



THE ARBORICULTURAL
CONSULTANCY LTD

Arboricultural Method Statement

Hurstpierpoint College, Hurstpierpoint

Report Reference Number: AMS.HC.0896.V1

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Date: 10 May 2024

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Foundation degree in Arboriculture (level 5), Lantra Professional Tree Inspection.			

Details:

Purpose of the report:

The report is designed to fulfil the recommended criteria for the provision of arboricultural information, with the primary objective being minimal impact to trees that are or maybe affected by the proposed installation.

Client: Hurstpierpoint College

Date: 10 May 2024

Report prepared by: Mr B Tidey FdSc (arb) of The Arboricultural Consultancy Ltd

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Use of Report:

This report is to give information on tree stock and is to be used in conjunction with;

- Arboricultural Impact Assessment – Hurstpierpoint College – Ref AIA.HC.0896.V1
- Arboricultural Impact Plan HC.AIP.0896.V1
- Arboricultural Method Plan. HC.AMP.0896.V1

Proposal:

The development was to increase the carparking volume across the site, this involves increasing the northern end by 6m.

Use of Report:

This report is to be used at the remediation stage, not all the information is applicable to every reader. The summary highlights which areas are more applicable to specific users of the report to help target the relevant information to those implementing the necessary instruction.

Report Outline Information

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur but is not limited to biological and non-biological factors as well as mechanical/physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to identified site risks and in accordance with relevant HSE and Central Government guidance. The Arboricultural Consultancy can provide further information on this matter if required. Where tree surgery works have been identified these should only be undertaken after checks with the relevant authority have been made, it is necessary to ensure that works may lawfully be undertaken. Up to date checks should be made as to the possible protection status of trees/vegetation or land they are located within, these checks should cover, but are not limited to; Tree Preservation Orders (TPOs), Conservation Area, planning conditions, Areas of Outstanding Natural Beauty (AONBs), Ramsar, Special Protection Areas (SPA), Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI). Locations of designation can be found at <http://magic.defra.gov.uk/MagicMap.aspx> and further advice on designations can be found at <http://jncc.defra.gov.uk>. Further advice on TPOs, Conservation Areas or planning condition can be found with the local governing organisation. All works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of protected species. Any comment relating to 3rd party trees has been made without full access to the tree(s). Should these trees have any impact on the site we would advise you to instruct us to contact the third party and undertake further inspection work.

This survey and report have been undertaken and produced by The Arboricultural Consultancy Ltd. All information within this report was correct at time of assessment.



Ben Tidey FdSc
Consultant Arboriculturist
Friday, 10 May 2024

Report Caveats:

The trees have been surveyed in accordance with the criteria set in the *BS 5837: Trees in Relation to Design, Demolition and Construction 2012*. A full hazard assessment of the trees (including assessment of decay or their defects and their implications) has not been undertaken as this is considered beyond the scope of this report. Any obvious hazards and defects have been identified where relevant in the Tree Survey Schedule and appropriate relating works have been recommended. Where relevant, trees not located within the legal property of the owner have been included and any works would be subject (where relevant by law, Statute and Common) to the owner's permission. Where appropriate further investigative works to be undertaken have been detailed and recommended. This may include climbing inspections, below ground exploratory investigations and the use of specialist decay detection equipment. Detailed ecological considerations are also beyond the scope of this report. UK and European Wildlife Legislation may affect the timing and even prohibit the enhancement of works and operations described in this report. Most of the information regarding wildlife can be found in the Wildlife and Countryside Act 1981 & updated 1994. This includes information of wild birds, bats, badgers and some insects. Bats in particular are afforded particular protection and a specialist is required to determine if bats are present or may be affected when carrying out tree works. Further information is available from Natural England.

This document has been produced after completion of the project and is to provide the best cause of action to address any failings highlighted within the *Arboricultural Impact Assessment – Hurstpierpoint College – Ref AIA.HC.0896*. The impact assessment was undertaken from looking at the site as it was after completion, therefore an approach was needed that looked at the most likely cause of damage and the extent compared to projects of a similar nature.

1.0 Introduction

- 1.1. The Arboricultural Consultancy have been appointed to provide advice on the arboricultural issues relating to the car park extension and power cable relocation at the northern end of the carpark.
- 1.2. This report has been compiled using the information gathered during the tree and area assessment undertaken on Thursday 25th April 2024. The trees were assessed to standards set out in *BS 5837:2012: Trees in relation to design, demolition and construction – Recommendations*.
- 1.3. Following preparation of our Arboricultural Impact Plan, and Arboricultural Impact Assessment (retrospective) it is clear that the development is likely to have had detrimental effect to the trees in the vicinity, therefore remedial works has been prescribed, these works:
 - are appropriate to the scale of the damage,
 - will reduce the impact to the trees,
 - are practical and can be undertaken,
 - will help the trees to react and adapt to the change caused by the carpark and the development operations.
- 1.4. The tree numbers used in this report refer to the tree numbers used in our Arboricultural Impact Plan and Arboricultural Impact Assessment (retrospective).

