



Arboricultural Implications Assessment and Method Statement



The Swan (PH), Jessie Road, Bedhampton

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THE SWAN (PH), JESSIE ROAD, BEDHAMPTON

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1 INTRODUCTION

- 1.1 **Instruction:** I am instructed by Punch Partnerships (PML) Ltd to report on trees that could be affected by a development proposal at The Swan, Jessie Road, Bedhampton and prepare an Arboricultural Implications Assessment (AIA) and preliminary Arboricultural Method Statement (AMS) to support a planning application on the site.
- 1.2 **Document disclosure:** Initially, I was provided with a topographical survey (drawing reference '4AA6-The Swan Inn'). This showed the positions of the significant trees on or near the site, together with the existing buildings and other important features. Subsequently, I was supplied with a copy of the proposed layout, (drawing reference 'The Swan Inn Email') showing a new site configuration.
- 1.3 **Scope of report:** All my tree observations are of a preliminary nature, with the tree survey carried out from ground level without any investigations using invasive or diagnostic equipment. I have not checked the accuracy of the positions of the trees shown on the provided plans and I have estimated all dimensions unless otherwise indicated.
- 1.4 **The Tree Protection Plan:** This is included in Appendix 1 and is a composite drawing derived from the information provided. It shows the existing landscape features (from the land survey) in grey and the proposed layout shown superimposed over the top in blue. This allows the relationship between the two to be clearly seen and an appropriate analysis of the implications of the proposed site changes to be undertaken. The Tree Protection Plan has also been annotated to show protection measures for the trees that could realistically be affected by the proposed development. It shows any activities in Root Protection Areas (RPAs) and if trees are to be removed, they are shown with a red dashed crown outline.

- 1.5 **Qualifications and experience:** This report is based on my site observations, and I have come to my conclusions in the context of my experience as a former local government tree officer and a private practice arboricultural consultant. I have qualifications in both arboriculture and forestry, and details of these, together with a career summary are provided in Appendix 6.
- 1.6 **Ecological issues and statutory tree protection:** Providing guidance on ecological issues is not within my sphere of expertise. However, trees and other vegetation can often provide nesting, roosting and feeding opportunities for protected species. Therefore, before any tree work proceeds on site, I advise that appropriate advice is sought to see whether the trees to be removed are being utilised by any protected species. At the time of writing, I have made no checks to ascertain whether any of the trees discussed are covered by tree preservation orders, or if the site is located in a conservation area. Therefore, any person intending to carry out any operations involving trees (before a formal planning consent is issued) should consult the council before any works are undertaken.

2 SITE VISIT, DESCRIPTIONS, OBSERVATIONS AND SURVEY METHODOLOGY

- 2.1 **Site visit:** I visited the site on 26 October 2017 to gather my tree data. The weather at the time of my survey was dull, still and dry, with good visibility.
- 2.2 **Description of site and surrounds:** The site is located in Jessie Road, Bedhampton. The Swan is on the northern side of the road and consists of the main 'pub' building, with car parking to the south, east and west and a large beer garden area to the rear. Groups and individual trees are located around or close to the beer garden of the pub, with the dominant tree species in the area being Lime.
- 2.3 **Description of proposed development:** This development proposal is to construct three new dwellings on land severed from the beer garden/car parking area of the pub.
- 2.4 **Soil assessment:** British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations advocates that a soil assessment should be carried out to inform decisions relating to Root Protection Areas (RPAs), tree protection, new planting and foundation design. I have consulted the British Geological Survey (BGS) website and their Geology of Britain viewer and this advises that the bedrock geology for the site is London Clay Formation - Clay, Silt And Sand. I did not undertake any excavations on site to confirm this and a full geotechnical site investigation may need to be undertaken to provide a more in-depth level of information regarding soil type for the site.
- 2.5 **Tree survey methodology:** My inspection of the trees was visual, and did not involve any climbing or exploratory investigation. During my visit, I identified obvious groups where this was appropriate and I assigned an identification number to each tree or group, as shown on the plan in Appendix 1. I then collected the tree data included in Appendix 2 and placed the vegetation in one of four categories (U, A, B or C), as set out in British Standard (BS) 5837: 2012. I have included the BS categorisations in Appendix 5 for easy reference. Where of relevance, I also estimated the crown spreads for each tree at the appropriate cardinal compass points and this information is also shown in the tree schedule in Appendix 2. Although this document is not meant to be a full and detailed

report on tree health and safety, any significant visible structural defects or physiological conditions identified, together with preliminary tree works, are also noted in the appropriate columns in the tree schedule in Appendix 2. However, a full post development tree inspection is recommended to establish that the trees retained during construction pose acceptable levels of risk once the development has been completed.

