



AllAboutTrees

Arboricultural & Ecological Consultancy
Chartered Arboriculturalists & Environmentalists

Arboricultural Impact Assessment

For Trees On

Land At Maple Avenue, Shildon



For

Livin



Document Verification

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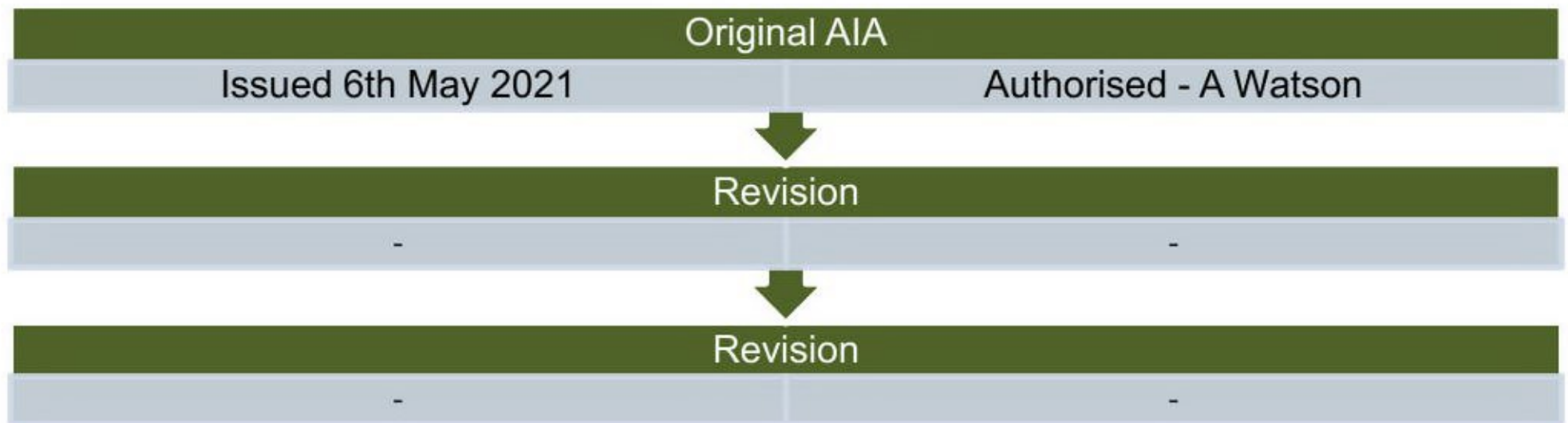


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1. Introduction

1.1 We are instructed by Livin to provide an Arboricultural Impact Assessment (AIA) for the significant trees located within a specified area at Maple Avenue, Shildon.

1.2 This report is produced to evaluate the proposed construction of residential units and associated infrastructure. The developments juxtaposition with the existing trees is considered.

1.3 We were provided with the following documents:

- Existing plan in digital AutoCAD format
- Proposed development plans in digital AutoCAD format

1.4 This assessment is concerned with recording the species, size and condition of the trees. Recommendations are made where appropriate to establish acceptable levels of safety for the site and also to establish a higher level of arboricultural management.

1.5 The trees are also evaluated for the purposes of British Standard 5837–2012 Trees in relation to design, demolition & construction, with regard to their quality and value. The type and size of the root protection area is calculated and the position of the protective barriers is determined. The remaining contribution or safe useful life expectancy is estimated as an indication of the trees period of retention.

1.6 All observations were from ground level without detailed investigation. No invasive examination or climbing inspections were carried out to confirm visual or audible signs of defect and no tissue or soil samples were taken for laboratory analysis.

1.7 Trees are living organisms whose health and condition may change rapidly and all observations, recommendations and conclusions are based on the status of the tree at the time of inspection. The recommendations contained within this report are valid for a period of one year only.

1.7.1 Both abiotic and biotic factors can alter the health/structural integrity of trees rapidly. No liability can be accepted for any physiological or structural deterioration of the tree occurring after the date of our inspection or that was not evident on the day of inspection. Where this report is relied upon at a later date the reader should be aware that the physiological and structural condition of the surveyed trees may have changed; Re-inspection may lead to significantly different observations, recommendations and conclusions.

1.7.2 Any significant alteration to the site which may affect the trees (demolition activity, construction activity, alterations to infrastructure, level

changes, hydrological changes, extreme climatic events, etc) will necessitate a re- assessment of the trees.

1.8 This report was prepared for use by our client in accordance with the terms of the contract and for planning purposes only. It is not a substitute for a tree condition, insurance, or mortgage service. Information provided by third parties used in the preparation of this report is assumed to be correct. The contents are copyright and may not be duplicated or used by third parties without the written consent of AllAboutTrees Ltd.

2. Protected Status Of Trees

2.1 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.

2.2 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.

2.3 AllAboutTrees has been able to ascertain with Durham County Council (the Local Planning Authority) on Thursday 6th May 2021 that there are no restrictions protecting the trees on the site. The site is not within a Conservation area and there are no TPOs imposed on any trees within the site.

3. Site Visit & Description

Site location – N 54° 37' 52.79 W 01° 38' 14.02
O/S Grid reference- NZ 235 263 GB Grid



Figure 1 - The study area is indicated by the red boundary line as shown on the above image.

3.1 A site visit was undertaken on Monday 2nd May 2021 by Tim Archment. The weather was fine with no visibility constraints.

