be levelled by the addition of up to 100mm of good quality topsoil to BS3882:2012. Hand tools only will be used for any levelling works; this work will not disturb the underlying soil.
- Should any roots over 25mm diameter, have grown above the final soil level and be a hindrance to the final surface installation, their removal will only be carried out under arboricultural supervision and with the approval of the LPA.
- If the area around the retained trees is to be left following the removal of the existing hard surface, before a new hard surface is laid, then the line of protective fencing MUST be correctly re-established immediately after the hard surface removal work has been completed.
- If the area around the retained trees is to be landscaped following the removal of the existing hard surface, then the line of protective fencing MUST be correctly re-established immediately the hard surface removal work has been completed. This area should then be de-compacted as detailed in the section Ref. SDC, this will enable appropriate conditions for root growth.
- If, for whatever reason there is a delay before the area is left exposed prior to awaiting a new surface, then a temporary surface must be implemented or the area fenced off.

TPZ INCURSION – SENSITIVE FOUNDATIONS.

TPZ Incursion ref.	SF
Nature of incursion:	Low impact Foundations
Potential Risk:	Very High Risk - Trees may be irreparably damaged through excavation within the TPZ.
Proposed Control:	Establish a porous sub-base above the existing ground level, preventing compaction & access to the soil within the root protection.

Adopt the use of low impact Construction Techniques.

Method

- o TPF to remain in situ throughout & unmade ground to be protected with built-up Ground Protection during construction process.
- o The proposed pile holes within the TPZ is to be preliminary, excavated using an Air spade which is used when the existing surface is to be protected by means of impermeable sheeting to avoid excessive build up of spoil and to aid trench refilling (sheeting will be in place for a maximum of 4 days).
- o Once the hole is formed and shows the area to be free of significant, rooting the foundation shall be located within the hole and driven / drilled to the desired depth.
- o Major roots that are greater than 20mm in diameter requiring removal shall be assessed by the Project Arboriculturist prior to removal. (Pruning shall be undertaken by an Arboriculturist in line with the general guides in section 7, paragraph 7.2).
- o Exposed roots shall be kept moist using a light water spray at regular intervals.
- o Exposed trenches shall be covered with hessian cloth or similar to prevent drying out and the action of frost.

- o Piling Equipment shall have a weight limit of 2500KG and therefore the use of mini-pilling rigs such as those in photographs 2 shall be adopted.
- o It is essential that all that all concrete is to be cast within an impermeable membrane to protect tree roots in the adjacent soil from concrete leachate.
- o Any change in the TPZ is potentially damaging and will require site specific assessment.

Photograph 1



Photographs 2



TPZ INCURSION - SOIL DECOMPACTION

TPZ Incursion ref. SDC.

Nature of incursion: Soil De-Compaction.

Potential Risk: **Moderate Risk -Trees may be irreparably damaged through continued compaction within the root zone.**

Proposed Control: **Adopt the use of low impact excavation and the incorporation of additional organic material.**

Method

- TPF to remain in situ throughout.
- Unmade ground to be protected by the built-up Ground Protection during the process.
- If, for whatever reason there is a delay before the area is left exposed prior to awaiting for a new surface, then a temporary surface must be implemented to prevent drying and the area fenced off.
- De-compaction shall be undertaken using an Air Spade in areas that have previously been landscaped or been previously cultivated. This tool works by blowing a high speed, high volume jet of air into the ground, disrupting the mineral constituent of the soil. The air blast penetrates any voids in the makeup of the ground and separates any granular based materials through the speed and expansion of the air stream.
- The Air Spade is used to break up any areas of the rooting environment considered appropriate, depending on the amount and nature of the compaction sustained and the remediation required.
- The additional organic matter is to be incorporated into the soil. A 50mm layer of organic matter, such as composted farmyard manure, leaf litter, composted

woodchip, bark and compost should be laid across the area. This must then be incorporated into the de-compacted area by means of an Airspade.

- Upon completion, a Final mulch of organic matter is applied in a 50mm thick layer to the surface of the soil, this absorbs the effects of pedestrian traffic and helps to prevent compaction within the TPZs of the trees in the post construction and landscaping stages of a development.