2.0 Executive Summary

- 2.1. The development was to increase the carparking volume across the site, this involves increasing the northern end by 6m.
- 2.2. The primary impact to trees is from the loss of rooting that would likely have been damaged or severed, to install the carpark and the electric cable. There is a high likelihood of soil compaction in the remaining southern areas of the RPAs.
- 2.3. There is to be a requirement to undertake remedial action to:
 - de-compact the soil where soil compaction has recently occurred,
 - add soil ameliorants,
 - undertake annual tree health assessments to identify if any further mitigation is needed.
- 2.4. All operations must consider the trees and be undertaken in such a way as not to add further damage or exacerbate any tree issues.

3.0 Arboricultural Protection Methods and Specifications

3.1. Soil decompaction

- 3.1.1. Soil decompaction is required for all areas that were subjected to machinery/ plant /vehicle movement on the unprotected soil. Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth.

3.1.2. Decompaction method shall utilise 'Air Spade' to vertical mulch the areas of compaction. Decompaction shall involve the blasting of holes that are 100-150mm in diameter by 300-400mm deep, the holes shall then be backed filled with loose mulch mixed with the soil ameliorants. These holes shall be spread out over the area in a grid form with a hole every 1m².

3.1.3. The area to be de-compacted is shown with the Arboricultural Method Plan *HC.AMP.0896.V1*

3.2. Soil Amelioration

3.2.1. Soil amelioration will involve mixing Biochar in with the mulch when back filling the blast holes, Biochar is carbon rich and is slow to decompose, improves the soil fertility installation of biochar shall follow the manufacturer's guidance, with care taken not to overuse it as this can result in a rise in PH level.

3.2.2. The area to be ameliorated is shown with the Arboricultural Method Plan *HC.AMP.0896.V1*

3.3. Annual tree health assessments

3.3.1. The four Oak trees that are in proximity and affected by the carpark expansion shall have annual inspections of their health for at least 7 years to ensure the trees are not adversely affected by the development and the operations undertaken during construction. The inspection shall look at the tree health and note of any deterioration. Where deterioration has presented, action to mitigate this shall be prescribed.

3.3.2. The ongoing approach to monitor and manage the trees' ongoing condition will offer the trees the best chance of returning to full health as it will provide an opportunity to undertake measures to improve health should they be required.

3.3.3. There is a chance that trees may deteriorate to a point where they do not respond to remedial operation then the trees shall be managed in their decline to ensure their ongoing retainability and safety.

4.0 Responsibilities and Delegate Powers

4.1. The grounds manager is responsible to ensure that the remediation work as listed above is undertaken and that subsequent monitoring is undertaken along with any prescribed mitigation measures.

5.0 Terms of Reference

5.1. Reference Documents:

BS5837:2012 *Trees in relation to design, demolition and construction – Recommendations*

BS3998:2010 *Tree work – Recommendations*

5.2. Documents supplied by the client:

- 1000009249-100-0000-R2 - PROPOSED CAR PARK GA

6.0 Statutory Protection

6.1.1. A check for any statutory protection for trees included within this report was undertaken on 09/05/2024 with the online mapping service of Mid Sussex District Council, this informs that there are no trees covered by a Tree Preservation Order or within a conservation area.

7.0 Conclusion

- 7.1. The 4 trees included within this document all require remedial works to lessen the impact from the carpark expansion. The expansion has resulted in the loss of the trees RPA likely root severance and soil compaction, remedial action is required to address these issues to help the tree to respond and adapt to this change.
- 7.2. The operation that are require are: anti soil compaction methods that utilise the blasting of holes that shall be back filled with an uncompacted compost, soil ameliorants added to the soil to boost the trees' vitality, and ongoing monitoring of the tree for at least 7 years to identify any deterioration of tree health and provided an opportunity to address issues.
- 7.3. The method proposed within this document will give the trees the best opportunity for ongoing healthy growth, however given the retrospective nature of the tree reporting and remediation the full extent of past actions is unknown and the extent of tree damage cannot be fully understood, predictions of how the trees may respond may be incorrect, and over the next few years it is likely that the trees will present their response to the damage.

