



TREE REPORT

Reference

121105

Site Address

The Longbow
Barnsley Road
South Yorkshire
Darfield
S73 9DJ

Prepared for

PH Land and Developments

Date of Inspection

5th November 2012

Surveyed by

Emily Wilde

Lincolnshire Tree Services Ltd
Jim's Yard
Bully Hill Top
Tealby
Market Rasen
Lincolnshire
LN8 6JA

Checked by

James Kendall



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1.0. SURVEY DETAILS

Client Name:	Mr M Phipps PH Land and Developments.
Site Address:	Barnsley Road Darfield South Yorkshire S73 9DJ.
Date of Inspection:	5 th November 2012.
Surveyor:	Emily Wilde.
Purpose of Survey:	Carry out a tree report as per BS 5837:2012 - Trees in Relation to Construction (with appropriate measurements) of trees in the area proposed for new development, and to make recommendations for remedial works where necessary.
Survey Method:	Visual inspection from ground level only, including: • Measurements for height, stem diameter and crown spread • The physiological and structural condition of the tree • To look for visible defects of the tree • To comment on the condition of the tree and make recommendations for removal or retention, and remedial works where necessary.
Weather:	Mild with a slight breeze and good visibility.
Plans:	OS Plan Reference Proposed Development (option D) – F1233 SK04.

2.0. INTRODUCTION

- 2.1. PH Land and Developments have commissioned this report, to provide a tree survey and arboricultural method statement in accordance with BS 5837:2012 to support a planning application for the site at The Longbow, Darfield. The intention is to inspect and assess the trees growing within the vicinity of the proposed development, which may potentially be affected by construction activity.
- 2.2. The report will include:
 - The tree condition and quality (arboricultural, landscape & cultural)
 - Root Protection Area (RPA) of the surveyed trees
 - Recommendations, if any, for future management
 - Demonstrate the trees' appropriateness for retention during the proposed development
 - Protection measures for the trees during construction.
- 2.3. The report is based on data collected on a site visit by Emily Wilde, who inspected the trees on 5th November 2012.
- 2.4. The site is within a residential area situated between Barnsley Road and Dartree Walk, Roundwood Way runs along the southeast boundary. A public footpath is to the northwest with Darfield Primary School just beyond. The wider surrounding area comprises fields and small woodland areas.
- 2.5. The site includes disused public house building with a hard-standing car park area to the southeast, with a woodchip and grass area to the northwest. The trees included within the survey are stand in the grassed area and provide a privacy screening for the site.
- 2.6. The proposal for this site is to take down the existing building and erect a new building, which will be utilised as a convenience store with car parking, also 6 residential dwellings with parking and gardens.
- 2.7. References used:
 - BS 5837:2012 Trees in Relation to Construction – Recommendations 2012
 - BS 3998:2010 Tree Work – Recommendations 2010.
- 2.8. The tabular element of the report (see appendix) records each individual tree with appropriate measurements, defects and characteristics worthy of note and recommendations for retention, remedial work or removal as applicable.

3.0. LIMITATIONS

- 3.1. The tree assessment was carried out from ground level only, using Mattheck's Visual Tree Assessment. A Thor hammer was used during the inspection and diameter measurements were taken using a DBH tape. Height measurements are approximate. No internal measuring devices were used during this assessment.
- 3.2. As trees are dynamic objects, they are liable to change within the space of a short time, sometimes unpredictably. While every attempt has been made to provide a realistic and accurate assessment of the trees' condition at the time of inspection, no responsibility can be accepted for damage or injury sustained as a result of the failure of any tree due to faults not apparent upon a visual, ground level inspection carried out, or to faults developing subsequent to the survey. Similarly, no liability can be accepted for the condition of the trees that are obscured in part or in whole (dense ivy or foliage). Nor for any that proved inaccessible to the inspector. Certain features that might provide evidence of on going decay or decline (such as fungal fruiting bodies, damage to foliage, insect emergence holes etc.) may not have been in evidence. Only those features that are apparent at the time of inspection could be assessed. Trees should be inspected regularly; this is the responsibility of the tree owner. Therefore this report is valid for 12 months.