- 2.6 **Data interpretation:** The Root Protection Area (RPA) calculations are included in Appendix 2. As set out in paragraphs 4.6.2 and 4.6.3 of the BS, the RPAs may have been adjusted as a matter of arboricultural judgement, to indicate the estimated likely position of tree roots. These modified (or unmodified) RPAs dictate the location of the tree protection barriers (which encompass the Construction Exclusion Zones - CEZs) and also determine the position of any ground protection measures. Tree protection details are shown on the plan included in Appendix 1. Where there is a need for incursions into RPAs, an assessment of the implications of these activities is set out in Section 3 (Arboricultural Implications Assessment) of this report. Where appropriate, details of suitable work methodologies to mitigate any impact are set out in Section 5 (Arboricultural Method Statement).

3 ARBORICULTURAL IMPLICATIONS ASSESSMENT

3.1 **Introduction to the implications of the development proposal on trees:** BS 5837: 2012 sets out in some detail how trees on development sites should be managed. It is generally accepted that Category A (high quality) and Category B (moderate quality) trees are potential constraints on any development proposal, whereas those belonging to Category C (low quality) are considered to be generally less important. Category U trees are in such poor condition that they are considered unsuitable for retention. This is because they cannot realistically be retained as living trees in respect of the current land use for longer than 10 years. Therefore, these trees can be effectively discounted in the context of a planning application. On this site a total of NINE individual trees and groups were recorded during the tree survey and were assigned to the BS 5837 (2012) categories, as set out in Table 1 below:

Category A and B trees	No trees, groups or hedges were rated Category A or B
Category C trees	A total of SEVEN trees and groups (T1, T2, T3, T4, G6, G7 and G8) were rated Category C
Category U trees	A total of TWO trees (T5 and T9) were rated Category U

Table 1: Tree numbers and BS categories

No Category A or B trees were recorded during my survey and I have focussed on the implications of the development proposal on the Category C trees on or near the site. Of the total of NINE trees and groups surveyed, FIVE are scheduled to be wholly or partially removed to facilitate this development proposal. Additionally, ONE group of trees will have activities arising from the development occurring in their RPAs. I have summarised the development related implications on trees in Table 2 below and set these aspects out in more detail in the following paragraphs.

Trees to be removed for development		Activities in RPAs arising from the development proposal	
Category A and B	Category C	Category A and B	Category C
n/a	T1, T2, T3, T4 and G7 (part removal)	n/a	G6 (new surfacing)

Table 2: Trees lost and activities in RPAs arising from the development proposal

3.2 Direct implications of the development proposal - Tree retention and tree loss

3.2.1 **BS Category A and B trees (trees of high and moderate quality):** No Category A or B trees were surveyed during my site visit. Consequently, no high or moderate category trees will need to be removed to facilitate this development proposal.

3.2.2 **BS Category C trees to be removed (or those of low quality):** As discussed, trees belonging to Category C are not normally retained where they would impose a significant constraint on the development or redevelopment of a site. In this instance, FIVE trees are scheduled to be removed to facilitate this development proposal. My comments on the implications arising from the loss of these trees are as follows:

- **Trees T1, T2, T3 and T4:** These trees are located in a linear formation across the back edge of the existing car parking and adjacent to the nearby beer garden. The trees have unbalanced canopies due to their close proximity to one another and they have ornamental metal guards surrounding their lower trunks. The trees have grown in an around these, resulting in tree stem material being fused with the metal of the guards (photographs 1 and 2). Unfortunately, the issue of these types of guards damaging trees is relatively common in urban situations.

The guards appear to have been in position since the trees were first planted and the degree of fusion between tree material and metal was significant. This is likely to have a longer term impact on their health and wellbeing by a process of gradual strangulation, thereby restricting their ability to transport water, nutrients and

sugars throughout the tree. If the trees were younger and less fused with the guards, then I feel that an option would be to remove them, allowing the trees to grow unrestricted. However, as the guards have been in situ since the trees were planted, I would have reservations about removing them at this stage, as the guards will have become structural to the trees, in effect acting as an exoskeleton that they rely on for support. I feel that the removal of the guards (even if this were possible without damaging the trees) would therefore leave them vulnerable to stem failure in the event of an extreme weather event.



Photograph 1: Trees T1-T4 with metal guards

In my view, the trees have a limited long term safe useful life expectancy (with one of the trees already showing canopy symptoms indicating declining vitality). I therefore feel that the sensible way forward would be to acknowledge the fact that the trees have no real prospect of maturing into useful trees and accept their removal to facilitate the development proposal, with the provision of new tree planting around the periphery of the site to mitigate their loss. New replacement tree planting is covered in section 3.5.2 below.



