



THE ARBORICULTURAL
CONSULTANCY LTD

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Qualifications Foundation degree arboriculture (level 5), Lantra Professional tree inspection.			

Report 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 affected by the proposed installation.

Date: 03 March 2023

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

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Site Address:

1 Beach Road
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Use of Report:

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

Tree Protection Plan – TPP.BR.0810.V1

Proposal:

The proposed development is for the renovation and extension to the existing property.

Use of Report:

This report is to be used at the development and operational 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.

Planning Consent Information:

Application number – *not yet available.*

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, 03 March 2023

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 planning consent was issued and after commencement of development operations begun, therefore specific site orientated logistics were established. It is accepted that this document may need to be updated and more detailed information added throughout the and process. However this document will be the main documentation for reference in the event of future disputes.

1.0 Introduction

- 1.1 The Arboricultural Consultancy have been appointed to provide advice on the arboricultural issues relating to the development of the side extension to the existing dwelling.
- 1.2 The site was inspected by Ben Tidey FdSc arb on Monday 20th February 2023, this tree survey included all trees that are within influencing distance of the area to be developed.
- 1.3 The production of the Arboricultural Impact Assessment (AIA) highlighted that there may be an impact to trees from the installation and that this impact can be mitigated with the implementation of tree protection methods.
- 1.4 The impacts highlighted within the AIA were RPA incursions of T1(B) T2(C), the removal of part of TG11(C) the potential for RPA damage from development operations to T1, T5, T2, T4, T6 and TG9, this impact is considered as minimal when implementing tree protection measures.

2.0 Executive Summary

- 2.1 The proposed development is for the renovation and extension to the existing property.
- 2.2 The Arboricultural Impact Assessment discusses the impact to trees and the suitability of this. To summarise the removal is of 1 tree group, part of a tree group, and a single tree. However this is irrespective of the development but is included for transparency, all three trees or

group are of C low quality category. This removal is to facilitate the dwelling construction There is no significant incursion of RPAs from the proposed extension however, there may be an incursion of the RPAs of two trees of B moderate and C low quality from development operations. This will in both cases be from the installation of car port support pillars and are both <1% of the RPA. There is a potential for tree damage to both above and below ground parts this impact is easily mitigated with the use of protective barrier fencing and construction exclusion zones during the operational phase.

- 2.3 Given the development area being a domestic garden and with there being no suitable location for replacement hedging to be planted there is no proposal for replacement tree planting.
- 2.5 At the current time there is no potential conflict with branching from retained trees, however if at the time of development there is a potential then facilitation pruning may be required.
- 2.6 The implantation of tree protective barrier fencing in proximity to the development will significantly reduce the likelihood of inadvertent tree damage, the location of this is shown within the *Tree Protection Plan – TPP.BR.0810.V1*.
- 2.7 To document the implementation of protection methods stated within this document a schedule of site inspections from the project arboricultural consultant is required, this shall provide evidence of conformity and provide an opportunity to address any unforeseen tree related issues.

3.0 The Arboricultural Protection Methods and Specifications

- 3.1 The below tables outline the criteria that is required to achieve suitable tree protection.

3.2. Tree Protection Plan:

3.2.1 Criteria

SCOPE OF WORKS	CRITERIA
Tree Protection Plan	- Includes details and location of the tree protection fencing of the Root Protection Areas (RPA) to define the Construction Exclusion Zones (CEZ) - To indicate areas of 'hand-dig under supervision' within RPAs - To show the location of temporary ground protection where required - To show what trees/hedging/tree groups that are to be removed - To indicate what trees will most likely need pruning - A copy of the tree protection specifications are indicated on the Tree Protection Plan.

- 3.2.2 This can be found within document *Tree Protection Plan – TPP.BR.0810.V1* this will provide a plan with locations of specific protection requirements.

3.3 Protective fencing:

3.3.1 Criteria

SCOPE OF WORKS	CRITERIA
Protective fencing	• Location of fencing shall be as detailed in the <i>Tree Protection Plan – TPP.BR.0810.V1</i> • The warning signs (as detailed within this report, Appendix 3) should be fixed at 6m intervals to raise awareness of the fencing and its desired function • Protective fencing must be in place prior to any site activities, it is recommended that this fencing is installed at the time site hoarding is erected • To be effective the tree protective fencing must remain in place for the duration of the development • Protective fencing for all trees shall consist of Heras style fencing panels installed as recommended in the BS5837:2012 • Full specification for fencing to be found in Appendix 3.

3.3.2 Tree protection shall protect the tree crowns and RPA of retained trees, if any development operations are not possible because of tree protection then the project arboriculturalist shall be contacted and a suitable solution found before works are undertaken. The proposed fencing specification is deemed as suitable and proportionate to the scale of operations.