3.2 The study area consists of residential properties and associated garden spaces located around Maple Avenue, Shildon.

3.3 The properties appear to be semi-detached dwellings though have been subdivided into flats. The gardens range from completely unmanaged and overgrown to well maintained. The garden around trees 1-3 is particularly neglected. It is suspected a degree of fly tipping takes place here, with easy access provided across the small green area to the east.

3.4 There are gentle level changes across the site, facilitated with graded land. There were no apparent drainage issues at the time of the survey.

4. Appraisal

4.1 The trees have been surveyed on site and plotted on the site plan. Their positions are considered accurate given the provision of a detailed topographical survey.

4.2 All significant trees have been inspected and some of the smaller specimens have been included for accuracy. Individual recommendations are included within Appendix 1 of this report.

4.3 Root Protection Areas (RPAs)

4.3.1 The British Standard Root Protection Areas (RPAs) are indicated by the red circles surrounding the trunk position of the trees on the associated plans. These indicative circles do not take into consideration site specific conditions such as the presence of buildings, roads, footpaths, topography, underground utility services etc. and are representative of typical root morphology where said structures are not encountered.

4.4 Tree Removals

4.4.1 It will be necessary to remove some of the existing trees to facilitate the proposed development and to establish a higher level of arboricultural management for the site:

- Tree 6 (in direct conflict with road)
- Hedge 1 (in conflict with parking bays associated with plots 11 & 12)
- Hedge 2 (remove to provide usable garden space in plot 12)
- Section of group 1 (remove to provide usable garden space in plot 7)

will need to be removed to facilitate the construction of the new buildings and associated infrastructure.

4.4.2 A breakdown of recommended removals, alongside their BS5837 category rating is provided in the table below. For further information regarding the BS5837 quality categorisation system please refer to Appendix 2 (II).

Tree Category Rating	Remove To Facilitate The Development
A – High	-
B – Moderate	Section of group 1
C – Low	Hedges 1 & 2 Tree 6
U – Unsuitable For Retention	-

4.4.3 The proposed plans indicate a planting scheme will be implemented to complement the proposed development. Careful consideration should be given to all new planting positions to ensure the trees can grow fully into maturity without requiring major or regular pruning works. New specimens

should not be positioned in close proximity to buildings, windows or utility services.

4.5 Retained Trees

4.5.1 Protective barriers as per section 5.1 of this report should be erected around all retained trees in the position indicated by the blue line on the Tree Protection Plan prior to any works on site. Signs should also be attached stating that the area is a protected zone and should not be entered.

4.6 Ground Protection Measures

4.6.1 It will be necessary to have access within the root protection areas (RPAs) of trees 2 and 7. To avoid compaction damage to the underlying roots during construction ground protection measures as per section 5.2 of this report will be required in the areas shown as hatched orange on the Tree Protection Plan (TPP) this will provide both a working area and space for scaffolding and allow access around the building. This methodology should be implemented at the time of barrier erection, remain in situ throughout the build and only removed when all construction activity has finished.

4.7 Wildlife Habitats

4.7.1 As part of the survey the significant trees were inspected from ground level for signs of wildlife habitation, in particular birds and bats.

Bats

4.7.2 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.)*

4.7.3 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.

4.7.4 No visual signs were found to indicate the presence of bats in the surveyed trees.

4.7.5 When carrying out tree works it is essential that the contractor or other competent person carries 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, we should be contacted so that our licenced Ecologist can advise further.

Birds

4.7.6 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

4.7.7 No nesting birds were present at the time of inspection though given the scope of the site and, the extent of vegetation, potential exists for birds to nest and as such caution must be exercised.

4.7.8 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.

5. Tree Protection Measures

5.1 Root Protection Area & Barrier Specification

5.1.1 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.

5.1.2 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.

5.1.3 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.

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

5.1.5 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.

5.1.6 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.

5.1.7 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.

5.1.8 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. The panels must be supported on the inner side by stabilising struts mounted on a block tray.

5.1.9 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.

5.1.10 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.