4.0. IMPLICATIONS ASSESSMENT

- 4.1. The following implications assessment should be accompanied by an appropriate tree constraints plan to identify:
- The position of the existing trees
 - Below ground constraints: Root Protection Area (RPA)
 - Above ground constraints: Crown spread
 - The category grading of the tree.
- 4.2. There are a total of seven trees included in the survey. Any other trees or shrubbery within the site are considered too small or insignificant to be included within the survey.
- 4.3. One tree T553 (Cherry) within the survey has been assigned a category grading of U as it is considered structurally unstable and therefore requires removal.
- 4.4. T556 (Sycamore) is situated within the corner of the site and has been assigned a category grading of C due to its location next to the railings and its unbalanced crown. In its present state, it is considered sound, but as it matures the tree will begin to grow around the railings causing future problems to the health of the tree. Therefore this tree should not dictate the layout of the proposed development and if necessary, it can be removed.
- 4.5. The remaining trees are all in a relatively good condition. They have been assigned a category grading of B and it is desirable for these trees to be retained.
- 4.6. The RPA of T550 (Sycamore) overlaps the position of proposed dwelling number 4. This tree would need to be removed if this layout were to proceed or alternately, the layout would have to be altered and dwelling 4 moved forward to ensure the RPA does not overlap.
- 4.7. The RPA of T554 (Cherry) is within the proposed driveway area of dwelling number 5. Therefore sensitive construction techniques and measures should be adopted when working within this zone. Ground protection in the form of Cellweb TRP would need to be used as a permanent sub-base to protect the soil structure around the roots of the tree.
- 4.8. Trees that are removed can be reallocated in planting spaces with native tree species, which are appropriate for their surroundings.
- 4.9. Work is not to be carried out within the RPA of any tree where it has not otherwise been agreed, and a CEZ (construction exclusion zone) will need to be created by means of protection barriers or ground protection. This will prevent any unauthorised works taking place within the RPA of the trees while protecting the soil around the roots by means of preventing compaction from passing construction vehicles.
- 4.10. New trees will need to be planted to replace those that have been removed to allow for the development to proceed. The new trees should be in keeping with the area and be suitable for their environment. The boundaries of the car park and the rear gardens of the proposed dwellings are suitable locations for the new trees to be positioned.

5.0. METHOD STATEMENT

- 5.1. The following arboricultural method statement should be accompanied by an appropriate tree protection plan to identify:
- Trees to be retained
 - Trees to be felled
 - Construction exclusion zones
 - Position of protective barriers.
- 5.2. The purpose of this method statement is to aid the preservation of the trees by setting out tree protection methods and working practices that are to be adopted in their vicinity. Most tree roots will be found in the top metre of soil. Continuous movement over the roots of trees can cause severe compaction and can be damaging to the tree if not carried out correctly. The preservation of the retained trees is dependent upon these methods being adhered to by the developers and by any visitors to the site.
- 5.3. The CEZ is informed by the RPA and is adjusted where necessary to allow for works to take place within this zone. The CEZ are to be afforded protection at all times to prevent compaction to the soil or severance of the tree roots. A Root Protection Area is determined by the stem diameter (calculations are shown in Appendix 1 – Tree Survey and Appendix 3 – Cascade Chart). The RPA is the ‘area surrounding the tree that contains sufficient rooting volume to ensure the survival of the tree.’
- 5.4. Any tree works that need to be carried out should be done so before any construction work is started and before the tree protection is installed. In this case, T553 needs to be felled and any trees with a crown clearance of below 3m require canopy lifting to 3m.
- 5.5. If at any time pruning works are required due to damage received from construction vehicles during the construction process, permission must first be sought from the Local Planning Authority and then the work must be carried out in accordance with BS 3998.
- 5.6. Tree protection barriers and ground protection will need to be put in place prior to the commencement of any construction work. The tree protection is to be sited in accordance with the Tree Protection Plan (TPP). Once protection measures are in their final positions, then the construction work can proceed.
- 5.7. Barriers will be placed around the RPA of T554 to T556 until the driveway construction of dwelling 5 begins. The barriers can then be adjusted to where the boundary of the driveway area is to be sited, and Cellweb TRP can be positioned where the driveway and RPA of these trees overlap. The Cellweb can be laid on top of the existing ground surface, as this will prevent the disturbance of the ground around the tree roots. Details of ground protection can be found in Appendix 5.
- 5.8. Access to the site will be via the existing access point off Dartree Walk and through the existing car park. There is sufficient space in the existing car park away from any CEZs, for any parking required and for any lavatories or site huts.
- 5.9. The storage of building equipment and machinery is to be stored away from the CEZ. Fuel needs to be stored and cement is to be mixed at least 10m away from the CEZ to prevent any run off from making contact with the RPA.