3.3.3 Barrier fencing is required to bisect the rear garden and to protect the Birch (T2) and hedge at the front garden this fencing should be of the alternative type and located as shown in *Tree Protection Plan – TPP.BR.0810.V1* using 2m tall welded mesh panels on rubber or concrete feet with these feet being staked into position to stop them being moved, this can be achieved by 'T' shaped wooden steaks or 'U' shaped bent rebar driven into the ground. The fence panels should be joined together using a minimum of two anti-tamper couplers, the panels shall have stabiliser struts on the inside to stop them being lifted or push over, all couplings shall be installed so that they can only be removed from inside the fenced area.

3.3.4 The location of fencing shall, where possible, connect existing features such as retained garden fencing or walls.

3.3.5 All areas protected by protection fencing shall be considered as sacrosanct and not be remove or altered until completion of the project.

3.3.6 All protective barrier fencing shall remain in situ for the duration of the project and any damage be fixed or parts replaced.

3.3.7 On every panel of the fencing should be a waterproof and clearly displayed sign that outline there is no access to the area beyond the fencing stating "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

3.4 Site inspection, Monitoring and Supervision:

3.4.1 Criteria

SCOPE OF WORKS	CRITERIA
Site Inspections and Supervision	• Arrange details of communication between the inspecting arboriculturalist, and client / client appointed ground worker, demolition contractor etc. • Details, instructions, and authority for inspections should be provided and retained on site at all times. • To ensure that the construction process is undertaken with minimal disturbance to the retained tree stock, we recommend that the experienced arboricultural consultant from The Arboricultural Consultancy Ltd is appointed to undertake regular inspections of the site according to a site inspection / supervision schedule below. • During the site visits any changes to the proposed works will be discussed, their impact assessed and recommendations for best practice will be outlined. After the visit a copy of a report should be sent to the Site Manager, Local Authority Tree Officer, and Client. • Any damage or incidents regarding the retained trees should be reported to the consultant arboriculturalist at The Arboricultural Consultancy Ltd. Any incidents requiring a planning variation will only be completed after prior approval and consultation with the LPA. • Where excavations are necessary within RPAs then this should be under the supervision of an arboricultural watching brief/ supervision. • Full list of proposed supervision/ inspections to be found in Appendix 6.

3.4.2 A pre commencement site meeting with the project arboriculturalist, developer, client, and with the invitation to the Council Tree Officer should take place once the tree protection is installed and before any further works commence. This will provide an opportunity to ensure the correct location of tree protection and to discuss any potential issues with site logistics.

3.4.3 If there is a requirement to change any aspect of the operation in such a way that may potentially damage trees or a requirement to change any aspect of the tree protection the project arboriculturalist shall be informed before any works are undertaken.

3.4.4 Given the scale of the project it is deemed appropriate to have only pre commencement and post completion inspections.

3.4.5 On completion of the project a final site audit should be undertaken by the project arboriculturalist and accompanied by the developer and the client, this will ensure that no tree damage has occurred or if any remedial action is required.

3.4.6 The council Tree Officer will be invited to attend the site meetings and should feel welcome to do so, following all site meetings/visits the production of a report (with photographic evidence) shall be undertaken by the project arboriculturalist. This will then be distributed by the client to all relevant parties and kept on file as evidence of conformity.

3.5 Excavation within RPA of retained trees, further information can be found in Appendix 4

3.5.1 Criteria

SCOPE OF WORKS	CRITERIA
Excavation if within the retained tree RPAs	- Excavations within the tree Root Protection Areas will likely require the severing/pruning of roots. - If necessary, a full specification on remove existing hard surfacing is found in Appendix 4. - If roots with a diameter of less than 25mm are found, then they are to be pruned to a side root, or suitable point, with secateurs. - If a major root with a diameter of over 25mm, clusters, or masses of fibrous roots are discovered then where possible they are to be protected, they shall be wrapped in hessian and hand dug around the roots and tunnel underneath (this may cause a confined space for which a Risk Assessment will need to be undertaken).

3.5.2 There is a requirement for excavation within the RPA of T1(A) and T2(C), this excavation is for pits for the footing to support pillars for the proposed car port, in both cases the RPA loss is under 1% of either tree.

3.5.3 The excavations within the RPA of T1(A) and T2(C) will be localised and are to be hand dug only. All works shall be undertaken from on the driveway hard surface or from on ground protective matting. All excavated materials shall be removed from the RPA to stop soil contamination.