Photograph 2: Typical tree/metal guard relationship

- **Group G7 (part removal):** One tree from this group will need to be removed to allow access to the new bin and cycle store close to its position. The tree to be removed is an elder. It is small in size and as such I feel it makes a limited contribution to local amenity. I therefore believe that its removal is unlikely to have any particular implications in the locality.

3.3 **Additional implications arising from the development proposal**

- 3.3.1 **BS Category C trees and activities in RPAs:** New car parking spaces are indicated within the RPAs of trees in group G6. These trees are not in the best condition and appear to be causing some damage to the nearby boundary brick wall and consequently there is an argument for their removal. Nonetheless, the trees do provide a boundary screening

function and I have therefore shown them to be retained at the current time. How the new surfacing will be installed has not been fully elucidated at this stage. But, in principle, the sub base could be formed using a cellular confinement system. This will negate the need for significant excavation and excessive disturbance to the RPAs of these trees. The use of cellular confinement systems is supported in BS 5837 (2012), together with bespoke suspended engineered solutions (paragraph 7.4.2.7). I set out some preliminary guidance in section 5.2.2 of this report regarding the installation of cellular confinement systems. In my view, provided the work is undertaken with due regard to the nearby trees, then there is a low risk of any implications on their health and wellbeing.

3.4 BS Category U trees normally removed for management reasons: Category U trees are in such poor condition that they are considered unsuitable for retention. This is because they cannot realistically be retained as living trees in the context of current land use for longer than 10 years. Therefore, these trees can be effectively discounted in the context of the planning process. On this site, I have assessed trees T5 and T9 as falling into Category U. Tree T5 is scheduled for removal for management reasons. As it is unsuitable for retention in the context of the current site use, I do not believe that its loss should be a consideration in respect of the current planning application. Tree T9 is positioned on an adjacent property and therefore outside the control of the owners of The Swan. It has therefore been shown as retained on the plan in Appendix 1, despite its poor condition.

3.5 Protection of trees during construction and mitigation for trees to be lost

3.5.1 Tree protection during development: A preliminary Arboricultural Method Statement is included in Section 5 and it details the various issues associated with successful tree protection in a development context on this site. If deemed appropriate by the council, this can be specifically referred to in a suitably worded planning condition attached to any subsequent consent.

3.5.2 New tree planting: As discussed, trees T1, T2, T3 and T4 are scheduled to be removed to facilitate the proposed development. Preliminary tree planting positions are set out on the drawing in Appendix 1. In this instance, I believe that seven heavy standard Small Leaved Limes (*Tilia cordata* 'Greenspire') would be suitable replacements for the trees to

be removed. These trees would be able to attain a large size in maturity and are described by Hillier Nurseries as 'largely aphid free' and so the risk of honeydew issues arising from their positioning should be low. In my view, the new tree planting would be more sustainable than the existing poor quality trees and could make a significant contribution to the tree cover in the area. However, the new tree planting could be the subject of further discussions with all stakeholders, as other tree species would also be suitable. This discussion could then feed into a comprehensive landscape scheme for the project, which could be secured by way of a suitably worded planning condition attached to any subsequent planning consent.

4 SUMMARY OF THE IMPLICATIONS OF THE DEVELOPMENT ON TREES

- 4.1 **Summary:** Of the total of NINE trees and groups surveyed, FIVE are scheduled to be removed to facilitate this development proposal. Additionally, ONE group of trees will have activities arising from the development occurring in their RPAs. The trees to be removed are low quality, with limited safe and useful life expectancies and it is proposed that these are replaced with new tree planting as part of the landscape scheme for the site. Provided the new tree planting and tree protection in this report is realised, then the proposed development is acceptable from an arboricultural perspective.

5 PRELIMINARY ARBORICULTURAL METHOD STATEMENT

5.1 Tree protection issues

5.1.1 **Tree Protection Plan (TPP):** The plan in Appendix 1 is illustrative, but is based on the layout drawings and topographical survey provided. Therefore, all scaled measurements should be checked against the original design documents. The attached plan and all other information in this report should only be used for dealing with the tree protection issues and all other uses are prohibited, unless authorised by Ecourban Ltd. Normally, all the existing trees will have been numbered, with higher categories (A and B) highlighted in green and blue rectangles and low categories (C and U) highlighted in grey and red respectively. However, on this site no Category A or B trees were recorded. The plan also shows the locations of the proposed protective measures, including areas where special care may be required and new tree planting. Additionally, any trees to be removed are indicated with a red dashed crown outline. The TPP is an important document, and a copy of it should be kept on site for reference whilst the development is under construction.

