Arboricultural Impact Assessment & Method Statement Tree Protection Plan

Protected Status Of Trees

Trees may be legally protected, this may either be in the form of a Tree Preservation Order (TPO) or that the trees are located within a Conservation area. In addition some tree felling may require a felling licence from the Forestry Commission.

Potentially large penalties may be enforced for illegally carrying out works on protected trees. It is recommended that checks are made before any works are undertaken and no work should commence until permission has been granted. Please note that there are a number of exemptions from the requirement to obtain a felling licence including land on which full planning permission has been granted by the local authority, however this exemption does not cover land where only outline planning permission has been granted, or on land which has been allocated for residential development within local authority urban and local development plans.

Wildlife Habitats

Consideration must be given to wildlife when conducting tree works, particularly birds and bats.

Bats

All UK bats and their roosts are protected by law. The legislation protecting bats are:

- The Wildlife & Countryside Act 1981 (WCA)
- Conservation of Habitats and Species Regulations 2017

For all countries of the UK, the legal protection for bats and their roosts may be summarised as follows:

You will be committing a criminal offence if you:

1. Deliberately* capture, injure or kill a bat
2. Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
3. Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
4. Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat
5. Intentionally or recklessly obstruct access to a bat roost

**In a court, 'deliberately' will probably be interpreted as someone who, although not intending to capture/injure or kill a bat, performed the relevant action, being sufficiently informed and aware of the consequence his/her action will most likely have.)*

Penalties on conviction - the maximum fine is £5,000 per incident or per bat (some roosts contain several hundred bats), up to six months in prison, and forfeiture of items used to commit the offence, e.g. vehicles, plant, machinery.

When carrying out tree works it is essential that the contractor or other competent person carriers out a specific 'bats in trees risk assessment' which can be obtained from the 'Arboricultural Association' or the 'Bat Conservation Trust' (BCT). If evidence of bats is found work must stop immediately and Natural England Batline contacted (0845 1300 228). A further inspection may well be required by a licensed bat handler or roost visitor.

Birds

In the UK, all wild birds, their nests and their eggs are protected by law.

In England, Scotland and Wales the legislation that protects wild birds is:

- The Wildlife and Countryside Act 1981
- The Countryside (or CRoW) Act 2000

As with bats the contractor has an obligation to carry out visual checks prior to works. Where possible tree works should be carried out in the period from August to the end of February in order to avoid the bird nesting season.

The Project Ecologist should be contacted for any further information required to ensure compliance with legal requirements.

Order Of Operations

The following is provided as to the optimal order of operations from an arboricultural perspective:

- Site to be managed as per the guidance in section 5.2 of this document.
- Remove trees in conflict with the development (see section 5.3 of this document). Carry out pruning works as specified in appendix 1 of this document. The tree works should wherever possible be carried out in accordance with BS3998:2010 Tree Work - Recommendations and contractors undertaking the work must comply with the legal obligations to wildlife (see section 4.8).
- Establish site compound and storage in accordance with section 5.4 of this document.
- Erect protective barrier in the position indicated by the blue line on the TPP and as per the specification which forms section 5.5 of this document.
- Install ground protection in the position indicated by the orange hatching on the TPP and as per the specification which forms section 5.6 of this document.
- Undertake construction works.
  - Guidance for formation of new surfacing within RPAs is provided in section 5.7 of this document.
  - Guidance for installation of services within RPAs (if required) is provided in section 5.8 of this document.
- Following completion of construction works the protective measures can be removed.

Site Management

It will be the responsibility of the site manager (or appointed person) to brief and induct all personnel entering site, particularly those who will conduct work in proximity of retained trees. A copy of this document and the associated Tree Protection Plan must be available and readily accessible to all entering the site.

The site manager (or appointed person) will be responsible for daily management of the site and protection of retained trees. The site manager will liaise with the project arborist as required for all tree related matters. Prior notice of any activity which has potential to impact on the retained trees must be made to the project arborist.

Any damage incurred to retained trees, or to tree protection measures, will be documented by the site manager (or appointed person) and reported to the project arborist. Works must cease in the affected area until the project arborist has been able to assess the situation and appropriate recommendations implemented (if required).