3.6 Ground protection

3.6.1 Criteria

SCOPE OF WORKS	CRITERIA
Ground protection	- Ground protection is necessary where construction access is available over any part of any tree RPA - The ground protection is to reduce soil compaction that results in dysfunctional roots and a reduction of tree health - The ground protection shall be suitable for the machinery and/or plant that it is proposed to enter the area - It shall be installed before any machinery or plant access the area, with trackways being made in a progressive manner, only driving over the protected parts as the track lengthens - Full ground protection specification to be found in Appendix 5.

3.6.2 There is no requirement for ground protection for this project.

3.7 Tree Pruning

3.7.1 Criteria

SCOPE OF WORKS	CRITERIA
Tree Pruning	- Tree work shall be undertaken to BS3998:2010 'Tree work – Recommendations' - Work shall be undertaken by a qualified, competent, insured company - 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.

3.7.2 There is no requirement for to prune any part of any tree for this project.

3.8 Tree removal and replacement tree planting

3.8.1 Criteria

SCOPE OF WORKS	CRITERIA
Tree removal	- Tree work shall be undertaken to BS3998:2010 'Tree work – Recommendations' - Work shall be undertaken by a qualified, competent, insured company - 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. - Tree loss to be compensated for with new tree establishment.

3.8.2 There is the proposed felling/removal of the entirety of TG10(C) and the removal of the eastern end of TG11(C) this will be to facilitate the development and allow sufficient operation space.

3.8.3 The tree T3(C) is to be removed irrespective of the development, however it has been included within this report for transparency.

3.8.4 This felling/removal shall take place before any site operation starts and before tree protection is installed thus allowing suitable space for this.

3.8.4 There is no proposal for replacement or compensatory tree planting given the loss is predominantly boundary hedging and this will not be possible because of the proposed extension.

3.9 Removal of existing surfacing and installation of new surfacing within RPAs

3.9.1 Criteria

SCOPE OF WORKS	CRITERIA
Removal of existing surfacing and installation of new surfacing	- Only plant/equipment/ machinery of a size that has been frequently accessed the site shall be used - Where possible existing features such as foundations or concrete slabs shall be left in situ and surfacing placed over these - Where surfacing is to be removed this shall be undertaken in such a way as to avoid plant/equipment/ machinery needing access to unmade areas - Where there is a requirement for new permeant hard surfacing within RPA to unmade areas, this will require a modified building method (not deemed necessary for this project given the current/previous usage).

3.9.2 There is a likely requirement to remove the wearing course from the front driveway and resurfacing.

3.9.3 Where the current driveway surface falls within the RPA and relaying is required this shall be undertaken by hand using only hand tools working backwards out of the RPA and using the existing surfacing, if this is not possible then protective layer of boards shall be used to operate from on. There shall be no excavation or removal to the surfacing within the RPA as there is likely to be rooting close to the surface that could be easily damaged.

3.3.4 The installation of the new final surface shall be the reverse of removal being undertaken by hand only works inwards over the newly laid surfacing.

3.3.5 The resurfacing operations shall be timed so that no part of the RPA is left exposed or unsurfaced for any duration over 2 days. There shall be no access to the RPA that does not have it final surfacing/wearing course present. This included vehicle and plant access, as well as footfall and storage of any kind.

3.10 Site compound and material storage location – (location front garden/driveway)

3.10.1 The site compound(s) will be planned to provide adequate space for operations required and will be outside of all RPA and construction exclusion zones.

3.10.2 All storage of materials will be outside of RPA and construction exclusion zones and be located to prevent soil contamination within RPAs.

3.10.3 There shall be no access to areas behind tree protective fencing, there shall be no attaching of anything to trees, no emptying of any cleaning containers within RPAs, there shall be no burning of rubbish at the site, and the storage of potential contaminants such as fuel and cement shall ensure they cannot contaminate the soil should they become spilled.

3.10.4 The use of any lifting equipment shall be carefully planned to ensure there is no contact with trees.

3.11 Service Runs

3.11.1 All service runs are to be outside of RPAs, connected internally to those existing.

3.12 Foundation/Footings

3.12.1 Foundation for the dwelling shall be designed to withstand the potential subsidence/heave that is associated with vegetation and clay soil types.

3.11 Responsibilities and delegated powers

3.11.1 The project management will be responsible for contacting the local planning authority or project arboriculturalist should any issue be raised relating to the trees affected by the development.

3.11.2 It will be the responsibility of the project manager to ensure that all planning conditions attached to the planning consent are adhered to and that an auditable regime in regard to tree protection is adopted on site.