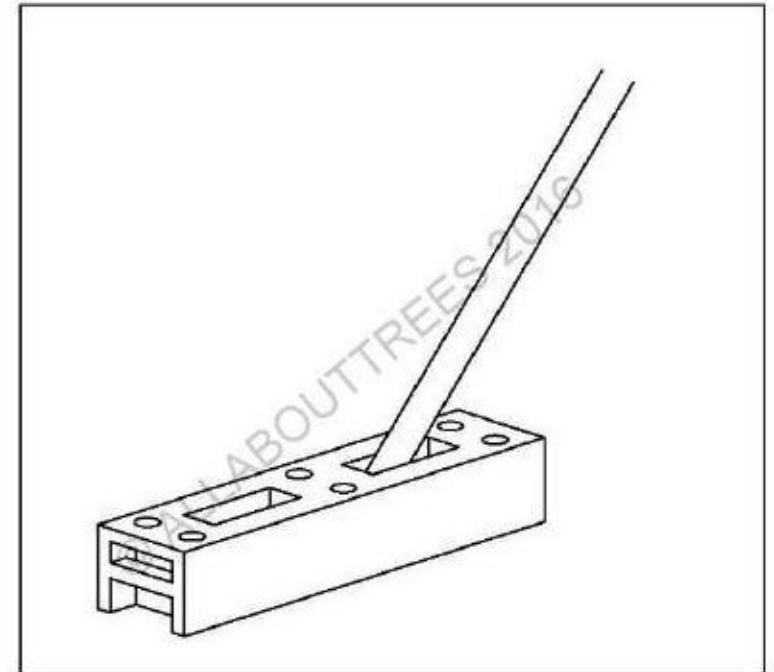
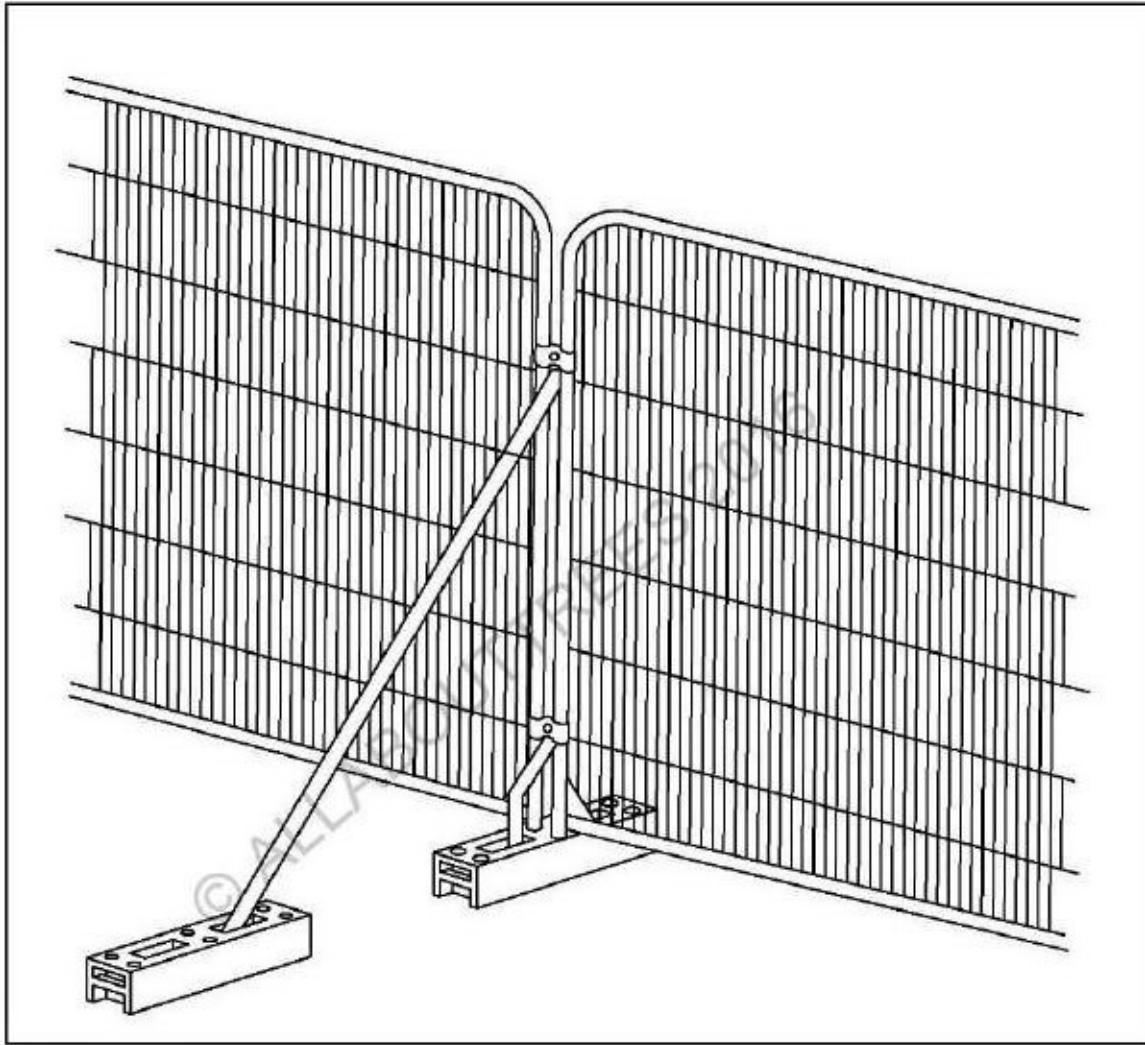


Figure 2 - Stabiliser strut mounted on block tray.



Figure 3 – An example of a barrier erected on a site

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

5.2.1 It will be necessary to provide access within the root protection area of trees 2 and 7. To prevent damage occurring to the hedge, the following technique should be observed. The areas requiring this protection are marked in hatched orange on the tree protection plan.

5.2.2 The following diagrams visualise the layout requirements. By sufficiently protecting the rootplate of the hedge, the access, 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 stems.

5.2.3 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 barrier drawing in section 5.1 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. Vehicle and plant access requires a more robust system.
- The ground protection must remain in situ until all construction works have been completed.