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Appendix 1: Impact and remediation schedule

Tree ID	Common Name/ Latin Name	Category/ Subcategory	Impact from the development	Mitigation required
T1	English oak / <i>Quercus robur</i>	B / 2 Mainly landscape qualities	• Severing of roots • Loss of RPA • Soil compaction within RPA	• Anti soil compaction/ aeration • Soil amelioration • Monitor tree
T2	English oak / <i>Quercus robur</i>	B / 2 Mainly landscape qualities	• Severing of roots • Loss of RPA • Soil compaction within RPA	• Anti soil compaction/ aeration • Soil amelioration • Monitor tree
T3	English oak / <i>Quercus robur</i>	B / 2 Mainly landscape qualities	• Severing of roots • Loss of RPA • Soil compaction within RPA	• Anti soil compaction/ aeration • Soil amelioration • Monitor tree
T4	English oak / <i>Quercus robur</i>	A / 2 Mainly landscape qualities	• Soil compaction within RPA	• Anti soil compaction/ aeration



Appendix 2: Key terms and abbreviations

Arboricultural Implication Assessment (AIA):

An assessment of the arboricultural impact of a development.

Arboricultural Method Statement (AMS):

Contains references to tree protection information.

Arboriculturalist:

Person who has relevant education and training, gained expertise in the field of trees.

British Standard 5837: 2012 Trees in Relation to Design, Demolition, and Construction - Recommendations (BS 5837):

British Standard document outlining best practice and guidelines for the impact of arboriculture on the construction industry.

British Standard 3998 2012 Tree Work Recommendations (BS 3998):

British Standard document outlining best practice for Tree Works.

Competent Person:

Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

Construction:

Site based operations with the potential to affect existing trees.

Construction Exclusion Zone:

Area based on the root protection area from which access is prohibited for the extent of the project.

Root Protection Area (RPA):

Layout design tool indicating the minimum area around a tree deemed sufficient to protect roots in order to maintain the trees health and viability.

Service(s):

Any above or belowground structure or apparatus required for utility provision e.g. drainage, gas supply, water, ground source heat pumps, soak-a-ways, CCTV, telecommunications.

Stem:

Principle above ground structural component(s) of a tree that supports the branches/crown.

Tree Protection Plan:

Scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing the trees for retention and illustrating the tree and landscape protection measures.