3.11.3 The contracts manger will be responsible to the project arboriculturalist on all tree related matters, in the first instance where construction is halted for tree protection. Should there be no line of communication then the Local Authority tree officer will be contacted. In the absence of any advice or supervision, all work must cease until relevant permissions are gained.

3.11.4 If further pruning works are required at any time, then the contracts manager will request permission from the Local Planning Authority through their project arboriculturalist and all works must be carried out to the relevant specification.

3.11.5 The contracts manger will ensure the project is sequenced is appropriately to ensure that no damage occurs to trees during any phase of the project, all protection measures will remain in position until completion of all construction work.

3.11.6 All tree protection measures will remain in position and will have regular monitoring by a responsible and designated person on site. An auditable system of management of tree protection measures must be made available for scrutiny by the Local Planning Authority should they request it.

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'

4.2 Document supplied by the client:

22032-1 Beach Road Planning Pack 2022.11.22

22124-J 01 Topographical Survey - 1 Beach Road-SHEET 1 (A2)

22124-J 02 Internal Floor Plans - 1 Beach Road-SHEET 1 (A2)

22124-J 03 Elevation Survey - 1 Beach Road-SHEET 1 (A2)

Multiple DWG files of the above documents

5.0 Statutory Protection

- 5.1 A check for any statutory protection for trees included within this report found that there are no trees within the property that are covered by a tree preservation order (TPO) and the site is not within a conservation area.



6.0 Conclusion

- 6.1 Tree protection measures in this **Arboricultural Method Statement** and the accompanying **Tree Protection Plans** are deemed appropriate and will offer the best solution with minimal arboricultural impact.
- 6.3 The recommended protection and working methods should be adhered to by all persons at all times and if there is need to deviate from this specification then advice from the project arboriculturalist shall be sought and an amended method statement may need to be issued.
- 6.4 If all the above measures are undertaken then the necessary work at will have the minimal effect on the retained local treescape, and with the proposed tree planting there will be a maintained tree cover as trees mature.

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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

