



THE ARBORICULTURAL
CONSULTANCY LTD

Arboricultural Impact Assessment

[Retrospective]

Hurstpierpoint College, Hurstpierpoint

Report Reference Number: AIA.HC.0896.V1

Version: One

Date: 10 May 2024

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Details:

Purpose of the report:

This report is to document the impact from the development of the car park extension, retrospectively. The development was undertaken in 2023 and concerns were raised as to the impact to the roadside oak trees.

Included within the contents of this report is:

- Retrospective tree impact assessment detailing the arboricultural impact from the carpark development on the local tree population.

Client: Hurstpierpoint College

Date: 10 May 2024

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

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Site Details:

Site Address:

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Project:

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

Key Terms and Abbreviations:

A comprehensive list of the key terms and abbreviations has been included to help explain some of the terminology, found in the [appendix](#).

Use of Report:

This report is intended to document the likely damage that may have occurred from the carpark extension, 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.

This report shall be used in accordance with document: Arboricultural Impact Plan HC.AIP.0896.V1, this will provide tree location and give context to this report.

Survey Method & Caveats

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.

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, Statue 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 survey and reports 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

1.0 Introduction

- 1.1. The Arboricultural Consultancy have been appointed by Hurstpierpoint College, to provide information regarding the impact to trees from the carpark extension.
- 1.2. The site was inspected by Ben Tidey FdSc arb on Thursday 25th April 2024, this tree survey included all trees that are within influencing distance of the carpark extension.
- 1.3. The trees were assessed to standards set out in BS 5837:2012: Trees in relation to design, demolition and construction – Recommendations. This standard will be used to guide future reports and remediation where appropriate.
- 1.4. The tree numbers used in this report refer to the tree numbers used in our Tree Constraints Plan and Tree Schedule. Following completion of this document this impact assessment was compiled using survey information from the area.
- 1.5. This arboricultural impact assessment will discuss the value of the tree resources in proximity to the carpark extension outline the impact to this resource and comment where there will be a requirement for remediation.

2.0 Executive Summary

- 2.1. This report is retrospective, being undertaken after the completion of the project, in order to ascertain any impact the project may have had on select trees and provide relevant information required for a method statement of how to rectify any issues caused.
- 2.2. The development was to increase the carparking volume across the site, this involves increasing the northern end by 6m.
- 2.3. The development resulted in the loss of part of the RPA of three trees and incursions from operations of these three trees and one other.
- 2.4. The loss of part of the RPAs affected trees: T1 (B cat), T2 (B cat) and T3 (B cat). The incursion of RPAs from development activities affected: T1 (B cat), T2 (B cat) and T3 (B cat) and T4 (A cat).
- 2.5. A summary of the affected trees for the proposed development is detailed in the table below:

Impact	Reason	A	B	C	U
Trees that were removed	To facilitate the development or due to their condition (U cat)	None	None	None	None
Retained trees pruned	To address identified defects/ facilitate construction	None	None	None	None
Conflicts with tree RPAs	Incursion of the RPA of trees to be retained	T4	T1, T2 and T3	None	None

- 2.6. The loss of the RPAs of T1 (B cat), T2 (B cat) and T3 (B cat) was taken as from the line of the electric cable install, as this would have severed tree roots in this area. The loss is T1 = 25.6%, T2 = 22.42%, T3 = 8%.

- 2.7. Where there has been an incursion of the RPAs of T1 (B cat), T2 (B cat) and T3 (B cat) and T4 (A cat), this likely affected all areas south of the hedgerow and for T1 (B cat), T2 (B cat) and T3 (B cat) would be circa 50% of the RPA and T4 (A cat) would have been at least 25%.
- 2.8. The loss of RPA will likely result in tree decline with the tree becoming stressed with an increase of epicormic growths and an increase in the volume of dead parts in the crown and a loss of foliage. It is unlikely the damage will result in tree death and ultimately loss, however, it will reduce the trees' ability to have a strong growth vigour that will result in further decline.
- 2.9. This damage type on this species of trees typically takes 5-8 years to show the full implication of any damage.
- 2.10. The damage to trees is irreversible however the trees can be given a 'boost' to increase the trees' vitality, help them adapt to the loss of rooting parts and to provide optimum growing conditions to enable the tree to react to the change. Information on this can be found within the Arboricultural Method Statement – Hurstpierpoint College – Ref AMS.HC.0896.V1
- 2.11. The trees shall have ongoing annual inspections to enable any subsequent remediation to be undertaken.