TPZ INCURSION - SOIL LEVEL CHANGE

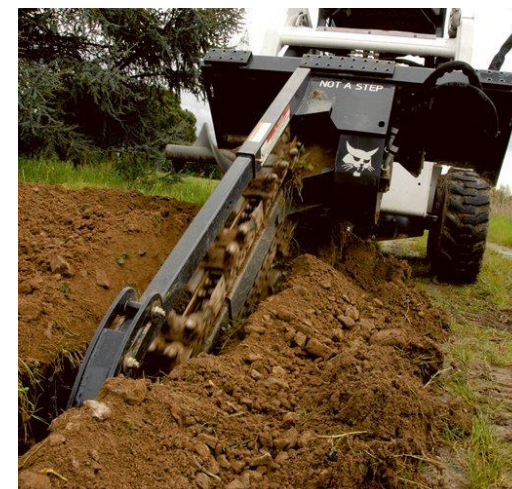
TPZ Incursion ref.	SLC.
Nature of incursion:	Soil Level Changes
Potential Risk:	High Risk - Trees may be irreparably damaged through compaction within the root zone, root severance or suffocation due to localised changes.
Proposed Control:	Adopt the use of low impact excavation and the incorporation of additional organic material or inert media to aerate fill.

Method

- TPF to remain in situ throughout.
- Unmade ground to be protected built-up Ground Protection during the process.
- If, for whatever reason there is a delay before the area is left exposed prior to waiting for a new surface, then a temporary surface must be implemented to prevent drying and the area fenced off.
- **REDUCTION OF LEVELS** - Shall be undertaken using an Air Spade. This tool works by blowing a high speed, high volume jet of air into the ground, disrupting the mineral constituent of the soil. The air blast penetrates any voids in the make-up of the ground and separates any granular based materials through the speed and expansion of the air stream and exposes roots which then can be pruned or pinned into position as required.
- The additional organic matter is to be incorporated into the soil. A 50mm layer of organic matter, such as composted farmyard manure, leaf litter, composted woodchip, bark and compost should be laid across the area. This must then be incorporated into the de-compacted area by means of an Airspade.
- Upon completion a final mulch of organic matter is applied in a 50mm thick layer to the surface of the soil, it absorbs the effects of pedestrian traffic and helps to

prevent compaction within the TPZs of the trees in the post construction and landscaping stages of a development.

- **RAISING LEVELS** - Shall be undertaken by the use of a granular material, which remains gas- and water-permeable throughout its design life.
- For significant level changes the use of Gabions of subterranean structural cells such as 'Silva Cells' or 'Permavoid Raft System' is recommended or similar approved by the project arboriculturist these works will need specific assessment.
- For shallow fill a 50:50 mix of native top soil & grit sand can be appropriate to a maximum depth of 150mm depending on the native soil type.
- **EXCAVATION CLOSE TO TPZ** - The initial 'Excavation Edge' needs to be defined by root pruning in order to reduce longitudinal root shattering within the TPZ.
- Root pruning to comprise of the soil, cut to 750mm depth using trenching saw as shown opposite, prior to the wholesale excavation throughout the area.
- If, for whatever reason there is a delay and the area is left exposed prior to awaiting a new surface, then a temporary surface must be implemented or the area fenced off.
- Trenching saw, exposed roots shall be kept moist using a light water spray at regular intervals.
- Exposed trenches shall be covered with Hessian to prevent drying out and the action of frost.



TPZ INCURSION - ROOT ZONE IMPROVEMENT

TPZ Incursion ref.	RZI
Nature of incursion:	Root Zone Improvement to reduce stress on trees.
Potential Risk:	Moderate Risk - Trees may be irreparably damaged through continued compaction within the root zone.
Proposed Control:	Limit compaction, Adopt surfacing mulching to help create an organic litter layer.

Method

- o TPF to remain in situ throughout.
- o Unmade ground to be protected with either built-up Ground Protection or the use of low ground pressure plant to be adopted.
- o Control the existing grass sward with an appropriate herbicide during the early part of the season.
- o Cover the areas with an organic mulch 50mm to 100mm deep and ideally cover the entire root system, (which may extend two to three times the diameter of the branch spread of the tree) to the drip line as a minimum. The idea of the mulch is to mimic the soil in a forest. In a natural environment, a layer of loosely packed organic matter mixes with the topsoil of the forest floor to form humus.
- o Keeping mulch at least 50mm away from the base of the tree, mulch can cause problems if it is applied wrongly. Where it is applied so deep that air cannot penetrate into the soil and roots will suffocate. It can also be so deep that water cannot penetrate and the roots may dry out.

- o Plastic sheet mulches shall not be used, because it interferes with the exchange of gases between soil and air, which inhibits root growth.
- o Where access is restricted, the use of a blower can be adopted as shown below to restrict material handling and compaction.