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- 5.10. A Banks person should always be employed when operating vehicles to ensure the vehicle is as far away from the tree as possible, so that the branches do not sustain injury. Although protection barriers are in place to prevent damage to the roots, branches are sometimes likely to grow beyond this RPA.
- 5.11. Once all construction work is complete, then the tree protection barriers can be removed.
- 5.12. All parties involved in the construction process should have a copy of the Method Statement provided or made available to them.

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APPENDIX 1 – Tree Survey

Site: The Longbow Client: Mr M Phipps Date: 05/11/12										Canopy Spread (metres)							
Tree Ref No	Species	Height (m)	Stem (diameter cm)	Age Class	Physiological Condition	Structural Condition	Remaining Contribution (years)	Comments	Recommendations	Category Grading	North	South	East	West	Crown Clearance from ground (m)	Root Radius (m)	RPA (m²)
550	Sycamore	12	70	M	G	F	20-40	- A good specimen tree with a well-balanced crown. - Forking at 1.5m, the tree gives rise to two co-dominant stems. There is some included bark within the fork – this is not an issue at present.	No remedial work is required.	B	4	5	4	4	1.5	8	221
551	Sycamore	10	29	Y	G	G	40+	A small tree with good form – a future asset.	No remedial work is required.	B	3	3	3	3	2	3.5	38
552	Large-leaved Lime	9	35	MA	G	F	20-40	- Ivy is growing up the main stem. - This tree has a large stem growing from the base.	Remove the large stem growing from the base to prevent any future issues.	B	4	2	4	4	1	4	55

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Tree Ref No	Species	Height (m)	Stem (diameter cm)	Age Class	Physiological Condition	Structural Condition	Remaining Contribution (years)	Comments	Recommendations	Category Grading	North	South	East	West	Crown Clearance from ground (m)	Root Radius (m)	RPA (m ²)
553	Wild Cherry	7	21	MA	P	P	0-10	- A large cavity in the northwest side of the main stem from the base to 1.5m has decay within. - There is significant deadwood present within the crown. - Snapped branches within the crown are dying back.	Fell.	U	1	1	1	1	2	2.5	20
554	Cherry	11	53	M	F	F	10-20	- A large tree which forks at 2m. - The two stems are growing close together - this is not an issue at present.	No remedial work is required.	B	4	4	3	4	2	6	127
555	Large-leaved Lime	11	54	M	G	F	20-40	- The two main stems are growing close together which are beginning to form a compression fork - this is not an issue at present. - The tree has a good form with a well-balanced crown.	No remedial work is required.	B	4	4	4	3	1.5	6.5	132

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Tree Ref No	Species	Height (m)	Stem (diameter cm)	Age Class	Physiological Condition	Structural Condition	Remaining Contribution (years)	Comments	Recommendations	Category Grading	North	South	East	West	Crown Clearance from ground (m)	Root Radius (m)	RPA (m ²)
556	Sycamore	10	26	MA	F	F	10-20	- Situated within the corner of the site and adjacent to the railings. - The crown is more dominant on the east side. The growth on the other sides has been suppressed due to the adjacent tree growing within close proximity. - Ivy is growing up the main stem.	No remedial work is necessary.	C	3	1	4	2	2	3	30.5