If the need for additional arboricultural works are identified beyond those approved during the planning process the project arborist must be informed as soon as practicable. Appropriate advice will be provided as to the suitable course of action, dependent upon the additional works required.

It is the responsibility of the site manager (or appointed person) to ensure all planning conditions are adhered to. A programme of arboricultural monitoring is provided in section 6 of this document.

Tree Works

The first arboricultural works on site will be the removal of all the conflicting vegetation:

- 9x sycamore in hedge 2 &
- 1x hawthorn in hedge 4

The sections of hedge to be removed have had their coloured hatch removed. A broken black ring has been placed around the coloured categorisation circle adjacent to the hedge label.

The stumps may be ground out using a stump grinding machine.

Details of any prescribed pruning works are included within Appendix 1 of this report. The tree works should wherever possible be carried out in accordance with BS3998:2010 Tree Work - Recommendations.

Location of Site Compound & Storage Areas

The contractor's site compound, storage & parking areas must be located outside of the root protection areas (RPAs) of the retained trees. This includes any trees which are located outside of the study area but not included within the survey.

All site storage areas, especially cement mixing and washing points for plant and vehicles must also be situated outside of the root protection areas (RPA). Where there is a possible risk of polluted water runoff heavy duty plastic sheeting and sand bags must be used to contain spillages and contamination.

Protective Barrier Erection

Trees on development sites are prone to damage during the course of demolition and construction works. Retained trees need to be protected in line with British Standard 5837-2012 Trees in relation to design, demolition & construction.

This usually involves identifying a construction exclusion zone around the tree which should remain undisturbed with appropriate protective barriers preventing access to this Root Protection Area for the duration of the project.

The minimum root protection areas (measured in a radius from the centre of the tree to the protective barrier) are outlined for each individual tree and the barrier layout is indicated on the plan.

The exact root spread of an individual tree is difficult to quantify, but in general, the bulk of a trees roots are situated in the upper 600mm of the soil with the finer absorbing roots prevalent in the upper 250mm.

Dependant on soil conditions and the species of the tree, the root plate may extend radially for distances in excess of the height of the tree.

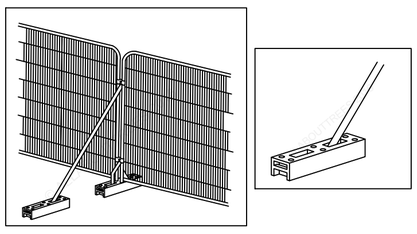
In the case of development sites, the root protection area is designed to prevent any significant long-term damage to the tree by protecting the root plate and to some extent the lower branches of the tree.

The barriers should be erected prior to work commencing on site and should remain until construction activities have been completed. The root protection area should be considered essential and should not be removed or altered without prior recommendation by an Arboriculturalist and approval of the local planning authority.

The barrier should consist of proprietary 2m tall welded mesh panels mounted on rubber or concrete feet. The panels must be joined together with a minimum of two anti-tamper couplings situated at least 1m vertically apart and installed uniformly throughout the barrier so that they can only be removed from inside the barrier. Where space allows the panels must be supported by stabiliser struts mounted on a block tray.

No fixing shall be made to any tree and all possible care must be taken to prevent damage to tree roots when locating the posts.

All types of barriers must be firmly attached to prevent movement by site personnel or vehicles and all weather signs with the wording "Construction exclusion zone- keep out" should be attached.



Ground Protection Areas & Erection Of Scaffolding Within The Trees Root Protection Areas

In some cases (adjacent to tree 5, group 2 and hedge 2) it will be necessary to provide access within the root protection area of the trees, or to create space for scaffolding and working areas. To prevent damage occurring to the trees, the following technique should be observed. The areas requiring this protection are marked in hatched orange on the TPP.

