

Arboricultural Implication Assessment
Of Trees At

The Countryman Public House,
Park Hollow, Wombwell, Barnsley

(Layout ST/17080016/201)



For
Premier Construction North

Document Verification

	Document Title	•Arboricultural Implication Assessment The Countryman Public House, Wombwell, Barnsley •For Premier Construction Northern
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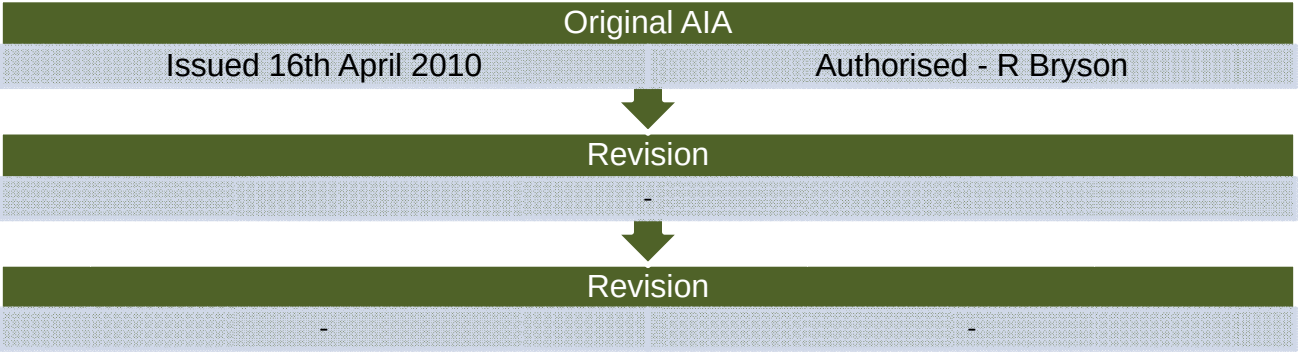


Table of Contents

	Page
1. Introduction	1
2. Protected Status Of Trees	1
3. Site Visit & Description	2
4. Appraisal	3
5. Tree Protection Measures	21
6. Conclusion	33

Appendices

- 1. Glossary of Terms**
- 2. Site Plans**
 - Existing Trees Shown On Existing Layout**
 - Retained Trees Shown On Existing Layout With Protective Measures Indicated**
-Tree Protection Plan (TPP)

1. Introduction

1.1 We are instructed by Premier Construction Northern to provide an Arboricultural Implication Assessment (AIA) of the significant trees located at, The Countryman Public House, Park Hollow, Wombwell, Barnsley.

1.2 This report is produced to evaluate the demolition of the existing building and the subsequent construction of a new residential estate and its associated infrastructure requirements. The juxtaposition with the existing trees has been considered.

1.3 Relevant documentation:

- Existing site plan- Digital topographical survey
- Arboricultural Tree Constraints Assessment (ATCA)- Prepared by AllAboutTrees Ltd- 16th April 2008 for Caldecotte Consultants.
- Arboricultural Implication Assessment (Layout 5058/06 Rev L)- Prepared by AllAboutTrees Ltd- 5th May 2009.
- Proposed site layout plans in AutoCAD format (layout ST/17080016/201).

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.

The trees are also evaluated for the purposes of British Standard 5837 – Trees in relation to construction - 2005, with regard to their quality and value. The type and size of the root protection area is calculated and the positions of the protective barriers are determined. The remaining contribution or safe useful life expectancy is estimated as an indication of the trees period of retention.

1.5 All observations were from ground level without detailed investigation.

1.6 Trees are living organisms whose health and condition may change rapidly and my observations are based on the status of the tree at the time of inspection.

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.

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.

2.2 AllAboutTrees has been able to ascertain with Barnsley Metropolitan Council (the Local Planning Authority) on Wednesday 16th April 2008 that there are restrictions protecting the trees on the site. The site is not within a Conservation area however the trees are protected by virtue of a TPO (The Countryman Pub TPO 6/ 2004). The adjacent land to the northwest which is the grounds of Wombwell Hall is also protected by a TPO this is Area order TPO 7/1993.

3. Site Visit & Description

3.1 A site visit was undertaken on Friday 11th April 2008. The weather was fine with no visibility constraints.

3.2 The study area consists of The Countryman Public House and its associated grounds with hardstanding parking facilities.

Access is gained via Park Hollow which is a minor road servicing a private residential estate.

The vast majority of the site is laid out to hard surfacing with the trees located around the periphery in grassed buffer strips.

To the northwest on the adjacent land are the grounds of Wombwell Hall. Several mature trees dominate the southern section of the Halls grounds with many in close proximity to the site boundary some of the canopies oversail the site boundary fence.

A number of other trees are located within the front adjacent gardens of properties within Park Hollow. The road demarcates the site from these properties and it is unlikely that any damage would occur in the event of development regardless of the scheme.

The site is relatively flat although at a lower level than Park Street which is to the west of the site. There were no apparent drainage problems at the time of site visit.

4. Appraisal

The trees have been surveyed on site and plotted on the site plan. Their positions are considered accurate given the layout and density of planting on the site.

All significant trees have been inspected and some of the smaller specimens have been included for accuracy.

4.1 Tree Removals

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.

- Trees 16-18 will need to be removed to facilitate the construction of the new buildings and associated infrastructure but should also be removed due to structural defects. Removal of these trees was agreed for a previous application.
- Tree 6 should be removed due to structural defects and a limited safe useful life expectancy.

To mitigate the above removals new planting should take place throughout the site. 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.