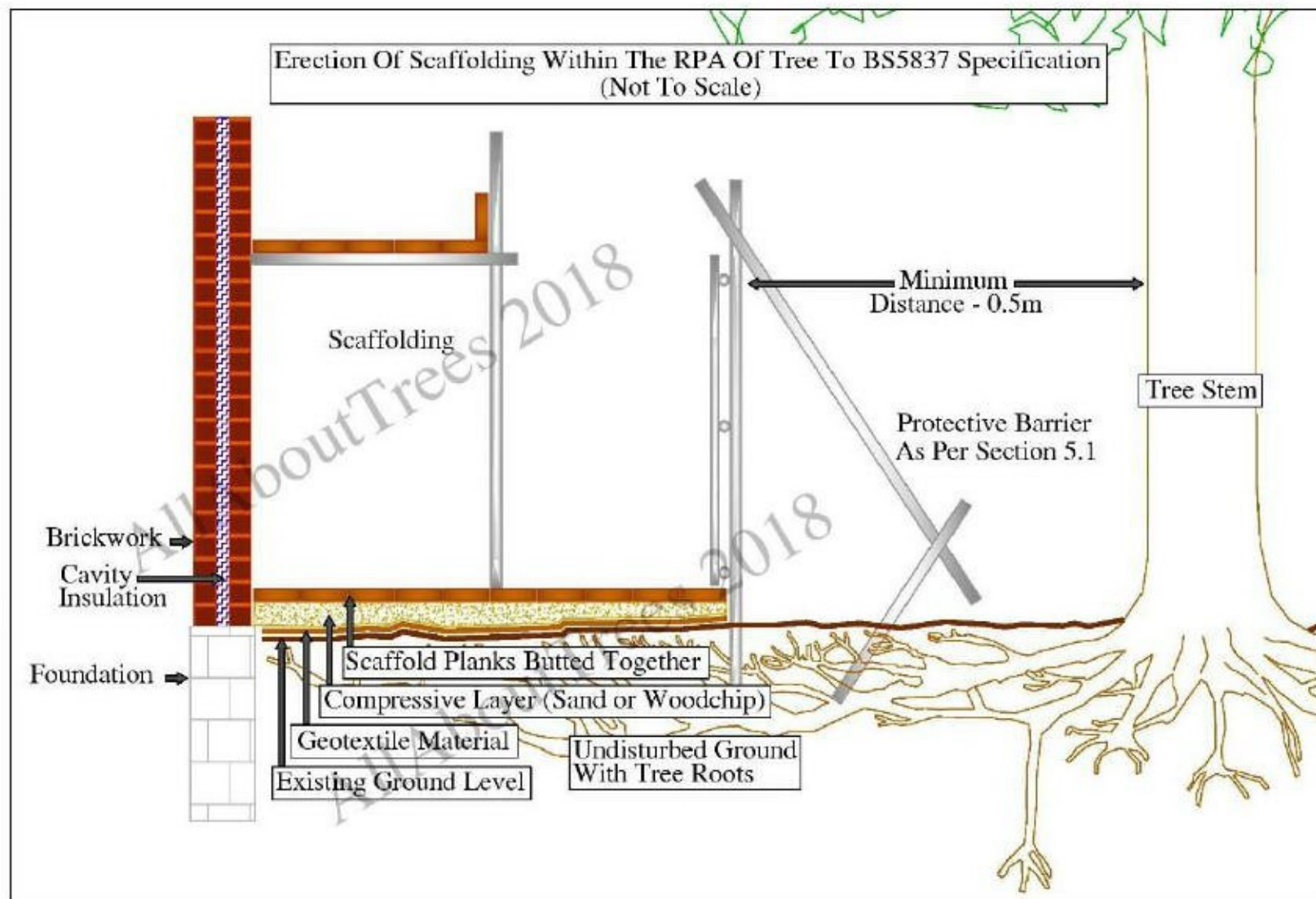


Figure 4 - Ground Protection Measures

5.2.4 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

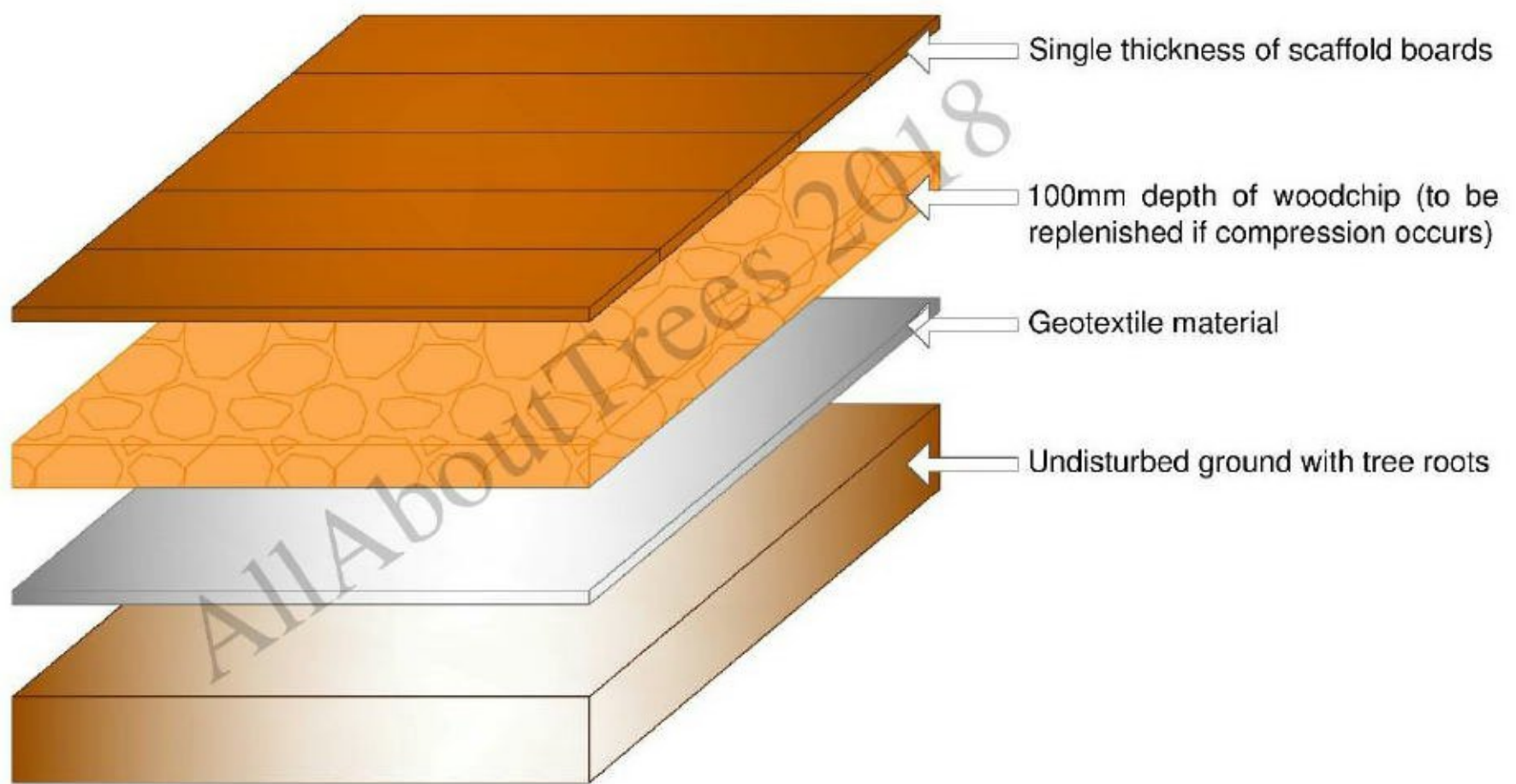