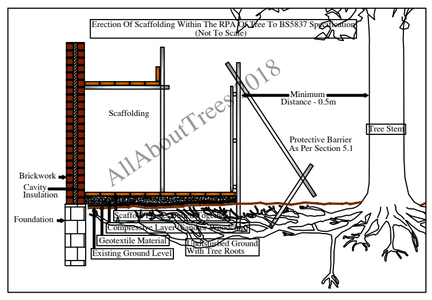
If the 'tree friendly' no dig, porous surfacing detailed in section 5.2 is not laid as part of the initial works it will also be necessary to provide ground protection measures in the area shown by the green hatching on the TPP until the surfacing has been laid. A number of ground protection options are suitable dependant on the weight and type of access required.

The following diagrams visualise the layout requirements. By sufficiently protecting the rootplate of the tree, the pedestrian access or scaffolding and associated working area can be placed within the root protection area. There is no limitation as to the size of the ground protection area, but we would advise that it is at least 0.5m from the trunk of any tree.

A summary of the requirements for the erection of the scaffolding and working area are detailed below.

- Protective barriers should be erected onto a framework of scaffolding (as per the fencing drawing in the Arboricultural Method Statement) to comply with the recommendations of BS 5837).
- The barrier is erected prior to the commencement of work at a suitable distance from the building to allow for the erection of the main scaffolding.
- A porous geotextile fabric should be laid onto the undisturbed ground surface and a layer of sand or compressible material such as woodchip applied to level the area.
- Boards should be laid onto the sand to protect the rootplate. Scaffold boards are usually adequate for pedestrian loads .
- The boarding must remain until building works are completed.

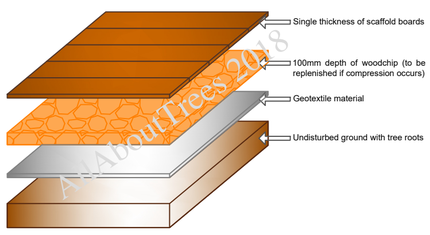
As the building rises, additional scaffolding is erected within the area protected by the boards. The use of supplementary timber sole plates is advised.



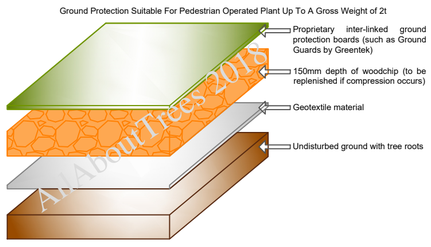
Temporary ground protection should be tailored to the likely load it will be subjected to. The following diagrams indicate the acceptable techniques for:

- Pedestrian
- Plant and vehicle access up to 2 tons gross weight
- Plant and vehicle access up exceeding 2 tons gross weight

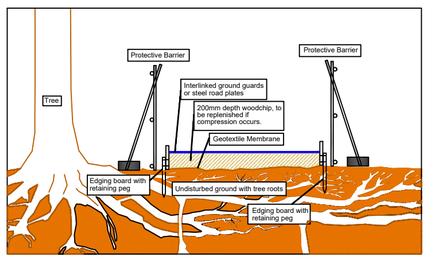
Ground Protection Suitable For Pedestrian Movement Only



Ground Protection Suitable For Pedestrian Operated Plant Up To A Gross Weight of 2t



If the likely loading is to exceed 2t gross weight it will be necessary to produce an engineered solution with arboricultural advice to accommodate the likely load safely. One such example is shown below. In some cases it may be necessary to install a temporary road using a 3D cellular confinement system (such as Cellweb by Geosynthetics Ltd).



No Dig 'Tree Friendly' Porous Surfacing

The development requires the installation of 'tree friendly' no dig porous surfacing in the areas shown by the green hatching on the TPP adjacent to tree 5.

If the principles of the 'no dig' construction are followed, no significant permanent damage should occur to the retained trees.

The **principal rules of construction** are as follows:

1) No roots are to be severed (except for hand digging to remove rocks or protrusions taking care not to sever any roots over 2.5cm in diameter).
2) The soil must not be compacted
3) Oxygen and water must be able to diffuse into the soil beneath the engineered surface
4) The construction of the road, footpath or parking bay will have to be **above existing ground** level and at least 1m away from the trunks of the retained trees.