Appendix 3: Tree Protection

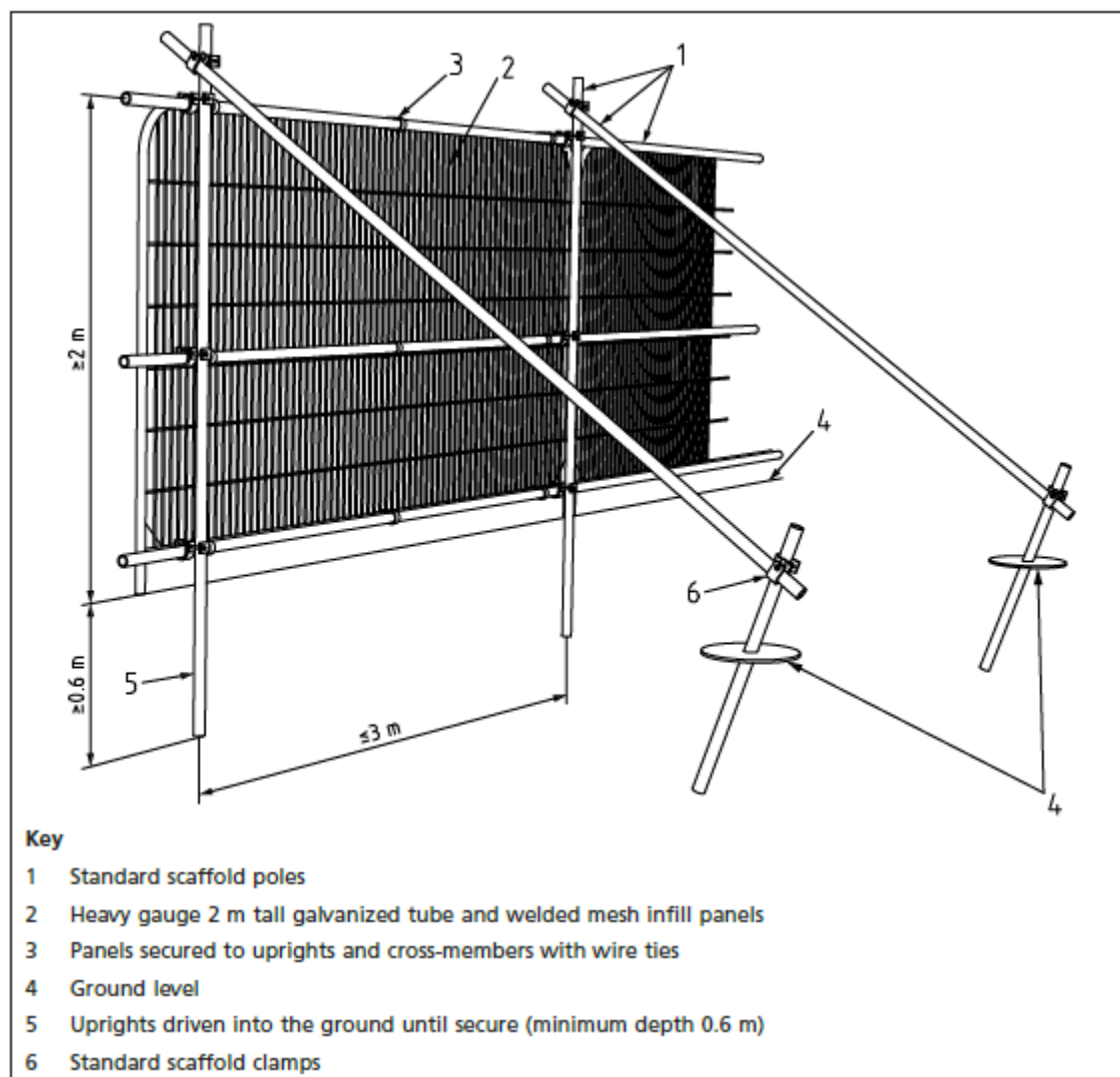
BARRIERS/FENCING

All barriers/fencing agreed for the development must be installed prior to any works starting on site and ideally in conjunction with the erection of the site security measures. All barriers/fencing must stay in place until the all works on site are finished or as agreed by the consultant arboriculturalist and/or planning authority.

Default Specification:

The default specification consists of a vertical and horizontal scaffold framework that is well braced to resist impacts from vehicles and construction site operations. The specification recommended in the current BS 5837 states the vertical tube should be spaced at maximum intervals of 3m and should be driven securely into the ground. Once in place weld mesh or similar (Heras panels) will need to be securely fixed to the scaffold framework.