Tree Species

Common Name

Sycamore
Large-leaved Lime
Cherry

Latin Name

Sapindaceae Acer pseudoplatanus
Malvaceae Tilia platyphyllos
Rosaceae Prunus avium

APPENDIX 2 – Tree Survey Details: Explanation of Terms

Tree Number:	Relates to the tree number.										
Species:	Common name of tree.										
Height:	Measured using a rule of thumb and taken to the nearest half metre.										
Diameter:	Measured at 1.5m above ground level or immediately above the root flare for multi-stemmed trees.										
Age Class:	<table> <tr> <td>Young trees (Y)</td><td>Less than 1/3 of expected lifespan</td></tr> <tr> <td>Middle aged trees (MA)</td><td>Half of expected lifespan</td></tr> <tr> <td>Mature trees (M)</td><td>More than 2/3 of expected lifespan</td></tr> <tr> <td>Over mature trees (OM)</td><td>Reached expected lifespan</td></tr> <tr> <td>Veteran (V)</td><td>Exceeded expected lifespan and is in decline.</td></tr> </table>	Young trees (Y)	Less than 1/3 of expected lifespan	Middle aged trees (MA)	Half of expected lifespan	Mature trees (M)	More than 2/3 of expected lifespan	Over mature trees (OM)	Reached expected lifespan	Veteran (V)	Exceeded expected lifespan and is in decline.
Young trees (Y)	Less than 1/3 of expected lifespan										
Middle aged trees (MA)	Half of expected lifespan										
Mature trees (M)	More than 2/3 of expected lifespan										
Over mature trees (OM)	Reached expected lifespan										
Veteran (V)	Exceeded expected lifespan and is in decline.										
Physiological Condition:	Categorised to: Good (G) Fair (F) Poor (P) Dead (D)										
Structural Condition:	Description of the condition of the tree and whether any decay or physical defects are present. Categorised to: Good (G) Fair (F) Poor (P)										
Estimated Remaining Contribution in years:	Categorised to: Less than 10 10-20 20-40 More than 40										
Management Comments and Recommendations:	Remedial tree work required (if any) and the potential for wildlife habitat.										
Category Grading:	U, A, B or C category grading. A copy of the BS5837 category explanation table is attached at the end of this report.										
Canopy Spread:	Measured from the stem to the north, south, east and west in metres.										
Crown Clearance:	Measured in metres from the ground.										
Root Radius:	Measured in metres.										
Root Protection Area:	Measured in metres squared. (RPAs are to be protected by weldmesh panels).										

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APPENDIX 3 – Cascade Chart for Tree Quality Assessment

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see [BS5837:2012] 4.5.7.</i>		
	1 Mainly arboricultural	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
Trees to be considered for retention			
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years.	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture).

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Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	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.
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm.	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 value.

Calculating the RPA
Root Protection Area = $\frac{(\text{Stem diameter (mm)} \times 12)^2}{1000} \times 3.142$ – Calculation for a single stemmed tree