4.2 Retained Trees

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 (TPP) prior to any works on site. Signs should also be attached stating that the area is a protected zone and should not be entered.

4.3 Special 'Tree Friendly' Construction

Tree 1 is adjacent to the new infrastructure and the root protection area (shown as the red circles on the Tree Protection Plan) extends significantly

into an area identified for development. The driveway and entrance is to be created for plot 6.

It is important that no damage is caused to the rooting area, therefore special 'no-dig, tree friendly' methodology as described in section 5.2 of this report should be implemented in the areas indicated by the green hatching on the Tree Protection Plan (TPP).

For this type of construction to be successful it should be installed following the manufacturer's instructions and under the supervision of a suitably experienced Arboriculturalist who can advise and provide site specific details which will deal with addressing level changes and mitigating any existing or perceived compaction damage.

4.4 Ground Protection Measures

It will be necessary to have access within the root protection area (RPA's) of tree 1. To avoid compaction damage to the underlying roots during construction ground protection measures as per section 5.3 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.

The above prescribed ground protection is suitable for pedestrian traffic only. In the event that vehicular movements are anticipated within these areas this protection must be substituted with a temporary road surface constructed using Cellweb and in accordance with section 5.2 of this report.

4.5 Individual Tree/Group Details

T1 Balsam poplar *Populus lasiocarpa* Oliv. (T5 in TPO 6/2004)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
21	5.8	6.1	6.5	4.9	75	1.2	Mature	Fair	Fair	9.0	Inter	25	16	High

A good specimen that is prominent within the streetscape.

The tree is planted within a grassed strip in the southern section of the site. A retaining wall is close (1m to the south) and the kerbing for the hardstanding car park is 2.3m to the north. The roots extend into the hardstanding and are visible where they are breaking the surface of the tarmac.

The trunk divides at 8.3m to form 1x dominant and 1x subdominant stem. The resulting fork is considered satisfactory.

The tree leans slightly towards the southeast and the crown is low over the Park Hollow, the road to the south. There is evidence of minor vehicular damage to the lower canopy. It would be prudent to crown lift the tree to a height of 5.2m over the road which will provide sufficient clearance for any large goods vehicles to the service the site or the neighbouring properties without further damage to the tree.

Deadwood is retained within the crown along with a split branch located at 10m on the southern flank.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

It is anticipated that the existing tarmac to the west of the tree will be lifted during the demolition phase as part of the site clearance. Removal of tarmac within the RPA must be done so by hand as not to damage to the roots or cause compaction. In addition, ground protection measures as per section 5.3 of this report will be required in the area shown as hatched orange on the Tree Protection Plan to provide both a working area and space for scaffolding and allow access around the building.

To avoid compaction damage and severance of the underlying roots during construction it will be necessary to construct the car parking bay for plot 6 and part of the new footpath using a 'no-dig, tree friendly' construction methodology as per section 5.2 of this report in the area shown as hatched

green on the TPP. This in essence means that the footpath levels will be met by building up using a layered Cellweb base so the ground remains porous and there is minimal compaction on the rootplate of the tree.

For the section of new footpath immediately adjacent to the dwellings it is not anticipated that any significant damage will be caused to the roots providing a 'no dig' system is adopted and the materials used are porous in nature. The footpaths will only be subject to light use by those entering the properties and flagstones laid onto a sharp sand base would be an appropriate method of construction. The remaining RPA within the site is to be laid out to lawn which will enhance growing conditions for the tree and will be an improvement over the existing hard surfacing

Recommendations

- It would be prudent to crown lift this tree to 5.2m over the road and conduct a crown clean to remove any deadwood and the split limb.

**T2 London plane
(T1 in TPO 6/2004)**

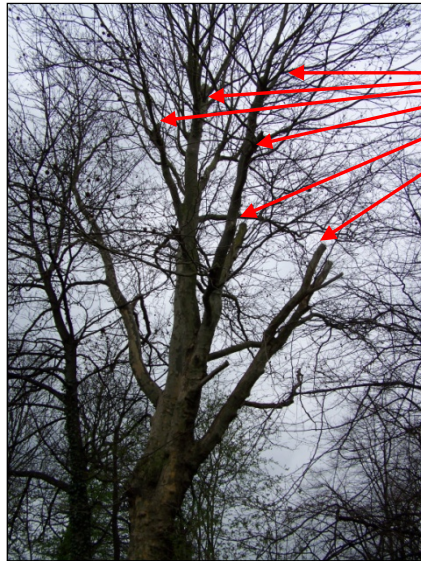
***Platanus x hispanica* Muenchh.**

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
18.5	6.4	3.1	5.5	9.5	67	5	Mature	Fair	Fair	8.0	Inter	26	18	Moderate

The tree is prominent within the streetscape and is located close to the boundary fence.

The trunk divides at 3.6m to form 2x codominant stems which further divide resulting in 5x stems that carry the crown. The tree has been crudely reduced in the past at 11m and there are multiple re-growth stems emanating from the reduction heads which appear to be in a decaying state.

A climbing inspection would be beneficial to evaluate the extent of the decay. An understanding of tree biology and mechanics leads to the prognosis that the attachment points of the stems onto the decaying reduction heads will be significantly compromised and will inevitably result in the failure of the limbs especially during adverse weather conditions. It would be prudent to monitor the condition of these reduction heads annually by a qualified arboriculturalist, who may advise a further reduction in the future and the tree to be routinely managed as a pollard.



Reduction heads which contain some decay and numerous adventitious shoots

There is some deadwood retained in the crown and there is a woodpecker hole on a decaying stub on the northern flank.