Figure 2 Default specification for protective barrier

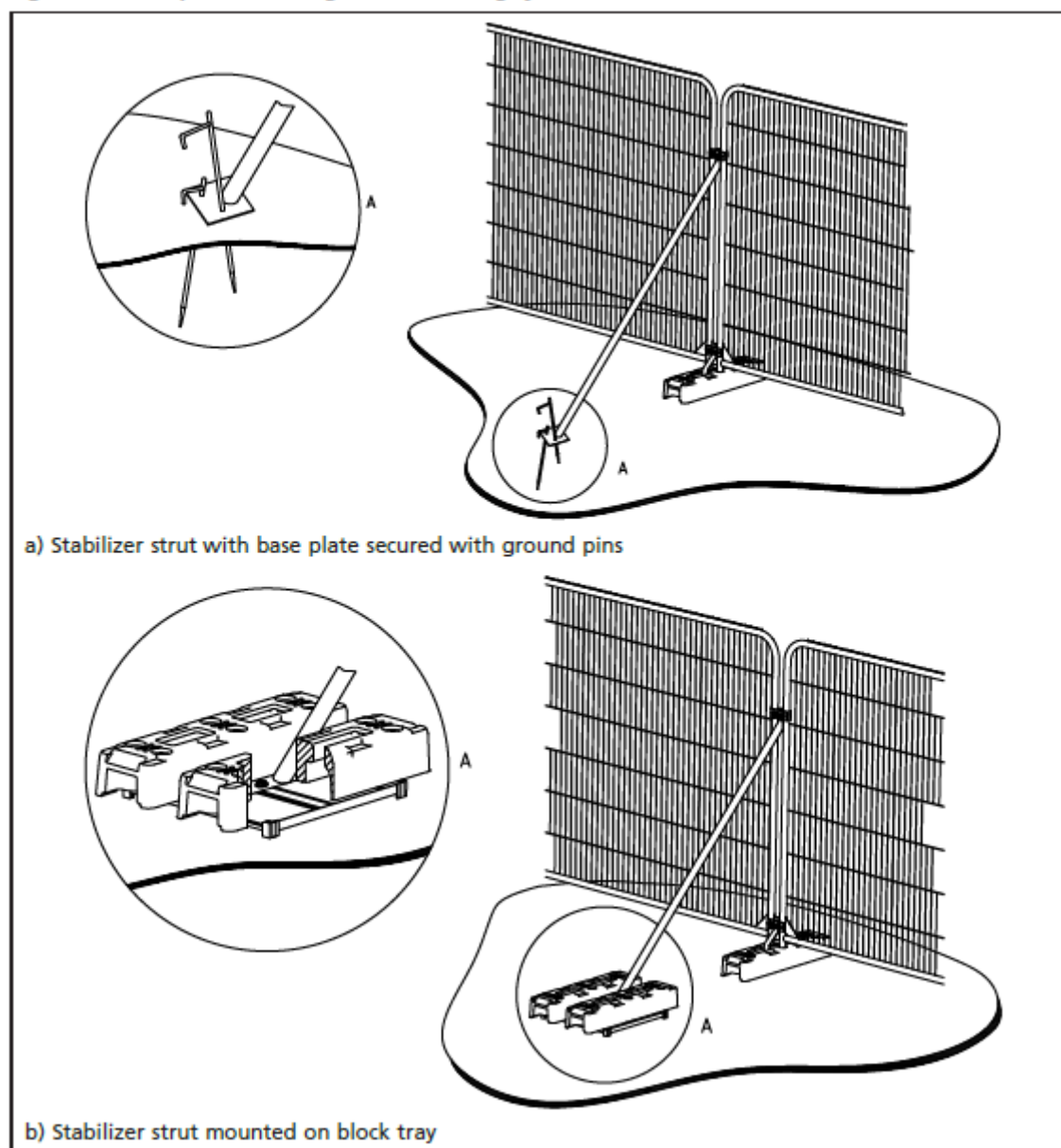


Alternative Specification:

Where the site circumstances and associated risk of damaging incursion into the RPA do not necessitate the default level of protection, an alternative specification should be prepared by the project arboriculturist and, where relevant, agreed with the local planning authority. For example, 2 m tall welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated

plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

Figure 3 Examples of above-ground stabilizing systems



Signage:

All tree protection fencing is required to have signs attached at 4-6m intervals. Below are examples of the required signage to be attached to the tree protection barrier.



Above: Three examples of tree protection fencing signage ranging from a simple sign (*left*) attached with zip ties to more in-depth signs (*middle & right*) explaining the limitations and legal protection status of the trees being protected.

Ground Protection

Ground protection is required during the development process to protect the retained trees.

Root Protection Areas from construction operations.

This can be where permanent working space is needed or temporary access is justified within the RPA, which would involve setting back the tree protection barrier. Where possible existing hard surfaces within RPAs need to be utilised or retained for ground protection rather than being removed during demolition operations. Where tree protection barriers are set back from the perimeter of the RPA exclusion zone exposing unmade ground to construction damage, new temporary ground protection will be installed prior to construction starting. Below are some general specifications for ground protection based on the type and weight of traffic.

Pedestrian Access

For pedestrian traffic **ONLY** a single thickness of scaffold board (40mm) or wooden boarding is to be laid on a minimum of 100mm deep woodchip, which is laid upon a geotextile membrane.

Small Plant Up To 2 Tonne (2000kg)

For small plant machinery with a gross weight of up to 2 tonne (2000kg), interlinking polyethylene or aluminium track way needs to be laid on a minimum of 150mm deep woodchip which is laid upon a geotextile membrane.

Regular Traffic and Plant Up To 3.5 Tonne (3500kg)

Where heavy traffic is expected from pedestrian to vehicular with a gross weight of up to 3.5tonne, interlinking aluminium or metal track way must be used over a minimum layer of 200mm deep woodchip, which is laid upon a geotextile membrane.

Appendix 4: Working in root protection areas

Prevention of detrimental impact to RPAs: In most instances the RPA will need to be completely isolated from construction and development operations using tree protection barriers and ground protection. This is the most reliable way to ensure the preservation of the RPA and retain it completely undisturbed. The RPAs of the trees to be retained have been shown diagrammatically on the Tree Protection Plan along with accurate location of any tree protection measures.

However some operations will require specific works to be carried out in the RPA and anyone entering the RPA must follow the guidelines below to ensure the minimal amount of disturbance is afforded at all times. Any operations in the RPA needs to accord to the principle that the tree and soil structure takes priority. This will help retain and preserve healthy, valuable trees in the landscape and development but also prevent costly and potentially dangerous situations from occurring during and after the works has been completed.

The two main instances where these guidelines for entering and working must be followed are:

1. Removal of existing surfaces/structures and replacing those with new surfaces, structures, landscaping.
2. Preparation and installation of new surfacing, structures, landscapes.

Most of the other operations can utilise some form of ground protection to prevent or reduce the impact on the RPA.

Excavations within the RPA and root retention: Any excavations carried out within the RPA must be done so by hand using spades, forks and trowels, taking care to limit the amount of damage caused to the outer bark and woody structure of the roots. The fork should be used to loosen the soil in the excavation area and help locate any substantial roots (25mm- 100mm diameter). A trowel can then be used to remove the soil from around the roots taking care as to not damage the bark.