3.0 Scope of Tree Survey, Plans and Report

- 3.1. To carry out an appraisal on the likely impact from the carpark extension installation on the trees at the above site.
- 3.2. To undertake the appraisal in accordance with the principles of BS5837: 2012 'Trees in relation to design, demolition and construction - Recommendations'.
- 3.3. To produce an Arboricultural Impact Plan showing the location of surveyed trees, their BS5837: 2012 categorisation and the theoretical Root Protection Areas (RPA).
- 3.4. To carry out this Arboricultural Impact Assessment on the effect to the local tree population from the development, commenting on what the likely impact is and outline if any remediation is required.
- 3.5. If the guidelines and principles outlined in this report are not adhered to, as with all development sites there is a risk that the trees will decline in health and potentially their demise. Damage to the trees will significantly increase the risk of their health declining and may increase the risk of their complete or partial failure.

4.0 Terms of Reference

4.1. Reference documents:

- BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'
- BS3998:2010 'Tree work – Recommendations'
- BGS Open Source Soil Data <http://www.bgs.ac.uk/home.html>

4.2. Documents supplied by client:

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

- ### Site Location (BGS Soil)

Weald Clay Formation - Mudstone. Sedimentary bedrock formed between 133.9 and 126.3 million years ago during the Cretaceous period.

6.0 Tree Information

6.1. Tree locations

6.1.1. There are 4 trees included within this report and have been affected by the new installation, the three trees are; T1 (B cat), T2 (B cat) and T3 (B cat) are directly north of the area and have their RPA fall over the carpark and a forth tree T4 (A cat) located to the northwest of the area, its RPA does not fall over the development area however there is evidence of plant and machinery operations over the RPA.

6.1.2. The full information regarding the trees included within this report can be found in the tree schedule and Arboricultural Impact Plan.

6.1.3. By BS5837:2012 categorisation ([appendix](#)) individually there are; three trees of B (moderate) quality and one tree of A (high) quality.

6.1.4. These trees' locations and a summary of their visual contributions can be summarised as follows:

BS 5837 Cat	A	B	C	U
Visual amenity from public areas	T4	T1, T2, T3	None	None
Internal contribution only	None	None	None	None

6.2. Statutory protection

6.2.1. 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.



6.3. Tree conditions

- 6.3.1. The trees in the vicinity are large mature Oak trees of high value offering much benefit to the area.
- 6.3.2. The trees are of moderate or high quality with a past operations but predominantly of unmodified form.
- 6.3.3. The four trees are of a significant age and are prominent in their location on the roadside.

7.0 Arboricultural Impact

7.1. Root protection area (RPA) incursions

- 7.1.1. Retained trees that will have incursion into their RPA, by BS5837:2012 category are:

BS 5837 Cat	A	B	C	U
Trees RPA incursion	T4	T1, T2, T3	None	None
Total	1	3	None	None

- 7.1.2. Impact to the trees is primarily from the loss of the rooting area around the trees: T1 (B cat), T2 (B cat) and T3 (B cat). This has been calculated to the electric cable run, this run likely severed trees' roots of under 25mm diameter. The loss is T1 = 25.6%, T2 = 22.42% T3 = 8%.
- 7.1.3. Damage has also been caused by the movement and operation of plant and equipment, with track marks on the soil/grass surface suggesting no surface protection was installed that may have reduced the compaction extent. This movement and operations are likely to have occurred across the southern halves of all T1, T2 and T3 resulting in a near 50% RPA damage, T4 appeared to have a 25% of its area damaged, compaction can result from temporary or short-term loadings, such as the passage of a single vehicle. When soil is compacted it will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss. Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth. It can result from temporary or short-term loadings, such as the passage of a single vehicle, or from longer-term construction activities, including materials storage.
- 7.1.4. Where root severance has occurred there is little that can be done to rectify this as any operations to expose the roots for correct pruning will likely result in further damage so on balance it is not suitable. Where soil compaction has occurred actions to improve the soil structure can be undertaken and soil amelioration undertaken to 'boost' the trees' vitality to help them respond to the damaged roots.