5.1.2 **Protective barriers:** Information on barrier design based on BS 5837 (2012) guidance is included in Appendix 3 and the approximate location of the barriers is illustrated on the plan in Appendix 1. The protective barriers will be erected before any materials or machinery are brought onto the site, and before any clearance or construction activities occur. Once the protective barriers have been positioned, these will stay in situ for the duration of the construction, unless previously agreed with the arboricultural consultant or council's tree officer. There will be no access into the protected area and the storage of excavated debris and building materials will be prohibited in RPAs, unless authorised by the arboricultural consultant, after discussion with the council's tree officer. No fires or fuel storage will be allowed within or near to protected areas under any circumstances.

5.2 Arboriculturally sensitive operations

5.2.1 **Activities in Root Protection Areas (RPAs):** Work in RPAs must be done with care, as set out in the following text. Site personnel will be properly briefed before any activities start and all sensitive work will be inspected regularly during the course of operations.

5.2.2 **Installation of new surfacing:** Trees in group G6 may be affected by the installation of new surfacing. I have shown the minimum extent of 'low invasive' type surfacing required to successfully retain these trees on the plan included in Appendix 1. This is based on the BS derived RPA. The use of a cellular confinement system is suggested in BS 5837 (2012) as one appropriate way to achieve hard surfacing over tree roots, and the following guidance is based on this principle. However, before implementation the following specifications and guidance will need to be reviewed by an engineering specialist, to ensure that the final construction is appropriate from an engineering viewpoint and suitable for the purpose intended.

- **Installation:** An installation video for a proprietary cellular confinement system is available to view at http://www.youtube.com/watch?v=-vlzHJ_LFho. Generally, any required changes in topography will be accomplished by raising levels rather than lowering, negating the need for any significant root disturbance. Any level changes will be achieved using uncompacted granular, permeable fills such as crushed stone or sharp sand. In this instance, the removal of the top layer of vegetation to a depth of 50mm (to provide a flat surface for the installation of the sub base) is unlikely to encounter or damage any tree roots. Any additional excavation will need to be assessed by the arboriculturalist, in consultation with the council's tree officer. Where roots may need to be cut, those smaller than 25mm diameter may be pruned back, preferably to a side junction, using a proprietary cutting tool such as bypass secateurs or handsaws. Roots larger than 25mm should only be severed following consultation with an arboriculturalist, as they may be essential to the tree's health and stability.

- **Sub base and final wearing courses:** Once a level surface has been formed, the load spreading construction will be installed on top of the existing soil, with no compaction of the existing soil structure. For cellular load spreading constructions, the infill will be crushed aggregate (typically 20-40mm, clean angular stone), with no fines, as per the manufacturer's specification. This is to ensure acceptable levels of moisture penetration and gaseous exchange. Suitable final wearing courses include bonded gravel, paving slabs, washed gravel or block pavements set on a sand base, although other surfacing may be suitable after consultation with the arboriculturalist.
- **Edge retention:** The use of non-invasive ground contact structures (including proprietary edging products), gabions, wooden boards or railway sleepers is suggested in BS 5837 (2012) as effective edge supports in RPAs, to be secured by metal rods, track or road pins or wooden pegs. This, or a similar approach (negating the need for excessive disturbance in RPAs) will be used to minimise any adverse risk of impact on trees.
- **Illustrative specifications:** Final drawings will be prepared by the project engineer. These will be based on the illustrative manufacturers specifications for special surfacing included in Appendix 4, or an alternative 'low invasive' construction technique. These definitive plans can be secured by way of a suitably worded planning condition and approved by the council before any construction activity occurs on site.

5.3 Additional tree-related issues

- 5.3.1 **Site supervision:** Site personnel will be properly briefed regarding the tree protection issues before any work starts, and the tree protection will be inspected periodically to ensure the retained trees are protected in accordance with this document and any conditions imposed by the council.

- 5.3.2 **Installation of new services or upgrading of existing services:** Final details relating to services are traditionally left until after planning consent has been granted by the council. Where practicable, all new services will be outside RPAs, but where existing services within RPAs require upgrading or new provision is required, great care will be taken to minimise any disturbance. Trenchless installation will be the preferred option, but if this is not feasible, any excavation will be carried out by hand in accordance with the guidelines set out in NJUG Volume 4 - Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.
- 5.3.3 **Storage of materials, cement mixing and washing points:** All construction storage areas, cement mixing and washing points for equipment and vehicles will be outside RPAs, unless otherwise agreed with the council.
- 5.3.4 **Contractors car parking, site offices and welfare facilities:** Whilst it is possible to have site offices and welfare facilities within RPAs, care is needed in their positioning and also in the connection of water, electricity and drainage to service them. Therefore, these will generally be sited outside the RPAs, unless agreed previously with the council. Contractor's car parking facilities will also be located away from retained trees.
- 5.3.5 **Tree works:** Any tree pruning or tree removal operations are set out in the tree schedule included in Appendix 2. Additionally, those trees scheduled for removal are also shown on the Tree Protection Plan included in Appendix 1.
- 5.3.6 **Planning, communication and preliminary timing of events:** It is not unusual for the details of timing of operations that could impact on important trees to only be finalised once planning consent has been given. Site managers, clearance and construction teams, and other important personnel are normally only appointed at this stage and it is these people who will be crucial in delivering the tree protection detailed in this report. My experience is that the pre commencement site meeting is critical in terms of avoiding damage to trees and this particular aspect, along with tree protection issues should be specifically referenced in a suitably worded planning condition imposed by the council. In the intervening time I propose the following preliminary cascading timetable of events to help minimise any risk of impact on important trees. However, the following schedule