Once the roots have been exposed, those that are to be removed (any roots up to 25mm in diameter) can be done using sharp secateurs or a handsaw. Any roots above 25mm in diameter, where possible, need to be retained and protected from drying out and temperature extremes by wrapping or covering them in a suitable material e.g. hessian, spare membrane material, plastic. This wrapping needs to be removed before any back filling takes place. Some roots over larger areas of excavation can be displaced where possible to bend round any new structures or pipework whilst remaining intact. Roots with a diameter of 25-100mm should only be cut in exceptional circumstances and after consultation. Roots above 100mm should only be cut after consultation with the appointed arboriculturalist. Alternatively using compressed to displace the soil is always preferable and more affective especially over larger areas or to remove soil quicker while keeping roots intact. This may be part of the specification and would be included within the Arboricultural Method Statement.

Arboricultural Supervision: All works being carried out within the RPA must be carried out with great care and be supervised by a qualified arboriculturalist to ensure that the contractors understand the need to minimize any detrimental impact on the retained root system. This is done through properly briefing before the work commences along with regular site inspections and signing the work off when completed.

Removal and Demolition of Structures and Surfaces: As with all operations carried out within the RPA exceptional care must be taken to ensure any detrimental impact on the roots and soil structure is kept to an absolute minimum. Where any structure is being demolished (above or below ground) within the RPA additional barriers is recommended to protect the remaining RPA, above ground stem and branch structures. Where there are no hard surfaces or they are due to be removed from within the RPA, plant machinery should operate from outside the RPA providing there is a long enough reach. Where this is unfeasible ground protection must be used to prevent soil compaction from plant machinery conducting the demolition operations. Where possible any suitable load bearing hard surface already existing within the RPA should be retained during demolition. This prevents any additional damage to the underlying soil structure by allowing the surface to support the plant machinery and falling material. Where the hard surface in the RPA is due to be removed, where possible it should remain in-situ for as long as possible. Before any demolition process takes place it should be determined whether any access facilitation pruning is required to provide clearance and prevent physical damage between the plant machinery and tree structures. In some situations working space can be provided by temporarily tying back tree branches. Both tying and pruning need to be specified by a qualified arboriculturalist and ideally follow the guidelines set out in BS 3998 2012 Tree Work Recommendations.

Debris to be removed from within the RPA must be done so across existing hard surface or temporary ground protection so as to prevent compaction of the soil structure. If possible the material can also be lifted out of the RPA using suitable machinery preferable with a long reach.

Where trees are standing adjacent to structures that need to be removed, the demolition should be undertaken inwards within the footprint of the existing building, often referred to as 'top down, pull back'. Where underground structures are present within RPAs and will become redundant it is preferable to leave the structures in situ rather than remove them, which could cause considerable root damage. Where hard surface is scheduled for removal within RPAs care must be taken to not disturb the root structure that could be present underneath. Hand held tools or carefully supervised machine work could be utilised to remove the surface. This should be working backwards away from the retained trees and not moving over the newly exposed ground.

New Structure Guidelines: All new structures being proposed in the RPA have the potential to cause damage to root structures and alter the ground conditions. The age and maturity of the trees will affect the viability and type of incursion into the RPA available. Younger trees are more robust and adaptable to changes in their environment where as mature and Veteran trees tolerate very little disturbance to their soil and root structures. When constructing inside RPAs the goal is to minimise the amount of soil disturbance/compaction and retain a good level of gaseous and water exchange.

Constructing above ground using pile and beam construction limits the amount of disturbance to the soil and root structure which reduces the adverse effect on physiological processes. Most solutions need to be well thought out and are a combined effort and communication of ideas between the engineer, architect and arboriculturalist.

Light Weight Structures e.g. Sheds, Small Storage: Small structures with relatively small foundations that spread load bearing can be constructed straight onto the surface without the need for any excavations. A certain amount of ground levelling is permitted but only to the top 50mm of the soil to fill in any undulations and provide a level surface. Anything above the 50mm will need to be raised up above the existing ground level to achieve the desired surface. Any ground works required must be carried out with great care so as not to damage retained tree roots. Small roots below 25mm can be severed with a sharp saw or secateurs. A membrane will be required between the ground and the bottom of the foundation to prevent leeching of potentially harmful chemicals materials e.g. cement into the soil. Frames can be constructed and fixed onto the ground using stakes from which the foundation can be produced. But there are recommendations for the amount of RPA that can be covered.

New permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA.

Fencing, Posts, and Small Piers: Generally, the construction of fencing that doesn't require a strip or wall foundation can be installed with having very little impact on the soil and root structure. It is acceptable to dig small holes up to 300mm x 300mm for the installations of posts or piers so long as the digging is carried out carefully and by hand as directed in Appendix. 5.4 Or preferably by compressed air. Any roots up to 25mm in diameter may be severed using a sharp saw or secateurs, if possible the hole being dug could be widened or moved to enable retaining the root(s) whole. Any roots 25mm+ should be retained where possible but may be severed after consulting the appointed arborist; further guidelines have been explained above. Ideally holes should be dug as far away from the main stem as possible where larger diameter roots are less likely to be encountered and less damage will occur. When installing posts or piers in the RPA the smallest feasible hole possible must be used when excavating for the foundations of the posts to reduce the impact to the RPA.