The south western stem is growing into and making contact with a sycamore which is located on the neighbouring property the stems are rubbing resulting in some cambial damage.

It is anticipated that the existing footpath to the southeast of the tree will be lifted during the demolition phase as part of the site clearance. Removal of footpath within the RPA must be done by hand as not to damage to the roots or cause compaction.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- It would be prudent to carry out an aerial inspection to determine to extent of the decay within the reduction heads.
- Crown clean to remove the deadwood and prune to clear the adjacent sycamore tree so there is no contact between trees.

T3 Sycamore *Acer pseudoplatanus* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
14	2.1	6.6	5.5	3.6	30	2	Young / Middle aged	Fair	Fair	3.6	Inter	22	20	Low

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP.

The crown spread is asymmetrical and the tree leans to the south, it has been suppressed from light by tree 2. The crown is low over the adjacent footpath and road. It would be prudent for the tree owner to crown lift the tree to 5.2m over the road ensuring a clearance height of 2.5m over the footpath is also achieved.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- It would be prudent for the tree owner to crown lift the tree to 5.2m over the road and 2.5m over the footpath.

T4 Common lime *Tilia x europaea* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
12	3.8	4.6	5.2	4.8	36	1	Middle aged	Fair	Fair	4.3	Inter	22	16	Low

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP.

The trunk divides at 3m to form multiple stems it is possible that the tree has previously been reduced at this height. The tree has poor form and there is extensive epicormic growth around the base and on the lower stem.

The crown is low and oversails the site. It would be prudent to lift the crown to 3m and reduce the overhang towards the boundary. Minor deadwood is also retained.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- Crown lift the overhang to 3m and reduce back towards the boundary.

T5 Cherry *Prunus avium* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
17	4	2.8	3	1.8	24	6	Middle aged	Fair	Fair	2.9	Inter	17	8	Low

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. Some of the measurements have been estimated as the tree was assessed remotely.

The trunk divides at 6.8m to form 2x codominant stems. The tree is slightly etiolated.

Recommendations

- No action required at the present time

T6 Red horse chestnut *Aesculus x carnea* Hayne (Not listed in TPO)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
10.3	3.6	3.3	3.9	3	48	2.2	Mature	Fair	Poor	5.8	Short	20	20	Remove

The tree is growing close to the boundary.

It is a poor specimen and the top has snapped out in the past. Multiple new stems are emanating from the torn wound which appears to be in a state of decay. The resulting attachment points are compromised with the potential for failure in the future.

There is extensive bud proliferation on the stem, which is merely an aesthetic problem as it disfigures the tree. In some circumstances the underlying wood can become invaded by wood rotting fungi and the tree may become unsafe.

Decay cavities are present at the site of old pruning wounds and located at 1.4m on the eastern flank and 3.1m on the southern flank of the stem. The extent of the decay appears advanced and protrudes well into the stem although this has not been quantified with decay detection apparatus.

The tree would have a limited safe useful life expectancy within any redevelopment scheme and should be removed as part of establishing a higher level of arboricultural management for the site.

Recommendations

- Remove the tree as part of the site management

T7 Plum spp *Prunus cerasifera* cv. 'Pissardii' (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
8	3	1.8	3.5	2.5	28	1.8	Middle aged	Fair	Fair	3.4	Inter	10	8	Moderate

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. Some of the measurements have been estimated as the tree was assessed remotely.

The tree leans towards the north and the asymmetric crown is carried by multiple stems.

Recommendations

- No action required at the present time

T8 Elderberry *Sambucus nigra* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
5.5	2.8	2.3	2.4	1.9	14	1.8	Mature	Fair	Fair	1.7	Inter	10	8	Low

This shrub is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. Some of the measurements have been estimated as the shrub was assessed remotely.

The trunk divides at 0.5m to form 2x codominant stems which further divide to produce multiple stems which carry the crown. Minor deadwood is retained in the crown.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- No action required at the present time

T9 Elderberry *Sambucus nigra* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
5	1.6	1.8	2.5	1.6	11	2	Middle aged	Fair	Poor	1.3	Medium	10	8	Low

This shrub is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP.

The shrub leans towards the north and there is a basal cavity on the northern flank of the stem.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- No action required at the present time

T10 Sycamore *Acer pseudoplatanus* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
17.6	4.5	4.8	6	5.3	35	2.5	Middle aged	Fair	Fair	4.2	Inter	22	20	Moderate

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. Some of the measurements have been estimated as the tree was assessed remotely.

There are no major visible defects.

Recommendations

- No action required at the present time

T11 Sycamore *Acer pseudoplatanus* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
19	4.8	6.4	7	4.2	44	2.1	Middle aged	Fair	Poor	5.3	Inter	22	20	Low

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP.

The tree has good outline form however the trunk divides at 1.6m to form 2x codominant stems. The resulting fork is acutely angled with included or trapped bark present between the stems. This type of formation is a potential structural weakness which is prone to failure in strong winds.

The problem occurs when the wood fibres meet at a shallow angle in a symmetrical plane and can therefore be parted with much less force than is required to tear a normal branch formation from the tree which has a much superior interlocked mechanism of attachment. This means that the plane of weakness and line of splitting will follow the forks downwards into the main trunk structure.



V crotch with included bark and cross sectional reaction growth present on either side of the union

It would be prudent for the tree owner to have the tree inspected by a qualified arboriculturalist regularly or following the event of adverse winds or storm conditions.

The crown is low over the site and it would be prudent to conduct a crown lift to create a 3m clearance gap. This height would be sufficient to allow for landscape maintenance within the site.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- Crown lift the overhanging branches to 3m.