may be modified at the pre-commencement meeting, subject to discussion with all parties and agreement with the council:

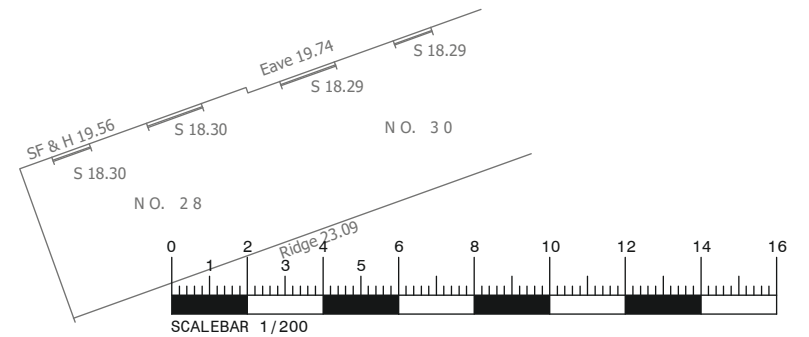
1. Pre-commencement site meeting
2. Extent of arboricultural supervision agreed
3. Tree works undertaken
4. Protective barriers erected before any clearance or construction activities occur on site and notification to the council that this is in place
5. Installation of new surfacing
6. Tree protection only removed at the end of the construction phase when there is no longer any risk to trees

Barrie Draper BSc (Hons) Arb TechCert(ArborA) CertArb(RFS)
Arboricultural Consultant

Date: **3 November 2017**

APPENDIX 1: TREE PROTECTION PLAN

1 A2 plan



This drawing was originally produced in colour, therefore any subsequent monochrome photocopies may not show appropriate levels of detail and should not be relied upon for the purposes of dealing with site tree issues

APPENDIX 2: TREE SCHEDULE AND INVENTORY

Background fill colour represents BS 5837 (2012) categories: A Category trees have green backgrounds, B Category trees have light blue backgrounds, C Category trees have grey backgrounds and U Category trees have red backgrounds.

Tree No.	Species	Ht (m)	Single stem diameter at 1.5m (cm)	Est. Dia. *	STEM DIAMETERS (Multi Stem)							Branch Spread (m)				Height above ground (m)	Age class	Notes	Management proposals	BS cat.	RPA area (m²)	RPA radius (m)	
					Multi stemmed trees with 1 - 5 stems (cm)					Multi stemmed trees with 1 - 5 stems combined (cm)	Multi stemmed trees >5 stems												
					1	2	3	4	5		Mean stem dia (cm)	No. of stems	N	E	S								W
All Trees																			Crown lift to 4m over site and crown clean canopies				
T1	Lime	13	42	-	-	-	-	-	-	-	-	-	5	3	4	1	3	MA	Part of linear group. Unbalanced canopy due to proximity to adjacent tree. Metal cage severely restricting lateral stem growth. Epicormic growth main trunk and base.	FELL	C1	80	5.0
T2	Lime	13	33	-	-	-	-	-	-	-	-	-	4	3	5	1	3	MA	Part of linear group. Unbalanced canopy due to proximity to adjacent tree. Metal cage severely restricting lateral stem growth.	FELL	C1	49	4.0
T3	Lime	15	47	-	-	-	-	-	-	-	-	-	6	3	5	2	3	MA	Part of linear group. Unbalanced canopy due to proximity to nearby tree. Metal cage severely restricting lateral stem growth.	FELL	C1	100	5.6