The **method of construction** is:

1) Ideally construction should be undertaken between the months of May and October when the ground is at its driest and less prone to compaction
2) Ground vegetation should be carefully removed with any organic material being removed from the line of the surfacing to prevent the build up of anaerobic conditions beneath the surfacing which will damage the tree roots.
3) No digging should take place within the protective zone except for the careful removal of organic matter by hand tools. Any hollows must be filled with sharp sand, any digging to remove rocks or protrusions must be by hand taking care not to sever any roots over 2.5cm in diameter. Stumps should be ground out rather than excavated to prevent damage to the retained trees roots.

Photo 1- line of new road prior to the commencement of works

Photo 2- laying of Fibretex material onto existing subgrade

The method of providing a permeable surfacing is as follows:

1) Lay a Fibretex F4M non woven geotextile material directly on the existing subgrade. Overlap dry joints by 300mm

2) Lay and expand the cellular confinement system (e.g. Cellweb by Geosynthetics Ltd) and anchor open during infilling. As a general indication only, a depth of at least 100mm is required for domestic traffic up to approximately 3 tons. A 200 mm depth should accommodate vehicles up to approximately 8 tons.

3) The three dimensional cell structure is formed by ultrasonically welding polyethylene (perforated) strips and panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and cell wall, increasing the stiffness of the system. The use of cellular confinement reduces the bearing pressure on the subsoil by stabilising aggregate surfaces against rutting under wheel loads. Comparisons between cellular confinement and traditional aggregate and grid reinforced structures demonstrate a 50% reduction in construction thickness.

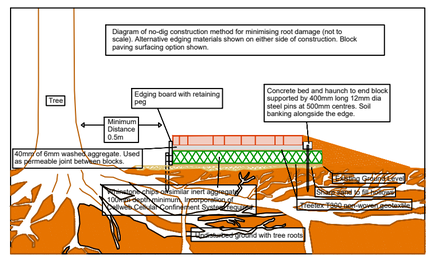
Photo 3- expanding and filling the Cellweb system Photo 4- once filled the system can support plant to carry aggregate to the fill area

4) Fill the cellular confinement system with a minimum of 100mm of aggregate (the amount is dependant on the depth of the Cellweb employed). The aggregate should not contain any fines and be of an inert type material such as whinstone chips rather than any lime based product. The angular particle dimensions should be 20-40mm. As most urban soils are already alkaline in nature, the use of dolomite, limestone or crushed concrete is not suitable for this application as it can react with rain water with the potential to change the soil pH and form impenetrable layers which impede water movement and gaseous exchange

Final surfacing options

- **Block Paving -**will require the laying of a second layer of Fibrex F4M Geotextile separation fabric over the infilled Cellweb sections. Then lay 40mm depth of 6mm washed gravel. Place paviors as per the manufacturers instructions using the 6mm washed aggregate as the jointing material. The use of porous blocks such as 80mm Priora by Marshalls are particularly tree friendly and allow natural rainfall to reach the rooting area.
- **Porous tarmac -** place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing course
- **Loose Gravel-** Place a second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections. Place decorative aggregate to the required depth. A treated timber edge should be provided to restrict gravel movement
- **Grass blocks or gravel infilled blocks -** Lay a second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections. Place 50/50 rootzone bedding layer to the required depth. Lay recycled Duo Block 500 Grass protection system infilled with 50/50 rootzone mix. Seed as required. Alternatively the grass blocks may be infilled with gravel

It is important that the edging material used does not encroach into the protected area and the use of conventional kerbing is not possible as the depth of excavation required for their installation will sever the tree roots.
Edging supports such as angled steel section or pinned edges are advised as shown in the following drawing although there are a number of varying kerbing options available which do not require any excavation and could be used above the existing ground level.



Where the footpath, road or parking bay goes through a root protection area, it is not usually possible to erect the normal permanent protective barrier at the correct distance from the tree as access to construct the hard surfacing is a requirement. In this situation the permanent protective barrier is erected as per the TPP as near to the edge of the working area as possible.