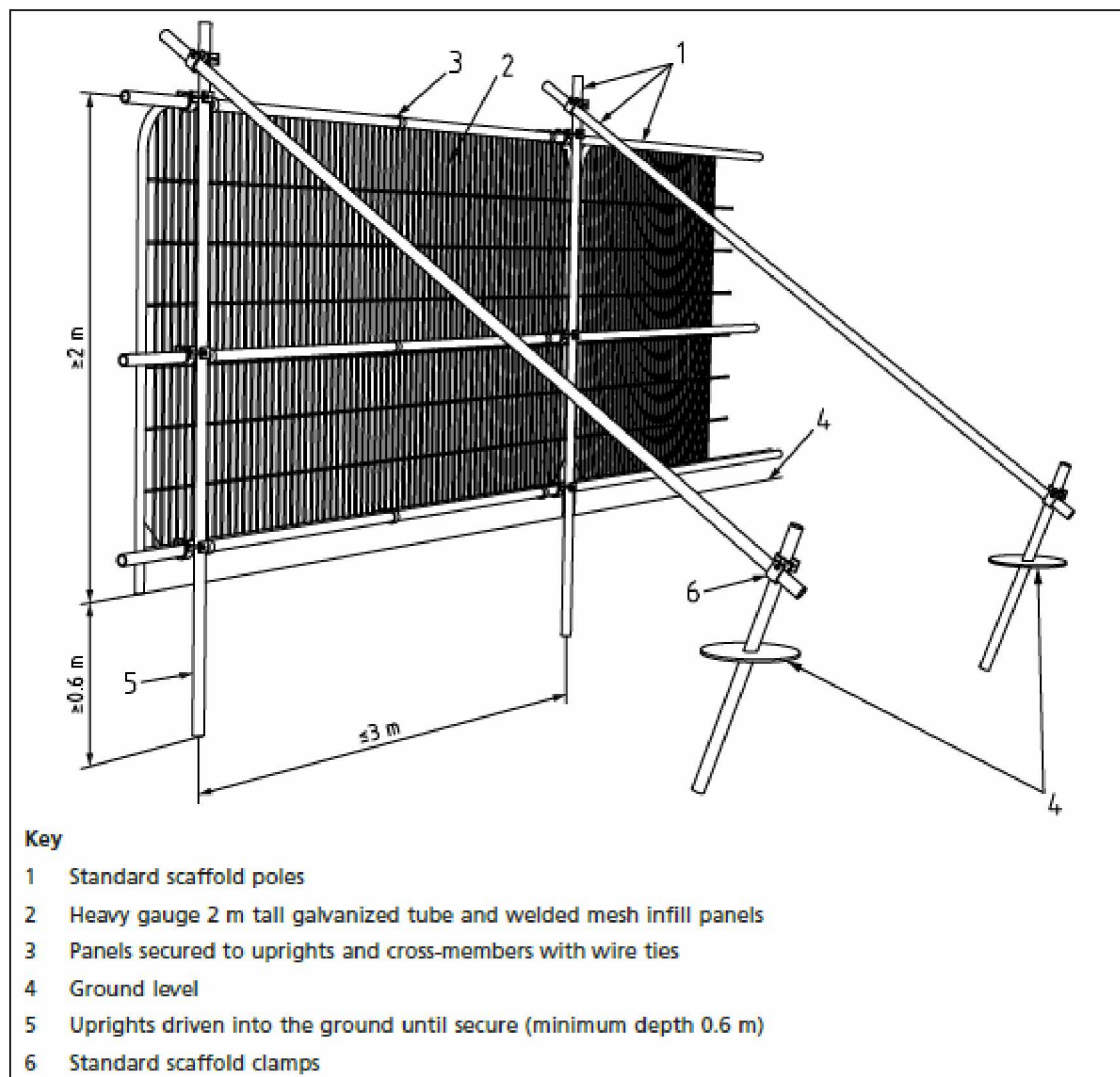
BARRIERS/FENCING

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 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

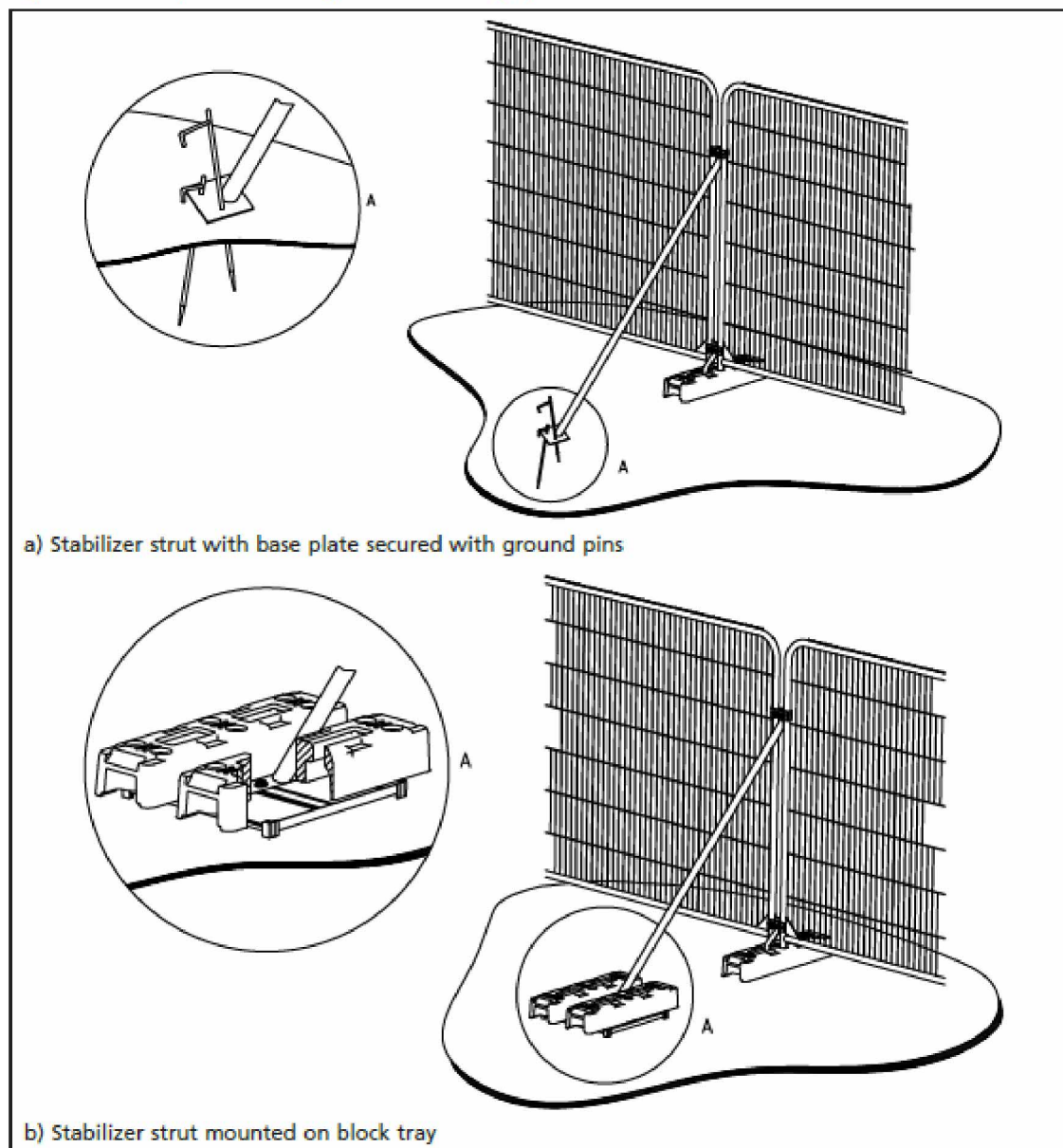


Alternative Specification:

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 schedule for removal within RPAs care must be taken to not disturb the root structure that could be present underneath. **Handheld** 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 whereas 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 RPAs 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 subbases 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 subbase 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 and *Installation of permanent 'no-dig' special surfacing*

5.1 Temporary Ground Protection Method and Specification

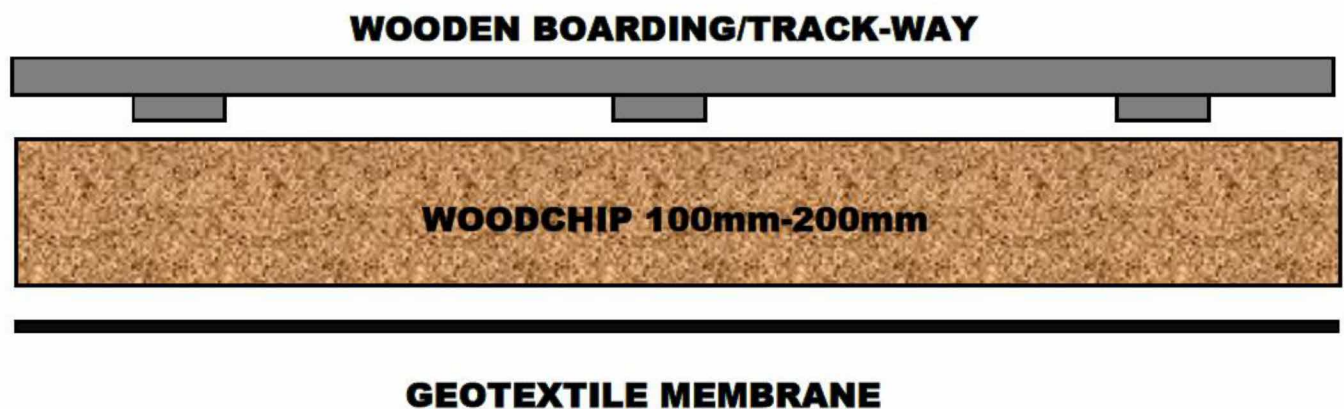
BS5837 recognizes that incursions in to the construction inclusion zones will be required at times during some developments.

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.*

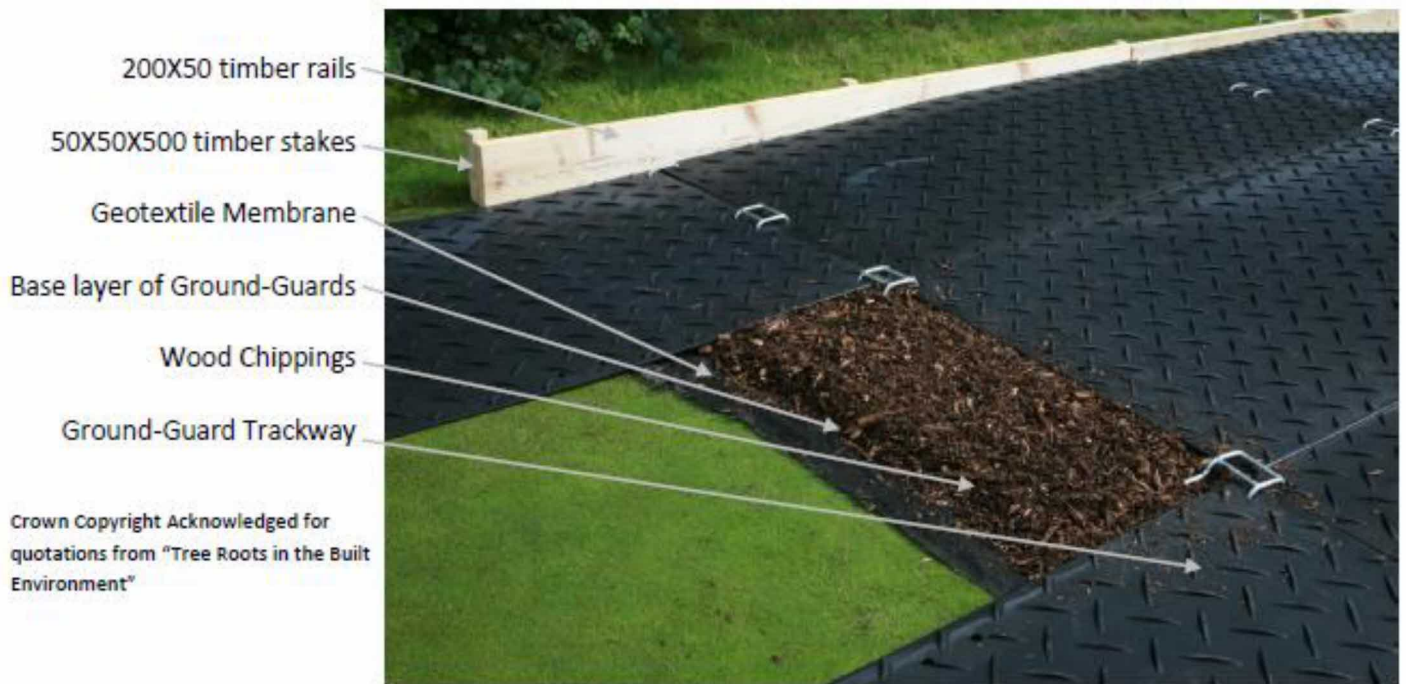
Example 3 - *For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed conjunction with arboricultural advice, to accommodate the likely loading to which it will 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 makeup.