T12 London plane *Platanus x hispanica* Muenchh. (Part A1 of TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
16.3	12.1	6.5	8	8.9	75	2.3	Mature	Fair	Fair	9.0	Long	26	18	High

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. Some of the measurements have been estimated as the tree was assessed remotely.

This is an attractive broad spreading specimen. Deadwood is retained in the crown.

Recommendations

- No action required at the present time

T13 Red horse chestnut (Part of A1 TPO 7/1993)

Aesculus x carnea Hayne

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
12.5	3.5	4.5	4.5	4	50	0	Mature	Fair	Fair	6.0	Medium	20	20	Moderate

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP. Some of the measurements have been estimated as the tree was assessed remotely.

The trunk divides at 1.1m to form 2x codominant stems with further subdominants from ground level. The resulting forks are considered satisfactory. There are areas of bud proliferation on the stem and early signs of bleeding canker (*Pseudomonas syringae* pv *Aesculi*). Bleeding canker is a bacterial disease that when severe can kill large areas of bark and the underlying sapwood which can eventually lead to the premature death of the tree. It would be prudent for the tree owner to monitor the condition of this tree regularly.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- No action required at the present time

T14 Sycamore *Acer pseudoplatanus* L. (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
15.7	2.5	8.5	4.8	5.5	37	1.6	Middle aged	Fair	Fair	4.4	Inter	22	20	Moderate

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP.

The trunk divides at 7.1m to form 2x codominant stems with the resulting fork being tight and slightly included. As described for tree 11 it would be prudent for the tree owner to have the tree regularly inspected.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- No action required at the present

T15 Red horse chestnut *Aesculus x carnea* Hayne (Part of A1 TPO 7/1993)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
12.8	3	4.6	4.9	4.5	35	1	Mature	Fair	Fair	4.2	Inter	20	20	Moderate

This tree is growing on the neighbouring property and will be adequately protected by the position of the protective barrier as indicated by the blue line on the TPP.

The trunk divides at 1.1m to form 2x codominant and 1x subdominant stem. Decay is present in the subdominant stem.

The crown is low over the site and it would be prudent conduct a crown lift to create a 3m clearance gap. This height would be sufficient to allow for landscape maintenance within the site.

The tree can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

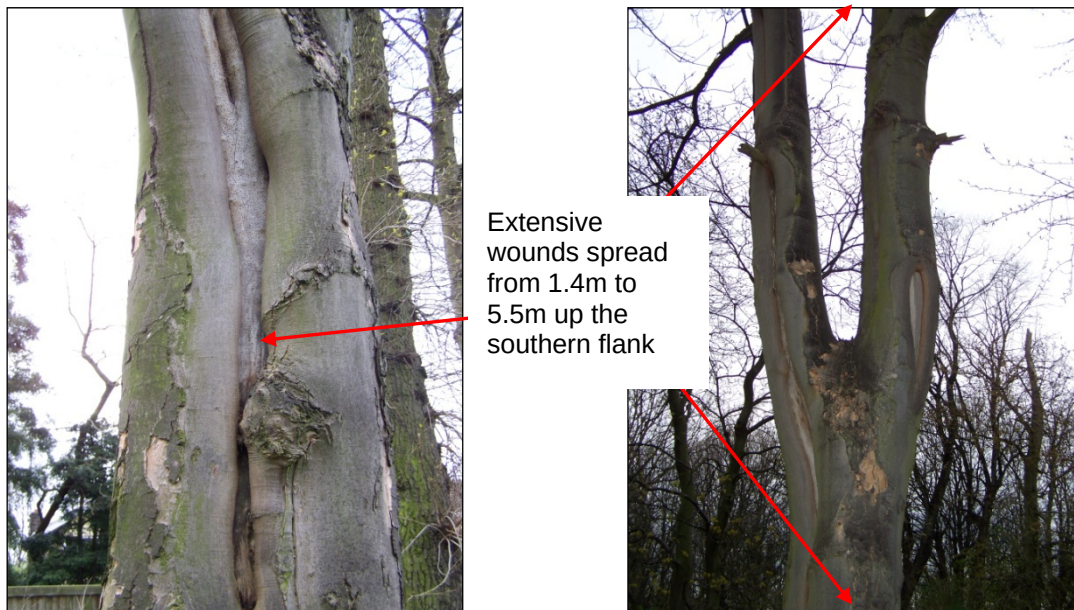
- Crown lift the overhanging branches to 3m.

T16 Sycamore *Acer pseudoplatanus* L. (T2 in TPO 6/2004)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
18.2	5.2	6.4	5.3	6.8	54	3	Mature	Fair	Poor	6.5	Medium/short	22	20	Low

The trunk divides at 2.7m to form 2x codominant stems. The resulting fork is considered satisfactory.

The southern flank of the trunk has previously sustained a considerable amount of damage which is characteristic of heat damage from a bonfire. The wound extends from ground level to 1.4m on the northern flank and from 1.4m to 5.5m up the southern flank and onto the western stem.



It is assumed that this damage has been caused post designation of the TPO as the damage is so significant that it detracts the amenity value of the tree and the structural integrity is also questionable.

Generally this is a poor specimen and should be removed in the interest of safety and as part of establishing a higher level of arboricultural management for the site replacing it with a new specimen elsewhere. The tree will also need to be removed to facilitate the construction of the parking for plot 13.