APPENDIX 2: TREE SCHEDULE AND INVENTORY

Tree No.	Species	Ht (m)	Single stem diameter at 1.5m (cm)	Est. Dia. *	STEM DIAMETERS (Multi Stem)								Branch Spread (m)				Height above ground (m)	Age class	Notes	Management proposals	BS cat.	RPA area (m²)	RPA radius (m)
					Multi stemmed trees with 1 - 5 stems (cm)					Multi stemmed trees with 1 - 5 stems combined (cm)	Multi stemmed trees >5 stems												
					1	2	3	4	5		Mean stem dia (cm)	No. of stems	N	E	S	W							
T4	Lime	10	36	-	-	-	-	-	-	-	-	-	3	3	3	1	3	MA	Part of linear group. Unbalanced canopy due to proximity to adjacent tree. Metal cage severely restricting lateral stem growth. Decay ingress main trunk at base. Canopy reduced previously, with deadwood in crown.	FELL	C1	59	4.3
T5	Elder	8	-	-	16	15	26	17	-	38	-	-	4	4	2	4	3	M	Small tree/shrub. Patches of dead bank on main stem and scaffolds. Decay at base and deadwood in canopy.	FELL	U	65	4.6
G6	Cherry plum and elder	11	54	-	-	-	-	-	-	-	-	-	-	3	5	5	3	OM	Small ornamental/fruit trees. Poor structural framework. Direct damage to nearby wall from root action. Decay main stem of cherry plum. Patches of dead bark on elder.		C1	132	6.5
G7	Cherry plum and elder	8	-	*	40	35	10	11	-	55	-	-	-	4	2	4	3	M	Small ornamental/fruit trees. Poor structural framework. Close proximity to wall.	FELL ELDER	C1	138	6.6

APPENDIX 2: TREE SCHEDULE AND INVENTORY

Tree No.	Species	Ht (m)	Single stem diameter at 1.5m (cm)	Est. Dia. *	STEM DIAMETERS (Multi Stem)							Branch Spread (m)				Height above ground (m)	Age class	Notes	Management proposals	BS cat.	RPA area (m²)	RPA radius (m)	
					Multi stemmed trees with 1 - 5 stems (cm)					Multi stemmed trees with 1 - 5 stems combined (cm)	Multi stemmed trees >5 stems												
					1	2	3	4	5		Mean stem dia (cm)	No. of stems	N	E	S								W
G8	Cherry and cherry plum	9	33	-	-	-	-	-	-	-	-	-	4	2	4	3	MA/M	Cherry twin stemmed with tight fork and included bark union. Decay ingress main trunk. Cherry plum multi stemmed, with poor structural framework and decay ingress secondary stems.		C1	49	4.0	
T9	Willow	8	-	*	30	35	-	-	-	46	-	-	0	0	0	0	n/a	MA/M	Severely pruned.		U	96	5.5

ABBREVIATIONS:

Abbreviations	Meaning	Abbreviations	Meaning	Abbreviations	Meaning
T	Individual tree	M	Mature	RPA	Root Protection Area
G	Groups of trees	MA	Maturing	<	Less than
H	Hedge	Y	Young	>	More than

APPENDIX 2: TREE SCHEDULE AND INVENTORY

TREE SCHEDULE GUIDANCE NOTES:

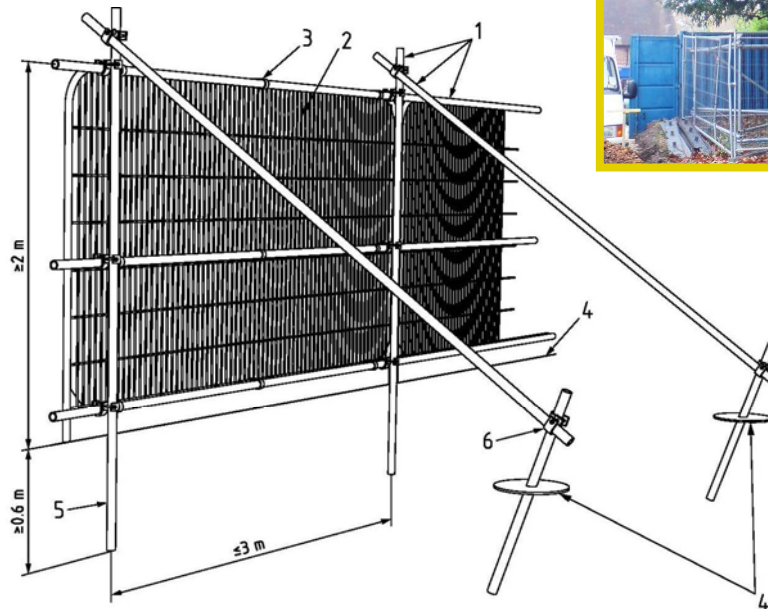
Tree number	Assigned during the site visit and also referenced on the plan in Appendix 1.
Species	Common name and referenced to scientific name in the above list. Where I have some doubt over the actual tree species, the genus will have been noted followed by sp. Where trees are numerous and present in groups, not every individual species may have been noted.
Height	Measurement of total tree height using a laser hypsometer to nearest metre or where clear line of site is not possible then an estimate based on interpolation of heights of nearby measured trees.
Stem diameters	Measurement of stem diameter either at 1.5m above ground (or in accordance with BS guidance where trees have multiple stems) with a forester's girth measuring tape. Diameters followed by asterisk symbol indicate estimated diameters because of access difficulties, presence of ivy or other obstructions. Where trees are present in a group, the tree with the largest stem diameter within the group will have been measured/estimated.
Est. Dia.	Estimated diameters due to access restrictions are indicated with an asterisk
Branch spread	Where appropriate and where ground conditions allow, an estimate of the crown spread at each of the cardinal compass points. Where only part of the site is affected by trees, measurement may be in one or two directions only
Existing height above ground level	Distance in metres to first significant branch or canopy or a height above which crown lifting operations would not be appropriate
Age class	Simplistic estimate of tree age in one of FOUR categories (young, maturing, mature or over mature).
Notes	Although this document is not intended to be a full and detailed report on tree health and safety, any significant structural defects or physiological conditions have been identified where these were visible. Where no entries are recorded, this indicates no observable issues were identified. Where there is restricted access to the base of a tree, its attributes are assessed from the nearest point of access. Climbing inspections are not carried out during a walkover tree survey and, if heavy ivy is present, tree condition is assessed from what can be seen from the ground.
Management proposals	The inspection of all trees was of a preliminary nature and only defects visible from the ground have been identified. Each individual tree may not have been inspected closely because of access difficulties and only defects visible from the inspection point have been identified. Monitoring may be indicated where tree risk can be adequately managed by increased frequency of site inspections. Further investigation may be indicated where additional data may be required beyond a purely visual assessment. However, a full post development tree inspection is recommended to establish that the trees retained during construction pose acceptable levels of risk once the development has been completed.
BS 5837 (2012) Category	Either U, A, B or C based on the BS 5837 (2012) guidance.
RPA and RPA radius	RPA and RPA radius calculations have been undertaken in accordance with the guidance set out in BS 5837 (2012).

APPENDIX 2: TREE SCHEDULE AND INVENTORY

TREE INVENTORY:

Common Tree Names	Scientific Tree Names		Common Tree Names	Scientific Tree Names
Cherry plum	<i>Prunus cersifera</i>		Lime	<i>Tilia sp</i>
Cherry	<i>Prunus sp</i>		Willow	<i>Salix sp</i>
Elder	<i>Sambucus nigra</i>			

APPENDIX 3: ILLUSTRATIVE SPECIFICATION FOR TREE PROTECTION BARRIERS



Key

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

Illustration taken from British Standard 5837 (2012): Trees in relation to design, demolition and construction – Recommendations.

The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts. The vertical tubes should be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed.

– BS 5837 (2012)

Ref: Tree Protection Barriers (Type 1)	Drawing No. TPB1
Scale: N/A	

APPENDIX 4: ILLUSTRATIVE SPECIFICATION FOR 'LOW INVASIVE' TYPE SURFACING IN RPAs

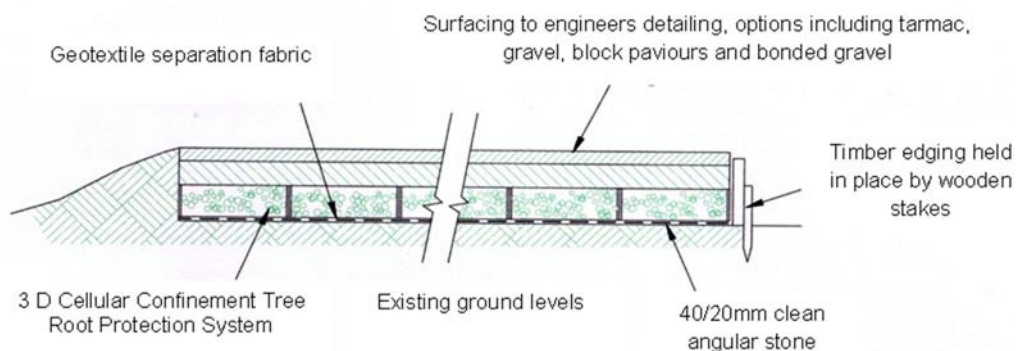


Illustration adapted from original drawings provided by Geosynthetics Ltd.

Appropriate sub-base options for new hard surfacing include three-dimensional cellular confinement systems. Alternatively, piles, pads or elevated beams can be used to support surfaces to bridge over the RPA or, following exploratory investigations to determine location, to provide support within the RPA while allowing the retention of roots greater than 25 mm in diameter.