Figure 5

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

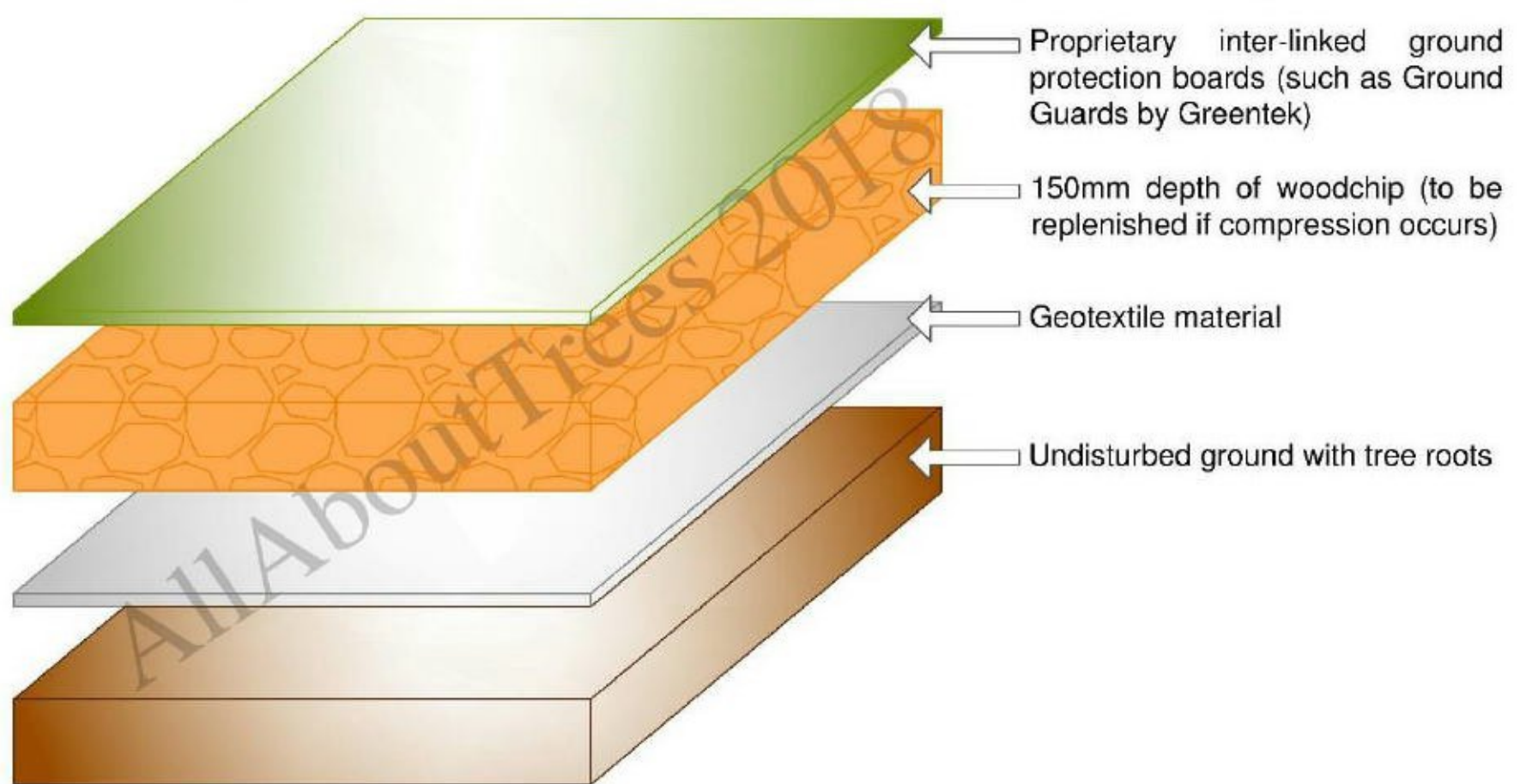


Figure 6

5.2.5 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).