7.2. Foundations

- 7.2.1. In instances where soil conditions are known to be of shrinkable clay and retained trees are present in proximity to the installation there is a potential for future tree related subsidence to occur. On this site and in accordance with information from the BGS, soils in relation to the site are known to be of Clay Formation. The retained and removed trees therefore have the potential to constrain the foundation design for any adjacent new buildings within influencing distance. Final decisions as to the risks presented by retained/

removed trees upon adjacent new buildings should be subject to detailed site geotechnical information being available, assessed by a structural engineer.

7.3. Services

7.3.1. To the north set away from the kerb edge by c.300mm is a row of lighting bollards, these have been connected via a subterranean cable run, this run appears to the closest point of excavation to the trees.

7.4. Ground level

7.4.1. There appears to have been a small increase in soil height, this is unlikely to be of any significance to the trees.

7.5. Shading & tree characteristics

7.5.1. The new car parking spaces are now under the crowns of trees mean that should parts such as deadwood, twigs and leaves fall from the trees these will land on any cars parked underneath.

7.6. Tree protection

7.6.1. Given that there is a potential for tree and RPA damage during construction, this project should have engaged with an arboriculturist to identify any constraints that the trees pose, to help plan the project to account for the trees, and to provide a method of works that will ensure the trees' ongoing health.

8.0 Recommendations

8.1. The extension to the car park has likely resulted in tree harm, this harm if left untreated would likely lead to a degree of stress and decline of the trees, therefore remediation should be undertaken to provide the trees with the best opportunity to react and adapt to this damage.

8.2. The required remediation is:

- Measures to de-compact the soil where soil compaction has recently occurred,
- Soil amelioration undertaken,
- Undertake annual tree health assessments to identify if any further mitigation is needed.

8.3. Full information regarding the methodology of remediation shall be with an Arboricultural Method Statement (AMS).

8.4. Details of site inspection / supervision visits by the consultant Arboriculturist are recorded and retained by the site manager.

9.0 Conclusion

9.1. The installation of the carpark extension has resulted in the loss of rooting area, the likely severing of tree roots, and likely soil compaction from machinery.

9.2. The damage to the trees will likely lead to the trees becoming stressed with crown dieback, epicormic growths forming, development of deadwood and the reduction in the trees' ability to withstand infection, this may then lead to further tree decline.

9.3. Action should be taken to:

- De-compact any areas that had operations on,
- Add ameliorants to the soil to boost the trees' ability to react to the damage and change
- Undertake annual tree health assessments to identify if any further mitigation is needed.



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Appendix 1: Tree Schedule and Impact Schedule

Tree Schedule

Tree ID	Common Name/ Latin Name	Category/ Subcategory	Life Expectancy	Maturity	Height (m)	Stem(s) diameter (DBH)	Root Protection Area (m ²) / Circle Radius (m)	Spread (m) N;E;S;W	Height and Direction of first significant branch (m)	Crown Height (m) N;E;S;W	Physiological Condition	Physical Condition	General Observations	Management Recommendations
T1	English Oak / <i>Quercus robur</i>	B / 2 Mainly landscape qualities	>40	Mature	16	820	304.2/9.8	7;9;7;6	S 2	7;5;3;5	Fair	Fair	Tree located on southern sited of ditch and road. Development located 3100mm from carpark edge and 2800mm from trenching for electrical cable and lighting bollards, damage to grass/soil for machinery movement has visible tracks	Anti soil compaction, soil amelioration, monitor tree.
T2	English Oak / <i>Quercus robur</i>	B / 2 Mainly landscape qualities	>40	Mature	16	690	215.4/8.3	5;3;9;7	N 3.5	2;2;4;5;	Fair	Fair	Tree located on southern sited of ditch and road. Branch removal at north 4.5m. Development located 3900mm from carpark edge and 3300mm from trenching for electrical cable and lighting bollards, damage to grass/soil for machinery movement has visible tracks	Anti soil compaction, soil amelioration, monitor tree.