– BS 5837 (2012)

Ref: No dig surfacing	Drawing No. NDS 1
Scale: N/A	

APPENDIX 4: ILLUSTRATIVE SPECIFICATION FOR 'LOW INVASIVE' TYPE SURFACING IN RPAs

CellWeb



The CellWeb System uniquely prevents rutting action of sub-soils by confining infill material within the hoop structure of the panel, increasing the infills shear strength. The use of a CellWeb System increases the load capacity of granular infill by up to 50% reducing the overall construction depth required. Perforated cell walls permit through drainage and also provides frictional interlock of the infill again increasing the shear strength of the system.

A non woven geotextile filtration/separation membrane is used beneath the system to prevent migration of materials and also to aid with drainage vertically through the system.

The CellWeb panels are infilled with a clean angular gravel which provides load support and permits air and moisture transfer to the roots ensuring the long term preservation of the tree root structure. (fig. 5)

Surfacing materials are at the discretion of the client, however for specific advice please contact our sales office.

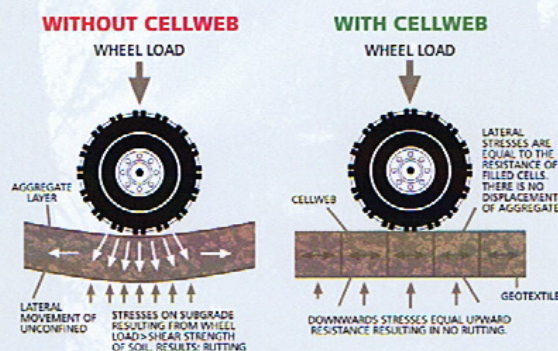


fig. 3

fig. 4

Benefits of using CellWeb

- Reduction in construction depth.
- Prevent compaction of sub-soils.
- Prevent oxygen/nutrient depletion.
- Environmentally friendly option.
- Fast and economic installation.
- Technical support available.

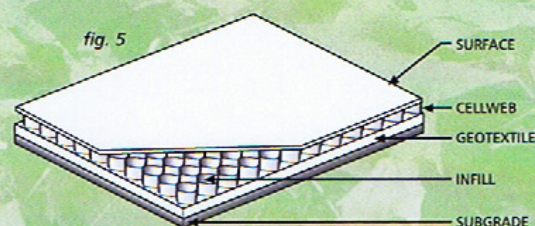


fig. 5

CellWeb is available in four cell depths; 75mm, 100mm, 150mm and 200mm.

The cell depth required is dependant upon specific site conditions. For specification details or project specific design assistance please contact our sales office.

Please contact:

Geosynthetics Limited
Fleming Road,
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Telephone: 01455 617139

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APPENDIX 5: BS 5837 (2012) – ASSESSMENT CATEGORIES

TREES FOR REMOVAL				
Category and definition	Criteria			Identification on plan
<u>Category U</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.</i>			RED
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria — Subcategories			Identification on plan
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
<u>Category A</u> 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)	GREEN
<u>Category B</u> 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	BLUE
<u>Category C</u> 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	GREY

APPENDIX 6: QUALIFICATIONS AND EXPERIENCE OF BARRIE DRAPER

- 1 Qualifications:** I have a BSc degree (with Honours) in Arboriculture from the University of Central Lancashire. I also hold a BTEC Higher National Diploma (HND) in Forestry (Lowland Management), the Arboricultural Association's Technician's Certificate in Arboriculture (Tech Cert), the Royal Forestry Society's Certificate in Arboriculture (Cert Arb) and the National Examinations Board Certificate in Forestry.
- 2 Career experience:** I began my arboricultural career in 1993 as an arborist with Portsmouth City Council. During my time with the council I worked for both the direct labour organisation and for a private contractor where I obtained valuable hands on experience in all aspects of arboriculture. From 1999 to 2002 I was employed as Senior Arborist by Parchment Housing Group, a housing association based near Portsmouth. I managed the Groups' tree stock on their behalf, carrying out tree inspections and practical management operations. I have also worked in local government, spending time with Thurrock Borough Council in Essex where I was the Tree and Landscape Officer, and with Winchester City Council, where I was Arboricultural Officer for a period of 2 years. During my time working in local government I was responsible for making Tree Preservation Orders, administering applications to work on protected trees and advising on planning applications when trees were considered material constraints on development. Working within a planning environment allowed me to gain valuable experience in the management of trees in development situations and an understanding of the planning process and how it relates to trees. From January 2005 I worked for Barrell Tree Consultancy Ltd advising clients on a wide range of tree related issues. I left the company in September 2008 and set up ecourban ltd, where I am currently the sole practitioner.



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