1. 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 of 500mm steel pins at 1.5m spacings.
2. A layer of geotextile membrane should then be laid over the area of ground to have the track way installed upon it.
3. 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.
4. 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.

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



5.2 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.

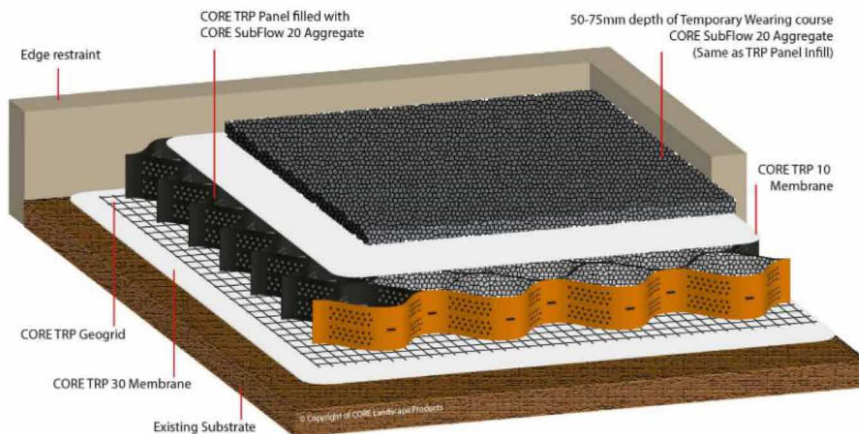
The installation of this ground covering shall use a method that ensures that no plant or equipment comes in direct contact with the soil of RPA. This shall be undertaken by installing the trackway starting at the front of the property and laying small sections advancing along the completed ground covering 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.

CORE TREE ROOT PROTECTION

APN12 Compliant Tree Root Protection Construction

TEMPORARY SITE ACCESS



Installation of 'No-dig' special surfacing within or close to the RPA of retained trees

Where the proposed drive/pathway is located within RPA then a modified surfacing shall be used to reduce soil compaction. Soil compaction is a major contributing factor in post development tree loss and shall be mitigated.