This leaves a portion of the root protection area unfenced and unprotected until the surfacing is laid. As such, the no dig surfacing must either be laid as part of the initial works (i.e. day 1) or ground protection measures, as per section 5.6 of this report, will required in the area shown by the green hatching on the TPP until the surfacing has been laid.

Drainage Runs/ Underground Services

It is assumed that the existing service runs will be exploited where possible, but if new works are required it is important that they comply with the National Joint Utilities Group (NJUG) 'Guidelines for the planning, installation, and maintenance of utility services in proximity to trees' and BS 5837:2012. The excavation of open trenches by machine will be unacceptable within the protective zone of any of the retained trees.

Wherever possible, services should be routed outside of any retained trees RPA. When this is not possible apparatus should be routed together in a common duct and any inspection chambers sited outside the RPA.

Acceptable techniques for the laying of services in order of preference are:

- **Trenchless-** by use of thrust boring or similar techniques. The pit excavations for starting and receiving the machinery should be located outside of the root protection area. To avoid root damage, the mole should run at a depth of at least 600mm.
  Use of external lubricants on the mole other than water (eg oil or bentinite) should be avoided.

Trenchless Solutions For Installation Of Underground Services					
Method	**Accuracy (MM)**	**Bore (A) diameter (MM)**	**Maximum subterranean length (M)**	**Applications**	**Not suitable for**
Microtunnelling	<20	100 to 300	40	Gravity-fall pipes, deep apparatus, watercourse/ roadway under crossings	Low-cost projects due to relative expense
Surface - launched directional drilling	≈100	25 to 1200	150	Pressure popes, cables including fibre optic	Gravity fall pipes, e.g. drains and sewers **(B)**
Pipe ramming	≈150	150 to 2000	70	Any large-bore pipes and ducts	Rocky and other heavily obstructed soils
Impact moling (C)	≈50 **(D)**	30 to 180 **(E)**	40	Gas, water and cable connections, e.g. from street to property	Any application that requires accuracy over distances in excess of 5m.

(A) Dependant upon strata encountered
(B) Pit-launched directional drilling can be used for gravity fall pipes up to 20m in subterranean length
(C) Impact moling (also known as thrust-bore) generally requires soft, cohesive soils.
(D) Substantial inverse relationship between accuracy and distance
(E) Figures given relate to single pass: up to 300mm bore achievable with multiple passes

If trenchless insertion is not feasible the alternatives are detailed below in order of preference.

- **Broken trench-** by using hand dug trench sections together with trenchless techniques. It should be limited to practical access and installation around or below the roots. The trench must be dug by hand (see following comments re continuous trenching) and only be long enough to allow access for linking to the next section. The open sections should be kept as short as possible.

- **Continuous trench-** the trench is excavated by hand and retains as many roots as possible. The surface layer is removed carefully and hand digging of the trench takes place. No roots over 2.5cm diameter or clumps of smaller roots (including fibrous) should be severed. The bark surrounding the roots must be maintained. Cutting of roots over 2.5cm diameter should not be attempted without the advice of a qualified Arboriculturalist.

  If roots have to be cut, a sharp tool (defined as spade, narrow spade, fork, breaker bar, secateurs, handsaw, post hole shoveller, hand trowel) should be used.

Backfilling

Reinstatement of street works must comply with the code of practice New Roads and Streetworks Act 1991 (Specification for the reinstatement of openings in highways), but where tree roots are involved backfilling should be carefully carried out to avoid direct damage to retained roots and excessive compaction of the soil around them.

The backfill should incorporate an inert granular material mixed with top soil or sharp sand (not builders sand) around the retained roots. This will allow a measure of compaction for resurfacing whilst creating an aerated zone around the roots.

Roots and in particular fine roots, are vulnerable to desiccation on exposure to air. The roots are at greatest risk when there are rapid fluctuations in the air temperature around them (especially winter diurnal temperatures). It is vitally important that the roots are covered with sacking whilst the trench is open. The sacking should be removed once the trench is backfilled.

Arboricultural Supervision

The following programme of supervision is proposed to assist is the preservation and protection of the retained trees during all aspects of the proposed development.