Recommendations

- Remove the tree to facilitate the development
- Replace tree as part of a replanting scheme

T17 Balsam poplar *Populus lasiocarpa* Oliv. (T3 in TPO 6/2004)

Height (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
17.5	3.2	3.9	3.3	5.1	60	0	Mature	Fair	Poor	7.2	Short	25	16	Remove

The top of the main leader has previously snapped out resulting in a large tear wound down the northern flank of the stem. The wound appears to be fairly recent as the wood has not yet discoloured with weathering.

A subdominant stem emanates at approximately 10m on the western flank. This subdominant stem has produced numerous vertical adventitious shoots which are developing as the new leaders. As these establish and grow they will increase the weighting and sail area of the limb thus increasing the load bearing stress on the limb attachment at the stem. The prognosis is the likely failure of the limb.



Adventitious shoots with increase loading on limb attachment

Torn wound (photo taken from the northeast)



It would be appropriate to remove the tree as part of the site management replacing it with a new specimen elsewhere on site. The tree will need to be removed to facilitate the construction of the building on plot 13.

Recommendations

- Remove the tree to facilitate the development
- Replace tree as part of a replanting scheme

T18 Sycamore *Acer pseudoplatanus* L. (T4 in TPO 6/2004)

H0eig ht (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
14	5.6	4.5	5.4	4.8	49	2.3	Mature	Fair	Poor	5.9	Medium	22	20	Low

The top of the main leader has snapped out which is likely to have occurred when the poplar stem failed. The resulting decaying stub is producing some water shoots.

A second area of decay is located at 3.1m on the southern flank of the trunk where a poorly pruned limb has been removed. A large stub has been left in situ and is now decaying with the decay spreading into the main stem. The extent of the decay is not known as no quantifiable decay detection test has been carried out.

Minor deadwood is retained in the crown.

The tree will need to be removed to facilitate the construction of the building on plot 13. A suitable replacement could be incorporated into the replanting scheme.

Recommendations

- Remove the tree to facilitate the development
- Replace tree as part of a replanting scheme

Group 1 Cypress spp, hawthorn, elderberry, holly (Part of A1 TPO 7/1993)

H0eig ht (M)	Crown Spread (M)				Trunk Diameter (CM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Cont	Ultimate size		Tree Quality Assessment
	N	S	E	W								Ht (M)	Sp (M)	
<5	-	-	-	-	<10	>0	Young / Mature	Fair	Fair	<1.2	Inter	20	8	Low

This group is located on the neighbouring property and comprises mainly of sporadically planted understorey species with the exception of the cypress spp. There is mature lime, cherry and sycamore trees located within this group however those within 8m of the site boundary have been survey and

plotted individually. Those further away are not likely to be affected by any development regardless of the scheme.

The group can adequately be protected from damage by erecting a protective barrier as per section 5.1 of this report in the position indicated by the blue line on the Tree Protection Plan (TPP).

Recommendations

- No action required at the present

It is anticipated that all trees that require removal due to structural defects will be replaced as part of a replanting scheme.

4.6 Wildlife Habitats

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

4.6.1 Bats

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

- The Wildlife & Countryside Act 1981 (WCA)
- The Habitat Regulations (also known as) - The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007

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.

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

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 and Natural England Batline contacted (0845 1300 228). A further inspection may well be required by a licensed bat handler or roost visitor.

4.6.2 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

No nesting birds were present at the time of inspection.

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

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: 5837:2005 Trees in relation to construction - Recommendations.

This usually involves identifying an area around the tree which should remain undisturbed with appropriate protective barriers preventing access to this Root Protection Area during the course of the construction period.

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.

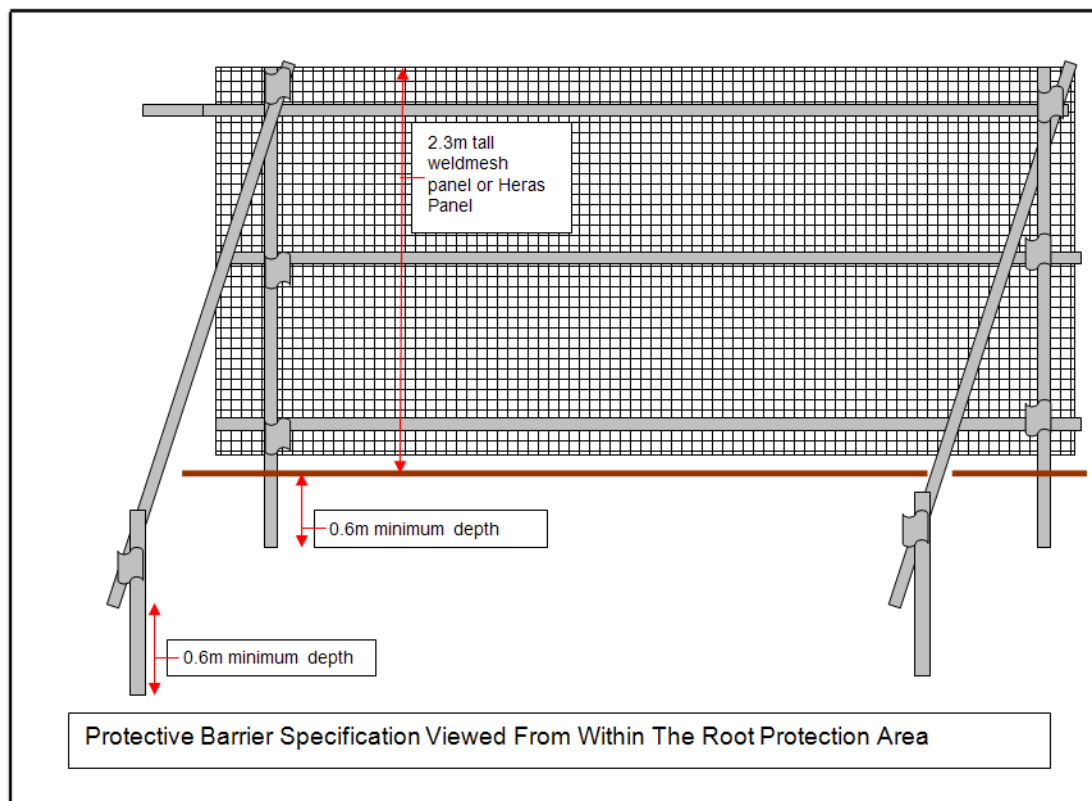
The exact root spread of an individual tree is difficult to quantify, but in general, the bulk of a trees roots are situated in the upper 600mm of the soil with the finer absorbing roots prevalent in the upper 250mm.