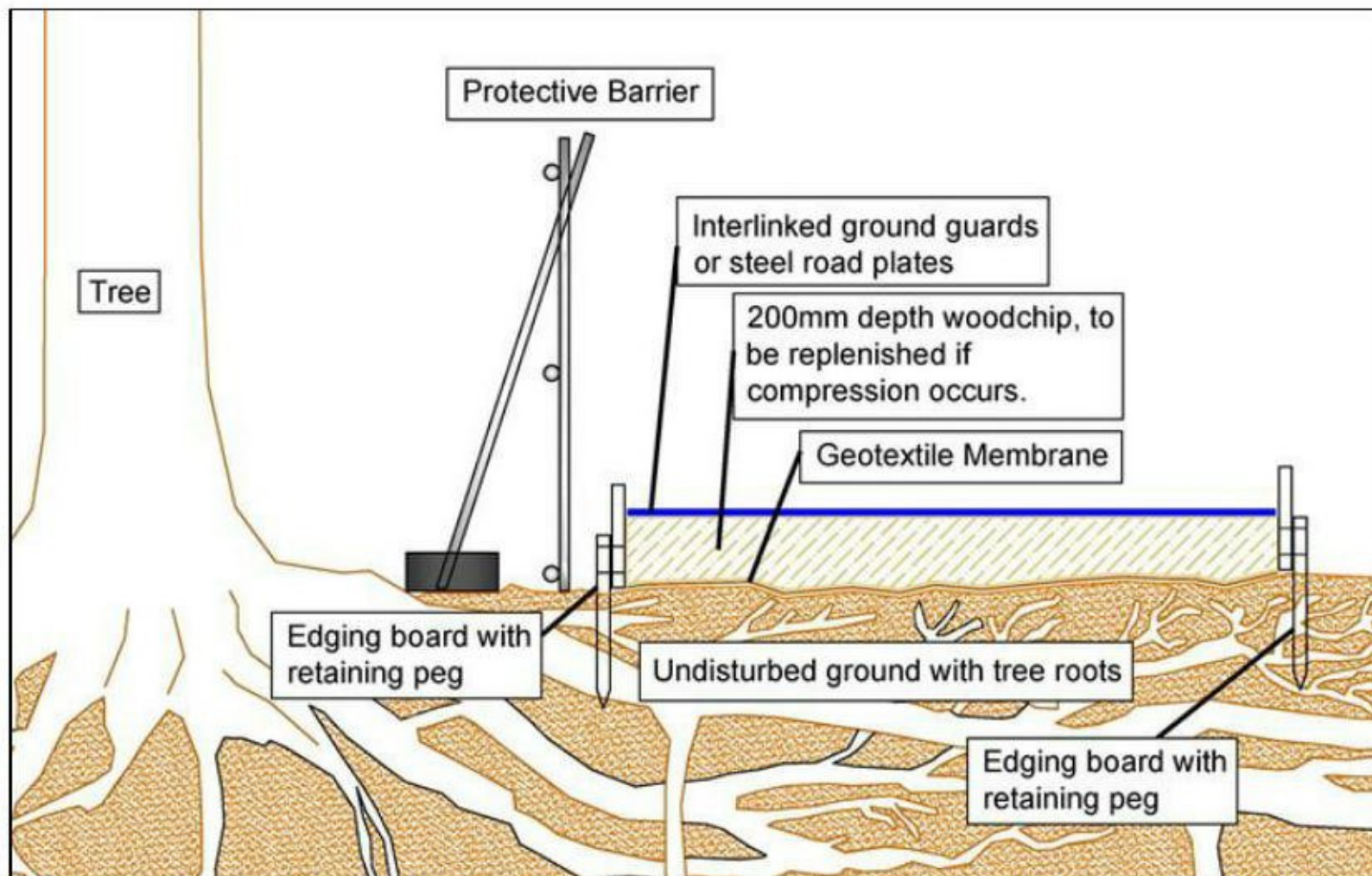


Figure 7

5.3 Service Runs

5.3.1 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.

5.3.2 Acceptable techniques (fuller details in the appendices) for the laying of services in order of preference are:

- **Trenchless-** by using thrust boring or similar techniques
- **Broken Trench-** to be dug by hand
- **Continuous trench-** to be dug by hand

5.3.3 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.

5.3.4 When underground apparatus is to pass within the RPA of a retained tree, trenchless insertion methods should be used (see table below) with entry and retrieval pits sited outside the RPA.

5.3.5 Shallow services runs may be dug with hand tools if appropriate and preferably by compressed air soil displacement. Roots, whilst exposed, should immediately be wrapped or covered to prevent desiccation and to

protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible.

Trenchless Solutions For Installation Of Underground Services					
Method	Accuracy (MM)	Bore ^(A) diameter (MM)	Maximum subterranean length (M)	Applications	Not suitable for
Micro tunnelling	<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 pipes, 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) Dependent 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

6. Conclusion

6.1 As with any construction exercise near trees, there are potential areas of conflict where damage could be caused to retained trees.

6.2 By using the protective elements dictated by British Standard 5837, no significant damage should take place during the construction phase and the tree cover should flourish in the longer term.

6.3 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.

6.4 All tree works must conform rigorously to BS 3998 (2010) 'Tree Work - Recommendations'. The contractors undertaking tree work must comply with the legal obligations to wildlife as outlined in both the AIA and AMS.