Mulching is one of the easiest and most effective means of improving a tree's health. It helps maintain soil moisture by slowing down evaporation from the soil, which saves water. It blocks sunlight to the soil, which helps control weeds. It serves as an insulating blanket that keeps the soils warmer in the winter and cooler in the summer. It can improve the fertility of the soil, improve soil aeration and drainage, encourage pedestrians to stay on lawns and paths and can inhibit certain plant diseases.

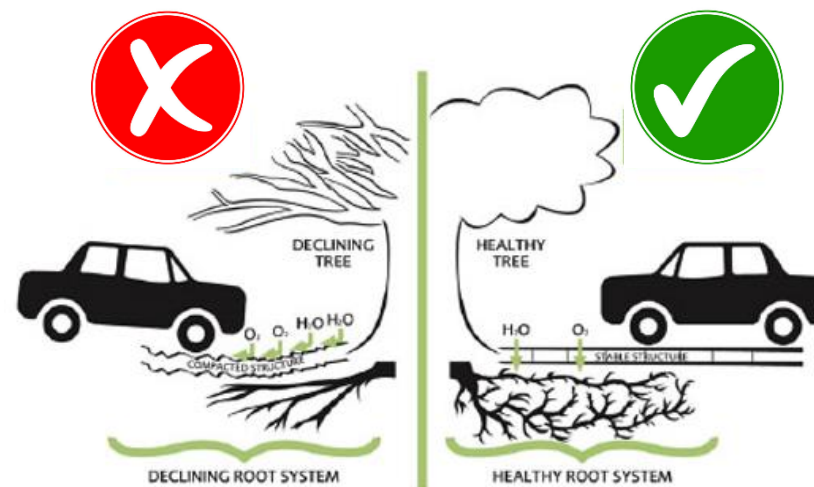
TPZ INCURSION - HARD SURFACE GROUND PROTECTION (PERMANENT)

TPZ Incursion ref.	HSGP
Nature of incursion:	Creation of Hard surfacing close to TPZ.
Potential Risk:	High Risk - The Essential rooting area of the trees may be irreparably damaged through compaction, excavation, soil level changes or contamination.
Proposed Control:	Establish a porous sub-base above the existing ground level, preventing access to the soil within the root protection, which allows the support of a permanent porous surface.

Method:

- Types 1 TPF to be installed in accordance with the Tree Protection Plan.
- Type 1 & 2 TPF to remain in situ throughout.
- Type 2 TPF to be taken down only when commencement of work is imminent.
- Unmade ground to be protected with anti-compaction boarding during construction.
- Grass sward / existing surfacing to be removed as necessary using hand tools or low ground-pressure plant (e.g. Bobcat or similar).
- Maximum level drop from existing to be 50mm.
- Void forming system such as **Permavoid** or **ArborRaft** act as a protection to the tree roots and dissipate vertical and dynamic loadings to protect the soil around the tree roots from compaction and to avoid the need for excavation.
- Sub-base to be formed using cellular confinement system (e.g. Cooper-Clarke *Geoweb* or Geosynthetics *Cellweb* or *InfraWeb TRP*) used with **NO-fines** granular (none rounded) fill.
- It is essential that all kerbing is non-invasive within the TPZ, ideally to provide a long-term solution a flexible steel shuttering should be pinned into position at regular intervals to provide ongoing support. Where the level of the final surfacing needs to be graduated to the existing grade, this can be achieved using a 50:50 mixture of grit sand and native top soil, which shall remain distinct with the graduation not extending greater than 500mm from the edge of the surfacing.
- Each section of Ground Protection shall be constructed from a point supported by the previously installed sections and at no time will free access to the TPZ be allowed.

- Hollows within the ground shall be filled with fine grit sand to create a level surface and avoid the weight being transferred through a small area.
- Surfacing to be Porous to enable continued air & water transfer to the native soils.



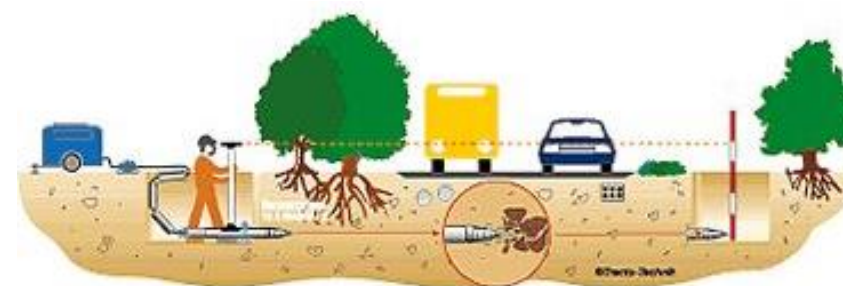
TPZ INCURSION - SERVICE STRIP

TPZ Incursion ref.	SS
Nature of incursion:	Installation of services close to or within the TPZ.
Potential Risk:	Very High Risk -Trees may be irreparably damaged through excavation within the TPZ.
Proposed Control:	Adopt the use of low impact installation method as Directional Drilling, Thrust Boring or None Injurious Excavation.