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 a vertical and horizontal framework of scaffold tubing which is adequately braced to resist impacts. The vertical scaffold tubes need to be placed at a distance not exceeding 3m apart. The weldmesh or Heras panels need to be 2.3m tall and are securely attached to the scaffold framework with wire or scaffold clamps. The wire or scaffold clamps should be secured on the inside of the barrier to avoid easy dismantling. Panels on rubber or concrete feet are not resistant to impact and should not be used.



Actual barrier being erected on site – incorporating Heras type panels



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.

5.2 Construction Methodology & Materials Near To Retained Trees

As the site contains a number of trees which will need to be retained as an integral part of the development, it is vital that the trees health and condition is maintained through protective measures and 'tree friendly' construction methods which avoid both short and long term damage to the trees. The areas which require this tree friendly construction are indicated as hatched green on the tree protection plan.

The construction method outlined below is suitable for the construction of permeable footpaths, roads and parking bays. It is not intended as a finished engineering solution but as an outline methodology to allow the construction of the above elements without damaging the nearby tree root system.

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

5.2.1 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 1.5m away from the trunks of the retained trees.

5.2.2 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

5.2.3 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



Photo 2- laying of Fibretex material onto existing subgrade

- 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.

Expand the Cellweb 2.56m wide panels to their full 8.1m length and pin with staking pins to anchor the cells open. Staple adjacent panels together to create a continuous mattress.

Below are illustrations of the correct stapling procedure for joining both edges and ends of panels together.

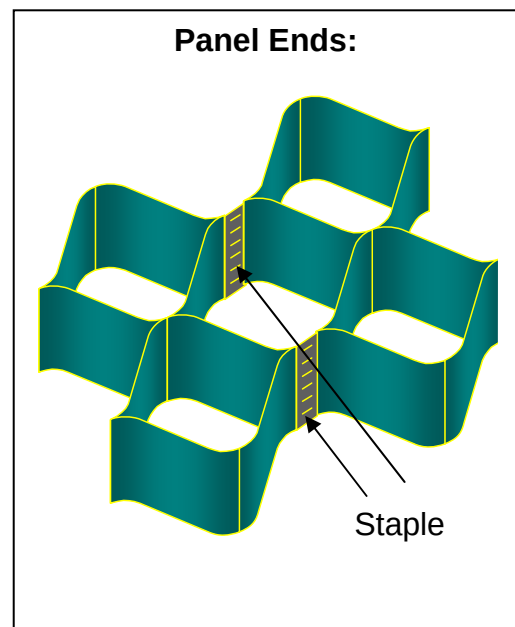
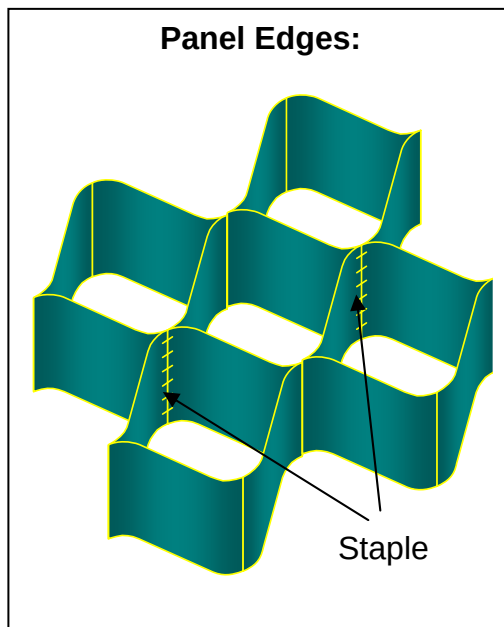


Photo 3- expanding and filling the Cellweb system

- 4) Fill the cellular confinement system with a minimum of 100mm of aggregate (the amount is dependent 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



Photo 4- once filled the system can support plant to carry aggregate to the fill area

5.2.4 Final surfacing options

- o **Block Paving** –will require the laying of a second layer of Fibrex F4M Geotextile separation fabric over the infilled Cellweb sections. Then lay a sharp sand bedding layer compacted with a vibro compaction plate to the recommended depth. Place paviors as per the manufacturer's instructions using the sand 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.
- o **Porous tarmac** – place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing course
- o **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
- o **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