Arboricultural Impact Assessment – Hurstpierpoint College – Ref AIA.HC.0896.V1

Tree ID	Common Name/ Latin Name	Category/ Subcategory	Life Expectancy	Maturity	Height (m)	Stem(s) diameter (DBH)	Root Protection Area (m ²) / Circle Radius (m)	Spread (m) N;E;S;W	Height and Direction of first significant branch (m)	Crown Height (m) N;E;S;W	Physiological Condition	Physical Condition	General Observations	Management Recommendations
T3	English Oak / <i>Quercus robur</i>	B / 2 Mainly landscape qualities	>40	Mature	16	550	136.9/6.6	9;7;7;7	S 3	4;5;5;5	Good	Good	Tree located on southern sited of ditch and road. Development located 4700mm from carpark edge and 4.200mm from trenching for electrical cable and lighting bollards, damage to grass/soil for machinery movement has visible tracks	Anti soil compaction, soil amelioration, monitor tree.
T4	English Oak / <i>Quercus robur</i>	A / 2 Mainly landscape qualities	>40	Mature	17	1010	461.5/12.1	9;8;7;2	E3	5;4;2;2	Good	Good	Tree set back from development, damage to grass/soil for machinery movement has visible tracks	Anti soil compaction

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

= Measurements estimated due to inaccessible tree or tree part

T = Tree

TG = Group /Tree Group

*= Owned by third party

Tree Schedule Key Terms Terminology Used

Tree Reference Number: Identification number allocated to each tree or group of trees, which is illustrated on the plan or physically tagged to trees.

Species: Botanical and/or Common name of the tree done from visual identification.

Height: Estimated height of the tree in meters.

DBH: Diameter of the stem(s) measured using a diameter tape at 1.5m from the ground in accordance with the BS 5837 2012.

Branch Spread: Branch spread was estimated at the four points of reference from the base of the stem (North, East, South, and West).

Age Class: Consideration of species.

Y= Young

EM= Early Mature

SM= Semi Mature

M= Mature

OM= Over Mature

Physiological Condition: The trees physiological state and general vitality is rated as Good, Reasonable, Poor or Dead.

Structural Condition: Structural condition rated as either Good, Reasonable, Poor and any notable structural defects or characteristics.

Preliminary Management Recommendations: A recommendation for tree works based on the visual inspection of the tree and recommendations based on the development.

Category Grading Definition:

Category A: Trees of a high quality with an estimated remaining life expectancy of at least 40 + years.

Category B: Trees of a moderate quality with an estimated remaining life expectancy of at least 20-39 years.

Category C: Trees of a low quality with an estimated remaining life expectancy of at least 10 -19 years, or young trees with a stem diameter below 150 mm.

Category U: Trees in such a condition that they cannot realistically be retained as living trees in the context of current land use for longer than 10 years.

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.