APPENDIX 4 – Glossary of Terms

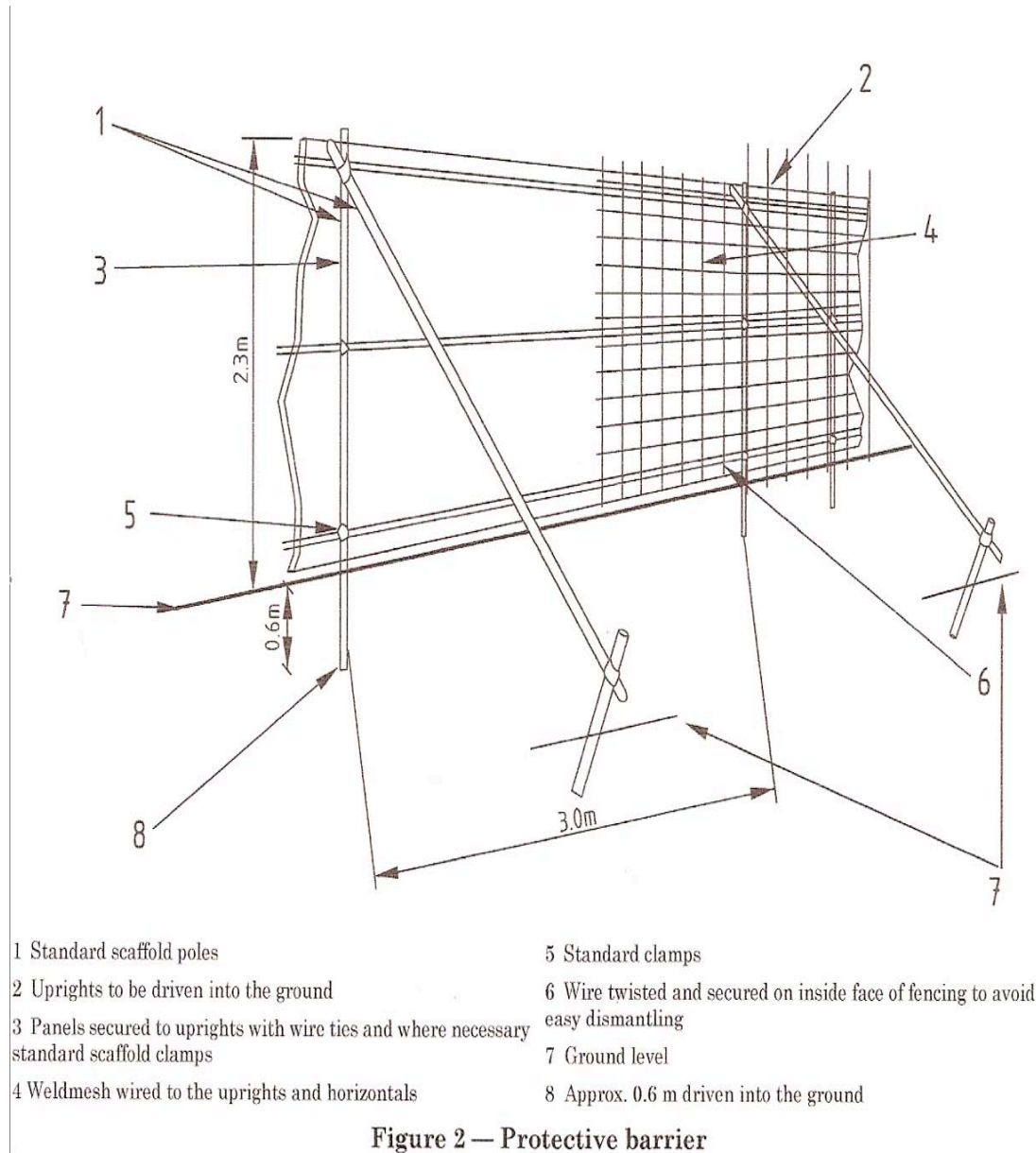
Bark	All tissue on the outside of the trunk, roots, stem, branches and twigs.
Bark Necrosis	A disease in which the branches gradually dry up from the bark to the center.
Bulge	Young trees may flex in the wind causing the wood fibres to buckle in places. Subsequent growth may produce horizontal tyre-like bulges to compensate for this.
Buttress	A large root on all sides of a tall or shallowly rooted tree. They prevent the tree from falling over and help gather more nutrients.
Canopy	The part of the tree composed of leaves and twigs.
Canker	Defined as a localised lesion; a dead spot.
Cavity	An open wound characterized by the presence of decay and causing a hollow.
Crown	The main foliage carrying part of the tree.
Crown Lifting	The removal of the lower branches up to a specified height to provide clearance under the crown.
Crown/Limb Reduction	A shortening of lateral and vertical branches that make the entire crown or specified part smaller.
Crown Thin	The balanced removal of secondary, minor, live branch growth to reduce the leaf density evenly throughout the canopy or specified part without altering the tree's overall size and shape.
Decay	Rot. The process of degradation of woody tissues by fungi and bacteria through decomposition.
Epicormic Growth	Usually appears on the main trunk from dormant buds, which may be activated when a branch or branches are removed higher in the crown, resulting in a flush of epicormic shoots.
Failure	A partial or total fracture of woody tissues or loss of cohesion between soil and roots.
Fibre Buckling	A line of ridges in the bark of the trunk made up of strengthening wood laid down to support excessive loading.
Fungi	A group of organisms that obtain nutrients from dead or living organic matter.
Growth Ring	A sheath of cells appearing as one of a series of concentric rings in a cross-section of a woody stem. Each ring is usually the result of a single yearly growth flush starting in spring and ceasing in the

late summer.