Method

- Services are to be installed in a way that avoids tree root damage and unless an alternative route can be found this will involve the location of the services within the drive. The services are to be installed by means of directional drilling or moling, to travel below the active rooting depth as shown in Diagram 1.
- Type 1 TPF to be installed in accordance with the Tree Protection Plan. TPF to remain in situ throughout.
- Unmade ground to be protected with built-up Ground Protection during construction process.
- The entry/ access pits within the TPZ is to be excavated using an Air spade as shown in photograph 1 which is used when the existing surface this is to be protected by means of impermeable
- sheeting to avoid excessive build up of spoil and aid trench refilling (sheeting will be in place for a maximum of 4 days).
- Once the trench is formed, the services shall be fed below the existing roots at the desired depth as shown in photograph 2.

- The Project Arboriculturist shall assess major roots that are greater than 20mm in diameter requiring removal. (Pruning shall be undertaken by an Arboriculturalist in line with the general guides in section 7, paragraph 7.2).
- Exposed roots shall be kept moist using a light water spray at regular intervals.
- Exposed trenches shall be covered with Hessian to prevent drying out and the action of frost.



10.0 SUPERVISION AND MONITORING

- 10.1 **General.** The Project arboriculturist shall be responsible for monitoring of all arboricultural works and issuing a certificate of practical completion. The client / project manager MUST advise the project arboriculturalist to enable visits and signing off works to be undertaken.
- 10.2 In addition, the Project Arborist shall inspect the protective fencing and monitor any works within the TPZ, the client/ project manager MUST liaise with the arboriculturist to ensure monitoring can and is done at the appropriate times.
- 10.3 A record of site visits shall be maintained for inspection on site and copies forwarded to the developer / agent and to the Local Planning Authority.
- 10.4 Monitoring visits shall be undertaken by the project arboriculturist at the beginning of each phase of the development to agree the details of the
- o The arboricultural operations.
 - o Setting out of the site and location of the fencing inspected by LPA.
 - o During the construction phase.
 - o Installation of ground protection.
 - o During the completion stage removal of the fencing.

tree protection plan and make appropriate variation in line with arboricultural best practice as the programme of the build develops or as variations within the development may occur.

- 10.5 In addition to random visits the key stages that require inspection following notification of commencement by the site agent are: -

Reporting damage to trees and tree protection fencing. Shall any damage occur to trees this shall be reported to the site agent immediately. The site agent shall report up the chain of responsibility to the **Project Arborist**, to allow any remedial measures to be implemented as necessary.

If fences become damaged to impair their function in protecting trees, all work shall cease in the vicinity of the damage until the fence has been returned to standard.

11.0 QUERIES

11.1 Any queries regarding this Method Statement shall be addressed, in the first instance, to Barnes & Associates

Project Arborist - Ian Barnes
Telephone: 01423 322371
Mobile: 07831 530563
Email: info@barnesassociates.co.uk

Local Authority Arboriculturist –
Telephone:
Mobile:
Email:

Site Agent -
Telephone:
Mobile:
Email:

Arboricultural Contractor –
Telephone:
Mobile:
Email:

Site Manager -
Telephone:
Mobile:
Email:

Fencing Contractor –
Telephone:
Mobile:
Email:

Project Manager -
Telephone:
Mobile:
Email:

Landscape Contractor –
Telephone:
Mobile:
Email:

APPENDICES

APPENDIX A - TREE PROTECTION SIGNAGE

ENTRANCE SIGNAGE FOR THE CONSTRUCTION SITE:



TREE PROTECTION AREA KEEP OUT!