Buildings, Walls, Bridges on New Foundations: Most conventional foundations are done by producing a strip of concrete dug into a trench in the ground. This is not acceptable practice in RPA's with the potential to cause large amounts of damage to root systems causing decline in the trees health, making the tree structurally unsound. Small diameter piles supporting beams or cast flooring are permitted within the RPA's as they will reduce the potential damage to root structure. But before any piling is carried out suitable ground protection must be put down to prevent soil compaction from the piling rig leaving gaps in the ground protection for the pile locations. Hand excavations need to be carried out in the location for each pile down to a depth of 700mm to establish whether there are any substantial roots in the pile location. If substantial roots are discovered (25mm+) the appointed arborist will make a decision whether the root can be severed or if the pile location has to be moved. The supporting beams connecting to the piles cannot be lower than the existing ground level resulting in the need for further excavations. The beams should be constructed off site allowing them to be lowered in to position without the need to be casted in the RPA.

Services: New services and service runs should where possible be sited outside the RPA of retained trees to prevent unnecessary damage to root structures. Sometimes there is the need to upgrade existing services, which requires excavation, this can cause extensive damage and render the trees structurally unsound. This should be a last resort and all decisions need to be in conjunction with the consulting arborist.

New Surfaces Guidelines: The installation of new surfaces within the RPA can be very damaging to the root structure and soil conditions. Excavations required for the laying of new sub bases and level grading could both cause extensive root damage to retained trees.

Excessive soil level alterations and new surfaces can change the condition of the soil and the environment the roots survive in, altering moisture content and the ability for gaseous exchange. Ideally any new surface needs to be permeable to allow moisture transfer and allow the continuation of gaseous exchange, be constructed above existing ground levels and load bearing where the load is spread evenly over the surface to help prevent compaction of the soil. Having these qualities helps enable structures and surfaces to be constructed in RPA while having continued successful retention of valuable trees. Younger trees are more adaptable to changes and construction of new surfaces within the RPA. They are able to cope with the pressures whereas mature, and veteran trees often severely decline. Mature and veteran trees should not have any new surfaces installed in their RPAs, as their ability to cope with the change is poor.

Providing Sufficient Grading for New Surfaces: Determining the depth of roots within any soil and RPA is difficult and can only be achieved by careful excavation of the topsoil. All surfaces proposed inside the RPA need to ideally be of a no dig construction which prohibits excavation, but this is often unfeasible as the ground is usually undulating. Limited ground movement and excavations are permitted if they are carried out with care to prevent any damage to the retained root systems. Ideally the ground should be raised up to provide a suitable level surface using a granular aggregate like angular stone or sharp sand. If done under supervision it is acceptable to allow the removal of the topsoil and turf to a depth of no more than 50mm, which normally doesn't, damage the roots. However if there are a large number of surface roots already showing prior to any soil removal there can be no excavation and the ground level must alternatively be raised. If during the grading of the soil roots at a diameter greater than 25mm are encountered the consultant arborist will need to make an evaluation as to whether the damage is preventable and or acceptable before proceeding. At no point can the graded surface be compacted to provide a finish as this will disrupt the soil structure and cause a damaging effect of the roots within it. The final level of the proposed surface must also be considered and discussed prior to starting any works to establish whether the proposal is practical and useable once completed.

Installing Base and Top Layers: Once a suitably level base has been created without damaging the retained roots, a load spreading construction is required to prevent the compaction of the soil structure beneath. Normally this can be achieved by installing a cellular confinement system that is filled with an angular no fines aggregate to help support and distribute the calculated load over a wider area and limiting soil compaction. This enables a finishing layer of permeable tarmac, block pavers, grasscrete, or gravel to be laid on top depending on the desired usage of the surface. Alternative options are to use preformed concrete slabs that can be laid directly onto the surface but they cannot be laid on top of any form of strip foundation which has a high potential for root damage.

Retention of Existing Surfaces: Where possible it is preferable to install new surfaces over those already existing, limiting the potential damage to any underlying root system. This can provide a suitable sub base without the need for excavation and without the need for special supervision and precautions. Care will only be needed if roots are lifting or protruding through the existing surface.