For and on behalf of
AllAboutTrees Ltd

Andrew Watson FLS MICFor CBiol MRSB FArborA CEnv LCGI
-Chartered Arboriculturalist & Registered Consultant

Appendix 1

Tree No.	Species Common Name <i>Latin Name</i>	Height (M)	Crown Spread (M)				Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M)		Priority
			N	S	E	W														Height	Spread	
1	Wild Cherry <i>Prunus avium</i>	6	2	2	2.5	2.5	189	6	1	1 E	Middle aged	Fair	Fair	2.3	40+	C - Low	Multiple stems from ground level. Abuts fence.	This tree is retainable and will be adequately protected by the position of the protective barriers as indicated by the blue line on the TPP. No tree works required at the present time.	None	17	13	-
2	Wild Cherry <i>Prunus avium</i>	16	7.5	5	7	4	919	2	1.5	1 SW	Mature	Fair	Fair	11	20+	B - Moderate	Stem divides below 1.5m; included bark present at fork union. Multiple stems above 1.5m. Deadwood. Not possible to measure stems due to surrounding vegetation and included union. Heavily pruned on west.	This tree is retainable and will be adequately protected by the position of the protective barriers as indicated by the blue line on the TPP. Ground protection measures required in the area indicated by the orange hatching. Minor encroachment on RPA. Remove deadwood over 25mm.	None	17	14	B
3	Sycamore <i>Acer pseudoplatanus</i>	15	2	4.5	4	4	380	1	2.5	2.5 S	Middle aged	Fair	Fair	4.6	40+	B - Moderate	No major visible defects. Asymmetric crown spread; canopy distorted due to group pressure.	This tree is retainable and will be adequately protected by the position of the protective barriers as indicated by the blue line on the TPP.	None	22	13	-

Tree No.	Species Common Name <i>Latin Name</i>	Height (M)	Crown Spread (M)				Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M)		Priority
			N	S	E	W														Height	Spread	
																	No tree works required at the present time.					
4	Wild Cherry <i>Prunus avium</i>	15	4	5.5	4.5	4	420	1	2	3 S	Middle aged	Fair	Fair	5	40+	B - Moderate	Surface roots sustained bark damage. Stem divides above 1.5m. Included bark present at fork union. Deadwood. Service wires pass through canopy.	This tree will not be affected by the development proposals. Crown clean to remove the deadwood.	None	17	11	B
5	Scots Pine <i>Pinus sylvestris</i>	12	4	4	4	2.5	340	1	2	2.5 E	Middle aged	Fair	Fair	4.1	40+	B - Moderate	Minor/small diameter deadwood retained in canopy. Crown distorted due to group pressure. Service wires pass through canopy. Slight east lean.	This tree will not be affected by the development proposals. No tree works required at the present time.	None	18	11	-
6	Privet <i>Liqustrum ovalifolium</i>	4	2.5	3	2.5	3	250	1	0	0 N	Middle aged	Fair	Fair	3	20+	C - Low	Stem diameter estimated as a single value. No major visible defects. Multiple stems from ground level. Straddles boundary fence.	This tree is in conflict with the proposed design layout and will need to be removed to facilitate the development.	None	6	7	A
7	Beech <i>Fagus sylvatica</i>	18	9.5	10	10	9	1000	1	1	2.5 W	Mature	Fair	Fair	12	40+	A - High	Located in neighbouring property. Located outside site boundary.	This tree is retainable and will be adequately protected by the position of the	None	20	21	-

Tree No.	Species Common Name Latin Name	Height (M)	Crown Spread (M)				Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M)		Priority
			N	S	E	W														Height	Spread	
																Remote assessment, some dimensions estimated. Multiple stems above 1.5m. Broad spreading canopy. Impressive size for species, let alone as a back garden tree.	existing garden boundary fences. Ground protection measures required in the area indicated by the orange hatching. Minor encroachment on RPA. No tree works required at the present time.					
Groups																						
1	Wild Cherry Rowan Cherry Laurel Lawson Cypress Cider Gum Silver Birch Elder Whitebeam <i>Prunus avium,</i> <i>Sorbus aucuparia,</i> <i>Prunus laurocerasus,</i> <i>Chamaecyparis lawsoniana,</i> <i>Eucalyptus gunnii,</i> <i>Betula pendula,</i> <i>Sambucus nigra,</i> <i>Sorbus aria</i>	14	-	-	-	-	340	1	-	-	Middle aged	Fair	Fair	4.1	20+	B - Moderate	Unmanaged overgrown garden. Dense ivy to individual on north flank of garden contributes to overgrown feeling. Branches encroaching on house windows.	A section of this group is in conflict with the proposed design. Thin group removing majority of trees leaving higher quality individuals and more manageable garden. Remove ivy. Place protective barrier around remainder of group in position indicated by the blue line on the TPP.	None	18	18	A
2	Privet	4.5	-	-	-	-	200	1	-	-	Middle aged	Fair	Fair	2.4	20+	C - Low	Large overgrown and unmanaged hedgerow on garden boundary.	This group is retainable and will be adequately protected	None	4	4	B