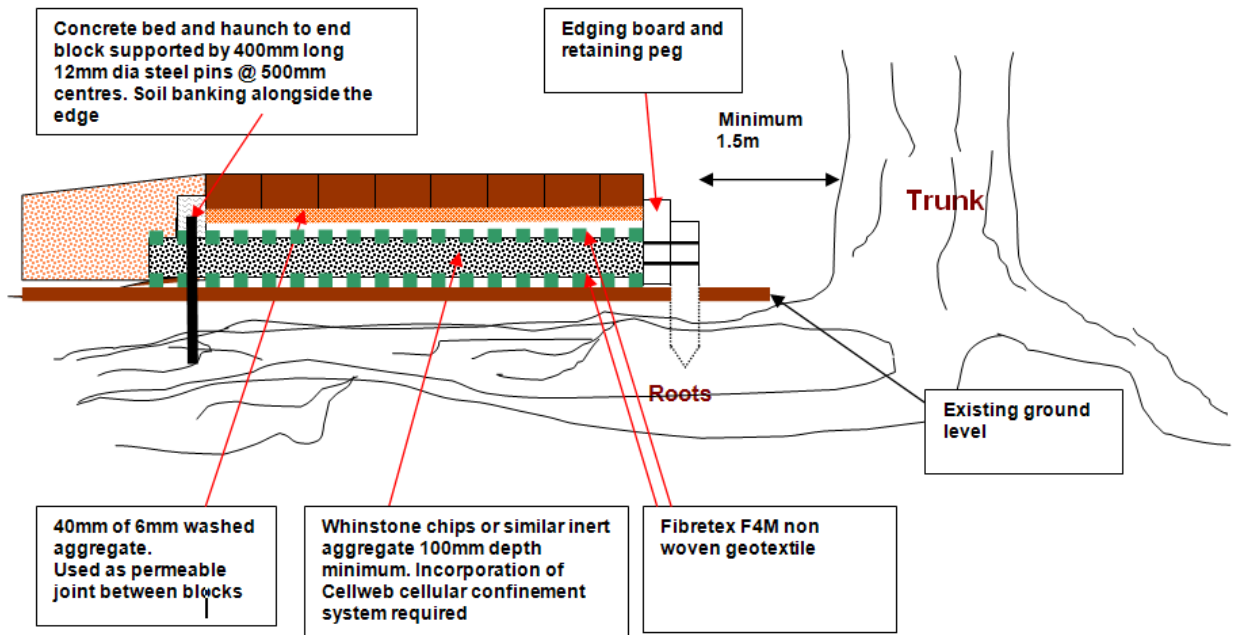
It is important that the edging material used does not encroach into the protected area and the use of conventional kerbing is not possible as the depth of excavation required for their installation will sever the tree roots.

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.



Photo 5- completed road using porous tarmac surfacing

Diagram of no-dig construction method for minimising root damage (not to scale). Alternative edging materials shown on either side of construction. Block paving surfacing option shown



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 plan 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. Extreme care must be taken to avoid damage to these areas until the cellweb and aggregate is laid and access must be prevented especially to vehicles and plant. This could be achieved by using temporary Heras fencing at distance indicated in the appraisal until such times as the surfacing is constructed.

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

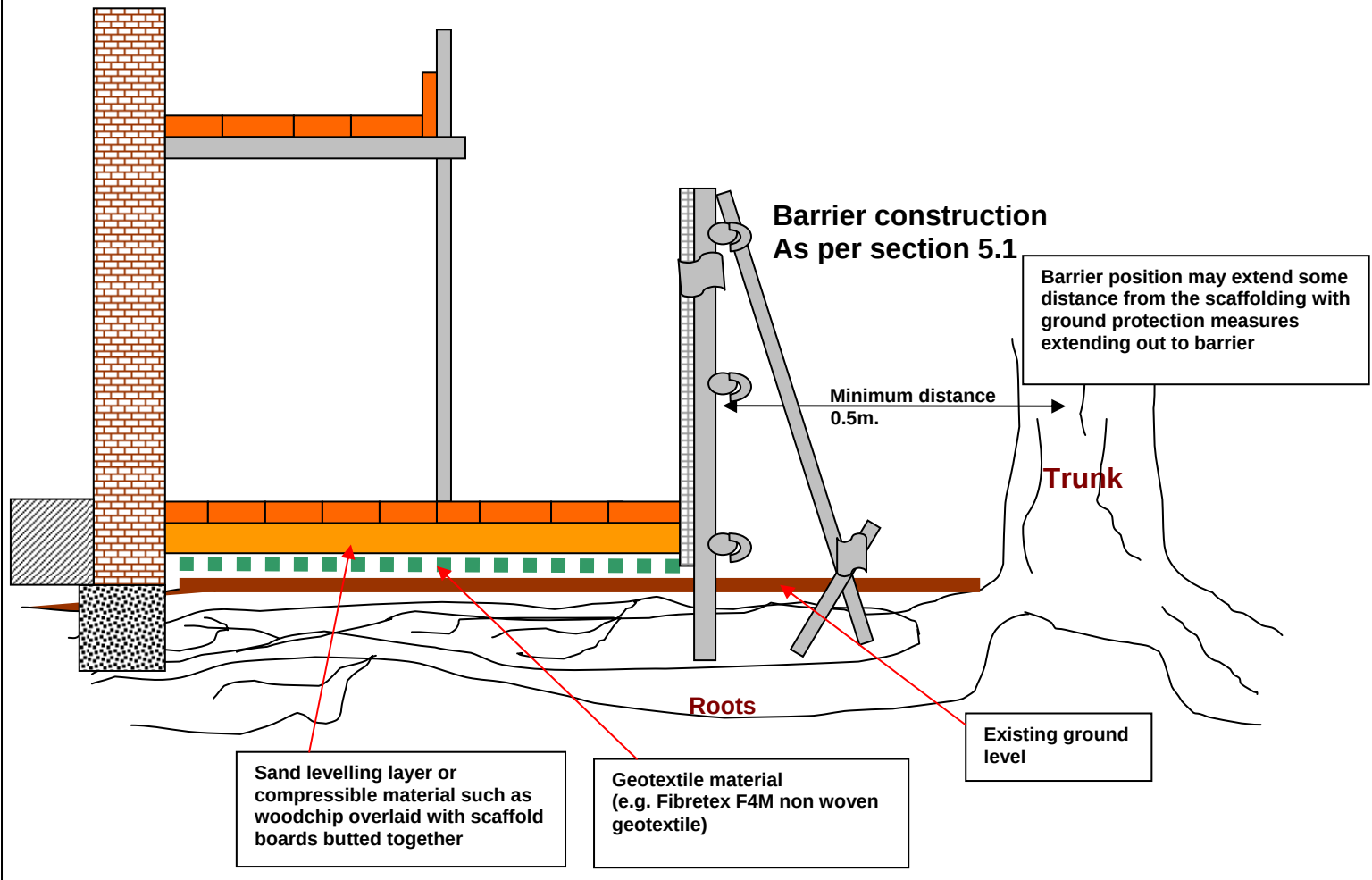
In some cases it will be necessary to provide pedestrian access within the root protection area of the trees, or to create space for scaffolding and working areas. To prevent damage occurring to the trees, the following technique should be observed. The areas requiring this protection are marked in hatched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