ALL TREES ENCLOSED BY THIS BARRIER ARE PROTECTED
BY PLANNING CONDITIONS (TOWN & COUNTRY PLANNING ACT 1990)
AND ARE THE SUBJECTS OF A TREE PRESERVATION ORDER,
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY
LEAD TO CRIMINAL PROSECUTION

THE FOLLOWING MUST BE OBSERVED BY ALL PERSONNEL

- THE PROTECTIVE FENCING MUST NOT BE MOVED
- NO PERSON SHALL ENTER THE PROTECTED AREA
- NO MACHINE OR PLANT SHALL ENTER THE PROTECTED AREA
- NO MATERIALS SHALL BE STORED IN THE PROTECTED AREA
- NO SPOIL SHALL BE BEPOSITED IN THE PROTECTED AREA
- NO EXCAVATION SHALL OCCUR IN THE PROTECTED AREA

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE
WRITTEN PERMISSION OF
THE LOCAL PLANNING AUTHORITY

PROTECTIVE FENCING SIGNAGE FOR THE TREE PRECAUTIONARY ZONE:



APPENDIX B – SUMMARY OF TREE PROTECTION MEASURES

This guide shall be issued to all site personnel as part of their induction briefing. It summarises the precautions that site personnel shall follow, to ensure that the existing trees on the site survive the development process.

Do's ✓

TREE PROTECTION

Don'ts ✗

Trees add value to the site, provide shade, improve habitat, improve Air quality and are typically protected as part of any planning approval, so their protection is in everyone's interest to avoid costly stoppages and damage.

Tree Roots - Spread out a lot further than the branches over a large area and are usually found close to the surface of the soil, making them susceptible to damage.

Depth in feet: 10, 5, 1, 0.5, 1, 0.5, 1, 0.5

Depth in meters: 3, 1.5, 0.3, 0.15, 0.3, 0.15, 0.3, 0.15

To Help Trees Survive any proposed changes a minimum amount to undisturbed rooting area needs to be protected or provided to help the tree feed itself and survive this can easily be done by creating a Construction Exclusion Zone. These are normally detailed on a Tree Protection Plan or detailed within an Arboricultural Method Statement. Please look at these before you start work to understand what Fencing & Ground Protection are to be used where.

Warning Construction Site

Tree Protection is not a puzzle, everything you need is on the Tree Protection Plan or can be found in the Arboricultural Method Statement

Before Work Starts Erect & Maintain the correct fencing and ground protection.

Tree Protection is usually a Planning condition and breaches can result in a Stop notice, Prosecution or fines.

Tree Damage Can Be Avoided, If in Doubt - Ask for Help

Help Avoid Costly Shut Downs & Financial Penalties

We must all avoid any unauthorised damage to trees.

Damage to major limbs must be avoided. Flagged wounds speed infection.

Parking of heavy vehicles is prohibited. If unavoidable, allow the tree to be supported. Flagged wounds speed infection.

Attachment of signs, fences, cables and vehicles to a tree promotes decay.

Protective fencing must be erected at the recommended distance.

Storage of materials, equipment and cement causes root death.

Soiling of exposed, electrical and cement causes root death.

Trees dug within root area causing instability and crown dieback.

Having ground levels even for surface caravans can cause severe damage to roots, causing severe dieback.

Lowering ground levels causes severe dieback.

Results of Breaching the CEZ

- Soil Compaction** – Starves roots of Oxygen and Nutrients and increases water run off the site.
- Excavation** – Cuts or damages the roots, which can affect a trees health or stability.
- Turf or Soil Removal** – Even shallow excavations can remove or damage fine feeder roots.
- Canopy or Branch Damage** – Limits food production and encourages pest or disease.
- Chemical spill including cement** – Kills roots, Starving the tree Oxygen, Water and Nutrients.
- Fires** – Scorch & Burn Leaves, Stems & Branches.

Email - info@barnesassociates.co.uk

Telephone - 01423 322 371

APPENDIX C - TREE PROTECTION PLAN

Tree Protection Plan - BA6485TPP (A1 Plan Attached)

Tree Surveys & Condition Reports

Tree Health & Safety Reports

Tree Risk Assessments

Tree Population Site Inventories

Estate Tree Management

Woodland Management

Tree Work Specification & Tenders

Insurance & Mortgage Reports

Decay Detection & Mapping

Windload & Stability Assessments

Development Site Tree Reports to BS5837

Arboricultural Implication Assessments (AIA)

Arboricultural Method Statements (AMS)

Construction Exclusion Zone Management

Tree Protection Plan Design

Tree Valuation & Replacement Costing

TPO Objections & Appeals

Tree planting Schemes

Landscape visual impact assessment

Landscape architecture

Barnes & Associates, Rivermead, Skelton Road, Langthorpe, North Yorkshire, YO51 9BZ

Telephone: 01423 322 371 Mobile: 07831 530 563

Email: enquiries@barnesassociates.co.uk