Appendix 5: Temporary ground protection

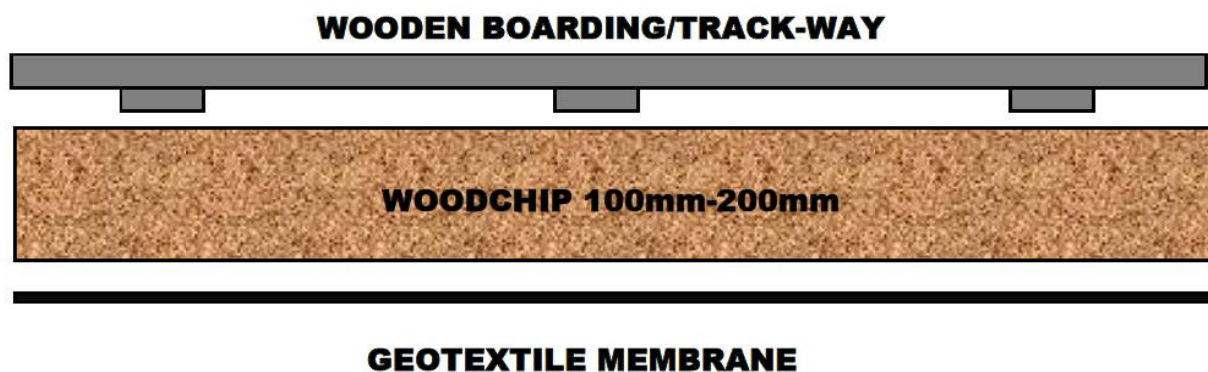
BS5837 recognizes that incursions in to the construction inclusion zones will be required at times during some developments.

The objective is to minimize soil compaction

Example 1 - *for pedestrian movements only, a single thickness of scaffold boards places either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g.) 100mm depth of woodchip), laid on to a geotextile membrane.*

Example 2 - *For pedestrian-operated plant up to a gross weight of 2 t, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;*

Example 3 - *For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative 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.*



The Ground Guards temporary road system can be used on construction sites to protect virgin ground from erosion and damage by construction vehicles. Ground-Guards are usually installed as a construction 'haul' roadway consisting of a parallel track of 2.4m x 1.2m panels with a 1.2m space in between. Where a temporary 'haul' roadway must pass near to trees, the following extra precautions must be taken in order to spread the loading applied to the track way. If Ground Guards are unavailable then a twin overlapping surface of 12mm plyboard may be used instead, this will be needed for both layers within the make up.

Edge rails of 200 x 50mm sawn timber or un-treated sleepers should be installed where the track way will pass over exposed retained tree RPA's. These should be installed on either side of the track way using either 50x50x500mm timber stakes or 500mm steel pins at 1.5m spacings.

A layer of geotextile membrane should then be laid over the area of ground to have the track way installed upon it.

A base layer of Ground Guards/twin sheets of 12mm ply should be laid over the top of the geotextile membrane at least three boards wide between the installed timber edging.

A minimum layer of at least 150mm deep coarse, preferably green wood chippings should be laid as a compressible layer over the top of the Ground Guards.

The second layer of Ground Guard/twin sheets of 12mm ply track way can then be laid over the top of the wood chippings.



Cellular confinement system for temporary site access (preferred method)- Use of Core TRP System (Core Tree Root Protection System).

The use of a product such as Core TRP System is used for areas that require temporary ground protection and then later may be used as a subbase for a porous wearing course. This reduces the likelihood of soil damage during removal and reinstallation. The temporary ground solution "provides guaranteed protection for the roots of mature trees from pedestrian and vehicular traffic". *Further information available at - <https://www.corelp.co.uk/core-tree-root-protection/>*

The system shall be installed in accordance with the manufacturers guidelines.

The installation of this ground covering shall use a method that ensures that no plant or equipment comes in direct contact with the soil of RPA. This shall be undertaken by installing the trackway starting at the front of the property and laying small sections advancing along the completed ground covering as it is installed. This method will ensure that no operations need to be undertaken within unprotected RPAs, the trackway will go no closer than 500mm from any trunk buttress root.

The system shall be installed as per the manufacturers recommendations, and as outlined below and installed as per section *Installation of 'no-dig' special surfacing within or close to the RPA of retained trees* of this report but with a sacrificial temporary wearing course that will on completion of the project be removed and the final top surfacing installed.

End of Report



The Arboricultural Consultancy is based in Sussex, covering the South East of England. We specialise in comprehensive tree management surveys, reports, and advice. Our expertise is invaluable in ensuring compliance with health and safety regulations, meeting development requirements, and fulfilling Tree Preservation Order (TPO) and Conservation Area obligations.

We take pride in offering professional and reliable services that prioritise the health and longevity of trees. Our team is dedicated to providing expert guidance and recommendations that align with your objectives and environmental stewardship.

With our extensive knowledge in arboricultural science, we deliver accurate and detailed assessments that inform sound decision-making. Trust us to be your trusted partner in responsible tree management.

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