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 I 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 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
- The boarding must remain until building works are completed.

Erection of scaffolding within the root protection area of the tree to BS 5837 (not to scale)



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

Care will need to be taken not to compact or damage the rootplate of the trees when the footings are dug out and if the excavator is likely to be within the root protection area, steel plating must be laid on top of a layer of sand or compressible material such as woodchip to adequately spread the load.

5.4 Service Runs

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. The excavation of open trenches by machine will be unacceptable within the protective zone of any of the retained trees.

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

6. Conclusion

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

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

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.

All tree works must conform rigorously to BS 3998 (1989) 'Recommendations for Tree Work' and as modified by more recent research.

For and on behalf of
AllAboutTrees Ltd

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

Appendix 1(1)

Glossary of Terms

- 1 Reference number:** An individual identifying number
- 2 Species:** Species identification is based on visual field observations and lists the common name. In some cases the botanical name will be used where there is no common alternative. On in-depth surveys the botanical name only may be used
- 3 Height:** Height is estimated to the nearest metre. On computerised surveys this may be within a range of heights. When measured height is required, a clinometer is used to measure to the nearest metre
- 4 Diameter:** Trunk diameter measured at 1.5 metres from ground level to the nearest centimetre. In some surveys this is indicated as a range
- 5 Spread:** Measurement of canopy from the trunk to the nearest metre in four directions, North, South, East, and West in metres
- 6 Lower crown Clearance:** Height in metres of crown clearance above adjacent ground level
- 7 Age:** Either an estimate (or statement if accurately known) of the age of the tree, classified as:
 - Y** = Young tree, established tree usually up to one third of expected ultimate height & spread
 - MA** = middle aged, usually between one third and two thirds of ultimate height & spread
 - M** = Mature, more or less at full height but still increasing in girth & spread
 - OM** = Over mature, grown to full size and becoming senescent,
 - V** = Veteran tree, individuals surviving beyond the typical age range for the species
- 8 Physiological Condition:**
 - Good = Healthy vigorous tree,
 - Fair = Less healthy and vigorous
 - Poor = Poor shape or form - signs of decline in crown, may have structural weakness.
 - Dead = dead or dying tree
- 9 Structural condition:** Description of any decay or physical defect, collapsing
- 10 Management Recommendations:** General comments on the condition of the tree or group and any action required. potential for wildlife habitats
- 11 Estimated Remaining Contribution:** Safe Useful Life Expectancy (SULE): in some cases the age ranges are modified
 - Short: 0 – 10years
 - Medium: 10– 20 Years
 - Intermediate: 20-40
 - Long: 40 + years
- 12 Tree Quality:** Assessment of tree quality see following cascade chart for details
- 13 Priority:**
 - A - Works to achieve an acceptable level of safety.
 - B - Works to achieve higher levels of arboricultural management.
 - C - To improve the aesthetic appearance.
- 12 Ultimate Size:** Taken from Arboriculture Research Note 8490ARB or NHBC Standards Chapter 4.2 as appropriate The Normal Ultimate Height in an Urban Situation in metres. Ultimate spread of the Crown in metres.
- 13 Root Protection Area:** The distance at which the protective barrier should be erected measured in a radii from the centre of the trunk in metres.
- 14 Pruning:** Pruning shall be defined as the removal of living or dead parts of a plant by the Contractor. Such parts may be soft growth, twigs, branches, limbs or sections of the tree trunk. The cut material may vary from small to large in size.
- 15 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.

- 16 Deadwood Removal:** Dead-wooding shall be defined as the removal of all dead and dying branches and limbs from the tree.
- 17 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.
- 18 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.

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	
<u>Category High = A</u> Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)		Trees that are particularly good examples of their species, especially, if rare or unusual, or 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 which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation historical, commemorative or other value (e.g. veteran trees or wood – pasture)	Green
<u>Category Moderate = B</u> Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)		Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits.	Blue
<u>Category Low = C</u> Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm		Trees not qualifying in the higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/ or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	Yellow
		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			
<u>Category Remove = R</u> Those of such a condition that any existing value would be lost within 10years and which should, in the current context, removed for reasons of sound arboricultural management		- 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 R 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. R category trees used as a bat roost- installation of bat box in nearby tree)			Red

Appendix 1(11) Cascade Chart For Assessing Tree Quality

Appendix 1(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 trees 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 (eg 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.