Tree No.	Species Common Name Latin Name	Height (M)	Crown Spread (M)				Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M)		Priority
			N	S	E	W														Height	Spread	
	<i>Liqustrum ovalifolium</i>																by the position of the protective barriers as indicated by the blue line on the TPP. Minor encroachment on RPA. Reduce to 2.0m, trim to shape and tidy.					
3	Lawson Cypress <i>Cotoneaster</i> <i>Chamaecyparis lawsoniana,</i> <i>Cotoneaster frigidus</i>	6	-	-	-	-	150	1	-	-	Middle aged	Fair	Fair	1.8	40+	C - Low	Located in neighbouring property. Located outside site boundary. Remote assessment, some dimensions estimated. Stem diameter estimated as a single value. No major visible defects. Multiple stems from ground level. Unmanaged trees growing in adjacent property and oversailing into site.	This group is retainable and will be adequately protected by the position of the existing garden boundary fences. No tree works required at the present time.	None	18	8	-
4	Forsythia <i>Forsythia x intermedia</i>	4	-	-	-	-	100	1	-	-	Middle aged	Fair	Fair	1.2	40+	C - Low	Located in neighbouring property. Located outside site boundary. Remote assessment, some dimensions estimated.	This group is retainable and will be adequately protected by the position of the existing garden boundary fences.	None	4	4	-

Tree No.	Species Common Name <i>Latin Name</i>	Height (M)	Crown Spread (M)				Trunk Dia (MM)	No. Of Stems	Height Of Lower Canopy (M)	First Sign Branch (M) (Position)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimated Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M)		Priority
			N	S	E	W														Height	Spread	
																Stem diameter estimated as a single value. No major visible defects. Multiple stems from ground level. Unmanaged trees growing in adjacent property and oversailing into site.	No tree works required at the present time.					
Hedges																						
1	Cotoneaster Cotoneaster spp.	1.5	-	-	-	-	120	1	-	-	Middle aged	Fair	Fair	1.4	20+	C - Low	No major visible defects. Tidy and maintained garden hedgerow.	This hedge is in conflict with the proposed design and will need to be removed to facilitate the proposed design.	None	3	3	A
2	Privet <i>Liqustrum ovalifolium</i>	2	-	-	-	-	150	1	-	-	Mature	Fair	Fair	1.8	20+	C - Low	No major visible defects. Maintained garden boundary hedgerow. Slightly untidy.	This hedge is in conflict with the proposed design and will need to be removed to facilitate the proposed design.	None	4	4	A

- 17 Crown Cleaning:** Cleaning out is defined as the removal of dead, dying or diseased branchwood, broken branches or stubs left from previous tree surgery operations (see also 16 Deadwooding) together with all unwanted objects, which may include ivy (if specified) and/or other climbing plants, nails, redundant cable bracing, rope swings, tree houses and windblown rubbish from the tree, and any such debris from any cavities within the tree.
- 18 Deadwood Removal:** Dead-wooding shall be defined as the removal of all dead and dying branches and limbs from the tree.
- 19 Crown Lifting:** Crown lifting shall be defined as the removal of all soft growth and branches or parts thereof which are below or which extend below the height specified in the tender documents. It is recognised that the resultant canopy base might not be one single level but might be stepped to allow for different clearances, for example where a tree overhangs both the footway and the road where different height clearances are required.
- 20 Crown Reduction:** Crown reduction shall be defined as the reduction of the complete outline dimension of the canopy, from the tips of limbs and branches to the main trunk, by pruning growth to an acceptable branch, twig or but to leave a flowing silhouette.

Appendix 2(11) Cascade Chart For Assessing Tree Quality

Category and definition	Criteria – Subcategories			Identification on plan
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
<p>Trees to be considered for retention</p> <p>Category High = A</p> <p>Trees of high quality with an estimated remaining life expectancy of at least 40 years</p>	Trees that are particularly good examples of their species, especially, if rare or unusual, or those that are essential components of groups, or of 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)	Green
<p>Category Moderate = B</p> <p>Trees of moderate quality with an estimated remaining life expectancy of at least 20 years</p>	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	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	Blue
<p>Category Low = C</p> <p>Trees of low quality with an estimated remaining life expectancy of at least 10 years; or young trees with a stem diameter below 150mm</p>	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	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 benefits	Yellow
<p>Category = U Trees unsuitable for retention</p> <p>Those of 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</p>	<p>NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation</p> <ul style="list-style-type: none"> • 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 U category trees (i.e. 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 (e.g., Dutch elm disease) or very low-quality trees suppressing adjacent trees of better quality • Habitat reinstatement may be appropriate (e.g. U category trees used as a bat roost- installation of bat box in nearby tree) 			Red

Appendix 2(111)
Guidelines for the Planning, installation and
Maintenance of utility services in proximity to trees-
Based on information from National Joint Utilities
Group (NJUG)

Ideally all services should be placed outside of the tree root protection area, but in some situations, this is not feasible due to the confines of the site. If services must be laid within the root protection area acceptable techniques are detailed below in order of preference.

- **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 (e.g. oil or bentonite) should be avoided.
- **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.

Planning of services

When laying new or replacement services it is wise to plan ahead to prevent future direct damage to the services from root growth by placing the services within a duct.

If roots have grown into a drain or duct and proliferated to cause a blockage, removal of the root mass will only have a temporary affect and the root will regrow. The fault is in the pipe or duct, not the tree roots and the only answer is to repair or replace the damaged area. Particular problems occur with old salt glazed pipes where clay has been used to seal the joints and has subsequently dried out leaving a gap for the roots to infiltrate.

A popular myth has arisen that tree roots are attracted to water or nutrients within piped systems, this is not so. Roots are adventitious and grow in all directions proliferating in areas where moisture or nutrients are present. They tend to grow near to the pipe to make use of the condensation or moisture build up on the outside of the pipe but will enter the pipe through any crack or damaged joint. They are not capable of breaking into sound pipes.



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