Hazard	Anything with the potential to cause harm.
Included Bark	Bark of neighbouring parts of the tree that are in face-to-face contact causing a weakness due to the lack of wood union.
Occluded	To seal a wound with the formation of new wood and bark.
Phototropic	Taking a particular direction under the influence of light.
Pollarding	A method of pruning that can obtain regulation of size and shape. It is also known as coppicing.
Pruning	The removal or cutting of twigs, branches or roots, often used to describe all kinds of work involving cutting.
Risk	The likelihood of a potential harm from a hazard becoming actual harm.
Root	Part of the tree that contains woody and non-woody tissues to absorb water and minerals from the soil, gases from the atmosphere, and support the trunk and crown.
Significant	Relates to health and safety – describing a condition, state, hazard or risk that is deemed to exceed accepted standards, thereby requiring remedial or preventative action.
Stem	The principle portion of the woody structure (the trunk) or one of a number of such portions with similar size and status.
Suppressed	Trees that have been over shadowed and whose crown development is restricted by neighbouring trees.
Tree	A woody plant that typically has a single self-supporting woody stem, attaining a height in excess of 4 metres in maturity with a stem diameter of at least 75mm.
Trunk	A single main self-supporting stem of a tree.
Wound	An injury that induces the tree to compartmentalize internally.

APPENDIX 5 – Tree Protection

Barriers



- All fences should be installed prior to any construction work being carried out on the site.
- Fences shall be between 1.5 and 3 meters in height.
- Standard scaffold poles should be used.
- Uprights are to be driven into the ground by 0.6 meters, where possible. On hard surfaces, concrete or other weighted blocks can be used to support uprights and/or scaffold poles.
- The panels need to be secured to the uprights and horizontals with wire ties and, where necessary, standard scaffold clamps.
- The wire ties need to be twisted and secured on the inside face of the fencing to avoid easy dismantling.

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- Warning signs need to be attached to the fence panels to make contractors aware of the boundaries and to show that these areas are not to be penetrated.
- Barriers must remain in place until all demolition work is complete and until the local planning officer has given permission for them to be removed.

Ground Protection

Cellweb TRP, a 3-dimensional cellular confinement system, uses established principles of cellular confinement to maximise strength and spread the load. Perforations in the cell walls allow water and air to migrate laterally throughout the reinforced layer and they also increase the friction between granular infill and the cell web. This greatly increases the ability of the structure to spread any load from above.

A permanent sub-base is to be installed where the tree roots fall within the vicinity of hard surfaces that are to be used on a regular basis by vehicles or pedestrian traffic. The Cellweb depth will need to be 100mm as the vehicles passing over this area will be infrequent light vehicles.

The cellular mattress will be the standard Cellweb with a minimum depth of 100mm and a cell diameter of 259x224mm. This will be laid on a geotextile membrane and filled with a clean, angular, no-fines aggregate at 20-40mm. As the ground level will be raised slightly, a treated timber edge should be used around the Cellweb to restrict gravel movement.

The 100mm Cellweb is appropriate for regular light vehicle use but will tolerate infrequent heavy vehicle use. It is therefore advisable that the heavy vehicles crossing the RPA are kept to a minimum. If prolonged crossing of the RPA by heavy vehicles is required, then a deeper Cellweb will be necessary.

Any uneven ground that is met during this process can be filled in with a loose granular material.

It is also advisable that an engineer is present to lay, or supervise, the laying of the Cellweb material.

The finished surface will need to be a material, which has long-term permeability to air and water as well as maintaining high frictions.