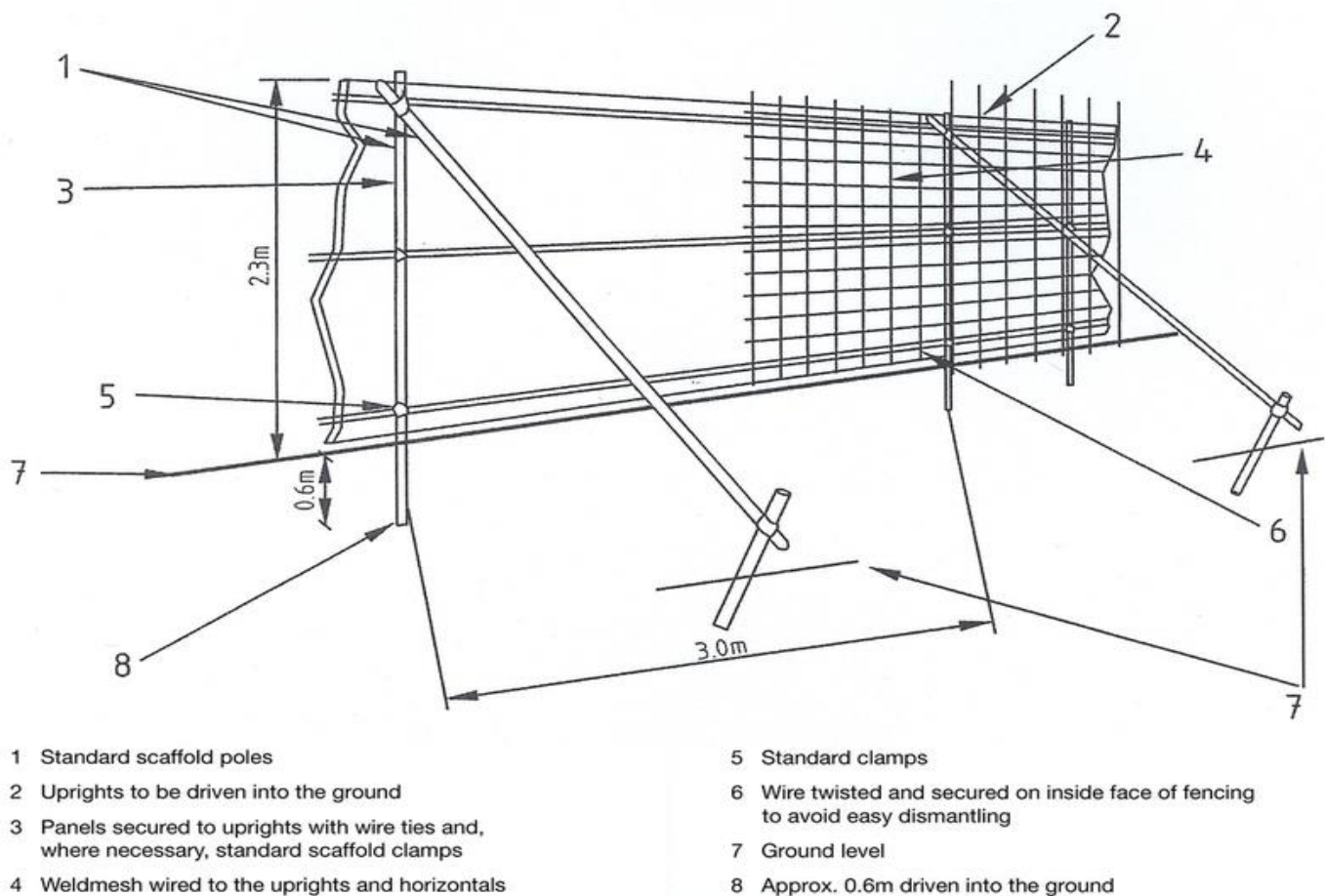


Figure 2. – Protective fencing for RPA

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. *A copy of these are available upon request*

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.

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 schedule 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. 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.

BS 5837:2012. Trees in relation to design, demolition and construction – Recommendations.				
Cascade chart for tree quality assessment.				
Trees to be considered for retention				Identification on Plan
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.			Dark red RGB Code: 127-000-000
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	Identification on Plan
Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)		Light green RGB Code: 000-255-000
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm			
Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Mid blue RGB Code: 000-000-255
		Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey RGB Code: 091-091-091

See document: *Arboricultural Impact Plan HC.AIP.0896.V1*



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.

Visit our website at www.thearboriculturalconsultancy.co.uk