The supervision arrangements must be sufficiently flexible to allow for the supervision of all sensitive works as they occur. The Arboricultural Consultant's initial role is to liaise with the developer and the council to ensure that the appropriate protective measures are in place before any works commence on site and once the site is active monitor compliance with the Arboricultural conditions and advise on any tree problems that may arise.

Action	**Programming**	**Extent of supervision**	**Nature of supervision**
Pre-commencement meeting with site manager & Council tree officer	Before any site activity commences	Meeting on site Review any updates to the proposal Confirm extent of tree works and protective barrier position.	E-mail confirming results of meeting distributed to relevant parties.
Tree works undertaken Finalising tree protection barrier installation and other tree protection measures	Before any plant enters site or demolition/construction work commences.	Confirm position of the protective barriers and other tree protection measures have been installed and comply with the Tree Protection Plan (TPP) Provide photographs indicating completed tree protection	E-mail confirming results of meeting distributed to relevant parties.
Installation of services within root protection areas (if required)	Prior to installation of surfacing or services & during installation of surfaces and services	Communication with contractor prior to installation and during installation of surfacing and services to ensure compliance with AIA	E-mail confirming results of meeting distributed to relevant parties.
Removal of protective barriers and other tree protection measures	Once construction activities have finished	Communication with contractor for briefing before removal commences	E-mail confirming results of meeting distributed to relevant parties.

Conclusion

Sections of hedges 3 and 4 will need to be removed to facilitate the development proposals.

By using the protective elements dictated by British Standard 5837, no significant damage should take place to retained vegetation and tree cover should flourish in the longer term.

It is anticipated that all of the retained trees can be incorporated into the site design; however, it is vital that the ultimate size and spread of the trees should be considered when retaining trees near to the building and that shading and light penetration should also be considered when positioning the windows in the building.

It is the developer's responsibility to ensure that the details of the Arboricultural Method Statement and any agreed amendments are known and understood by all relevant site personnel. Copies of the agreed documents must be kept on site at all times and the site manager or other appropriate person must brief all personnel who could impact the trees on the specific tree protection requirements.

This should form part of the site induction procedure and be written into the appropriate site management documents.

© This drawing should only be used for the purpose for which it is intended, all rights are reserved and it should not be reproduced without written permission. All dimensions should be checked on site and any discrepancies, ambiguities and/or omissions between this drawing and information issued in the accompanying report should be forwarded to this office for clarification before proceeding.

The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

Key:

- Tree Number
- Tree Crown True Shape (Shaded Light Green)
- Trees To Be Removed Broken Black Ring Surrounding Centre
- Tree Quality Assessment Centre Colours As Below
- Green Centre = High Quality (Denoted By Letter A)
- Blue Centre = Moderate Quality (Denoted By Letter B)
- Yellow Centre = Low Quality (Denoted By Letter C)
- Red Centre = Unsuitable To Retain (Denoted By Letter U)
- BS Root Protection Area As Shown By The Red Circle Around The Tree
- Tree / Woodland Groups Root Protection Area Shown By Red Outline Surrounding Group
- Hedgerows Root Protection Area Shown By Red Outline Surrounding Hedge
- Removed Hedgerows Hatch Fill And Root Protection Area Removed
- Position Of Protective Barrier - Dashed Blue Line With Letters PB (Protective Barrier)
- Special 'No Dig, Tree Friendly' Construction Required (Areas Indicated By Green Hatching)
- Ground Protection Required (Areas Indicated By Orange Hatching)

Institute of Chartered Foresters
Registered Consultant

Arboricultural Impact Assessment & Method Statement
Tree Protection Plan (AIA & AMS TPP)

Retained Trees Shown On Proposed Layout With Protective Measures Indicated

Land Adjacent To 39 Sunderland Road,

East Boldon

For

Phil Hartley

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Scale 1:200 at A1 | Date 01.12.25

-Registered Chartered
-Arboricultural Consultants
-Planning & Development
-Urban Forestry
-Ecological Consultants

Drawing Ref.	Revision
AIA & AMS TPP	-