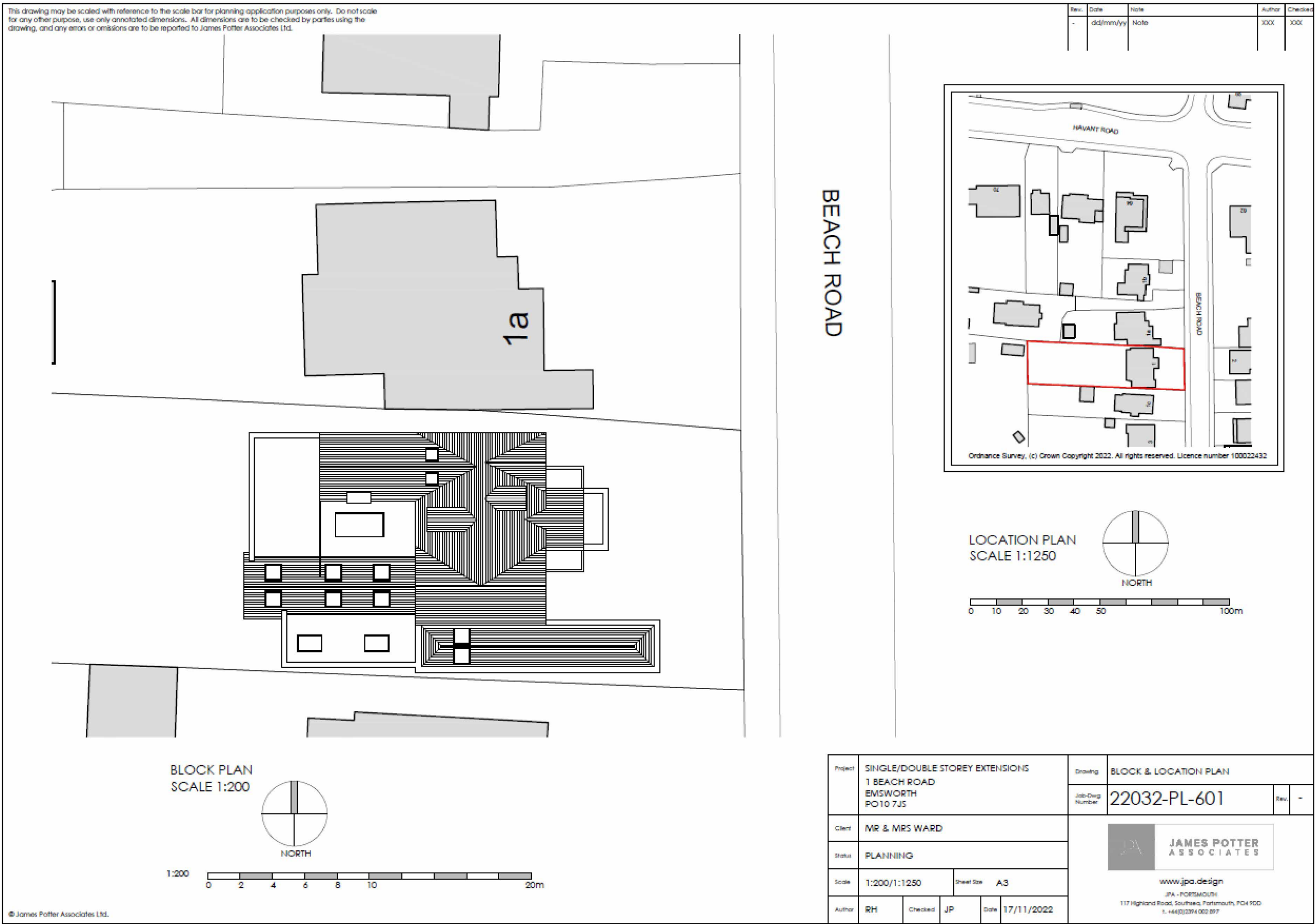
The no-dig surface is a tree root protection system combination of; a 3-dimensional cellular confinement system, separation and filter geotextiles and a specific grade of granular material. This document should be read in conjunction with the appropriate section drawing for the specified system to ensure the correct installation is achieved. See CORE Landscape Products at <https://www.corelp.co.uk/core-tree-root-protection/> for tree related systems and installation guides.

A full specification and installation guidance shall be sought prior to development; the requirements for the drive/pathway should be suitable for the usage type or greater. The final surfacing shall be suitable and as recommended by the 3-dimensional cellular confinement system manufacturer. If the temporary ground protection has been formed of a cellular confinement system see - *Cellular confinement system for temporary site access Appendix 5*, then the permanent hard surfacing should be installed as per the manufacturer's guidance. This typically involves the removal of the sacrificial layer and then installation of the final surface this surfacing type shall be in accordance with the manufacturer's guidelines and shall be porous. Typical porous surfacing is gravel grid / porous paver, grass reinforcement grid, porous block paving and porous asphalt/ macadam. Further advice can be found at <https://www.corelp.co.uk/core-tree-root-protection>.

Appendix 6: Supervision/ Inspection Matrix

Visit	Date	Status
Pre-commencement Inspections Attend site to inspect type and location of tree protection and any temporary ground protection prior to development commencing and discuss any issues associated with demolition/ enabling works	TBC	Incomplete
Final Site Inspection Final site visit to confirm that no damage has been done to retained trees/ identify any remedial actions in the event damage has occurred. Assess any required tree surgery following construction	TBC	Incomplete
Watching brief / Arboricultural supervision Where any operations within RPA are undertaken	TBC	Incomplete

Appendix 7: Outline Development Plan - 22032-1 Beach Road Planning Pack 2022.11.22. Page 1– Extract - Not to scale



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