

YACHTHAVEN, HAYLING ISLAND

ENVIRONMENTAL STATEMENT

DECEMBER 2011

APPENDIX 10.1



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Arboricultural Implications Assessment and Method Statement

YACHTHAVEN, COPSE LANE, HAYLING ISLAND

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CONTENTS

No.	Title	Page
1	INTRODUCTION	2
2	SITE VISIT, DESCRIPTIONS AND SURVEY METHODOLOGY	4
3	ARBORICULTURAL IMPLICATIONS ASSESSMENT	6
4	SUMMARY OF THE IMPLICATIONS OF THE DEVELOPMENT ON TREES	11
5	ARBORICULTURAL METHOD STATEMENT	12
APPENDIX 1	Tree Protection Plan	17
APPENDIX 2	Tree schedule and inventory	18
APPENDIX 3	Root Protection Area (RPA) data	22
APPENDIX 4	Illustrative specification for tree protection barriers	23
APPENDIX 5	Illustrative specifications for 'low invasive' type surfacing in RPAs	24
APPENDIX 6	BS 5837 (2005) – Assessment categories	26
APPENDIX 7	Qualifications and experience of Barrie Draper	27

1 INTRODUCTION

- 1.1 **Instruction:** I am instructed by Yachthaven (Hayling) Ltd to survey the trees that could be affected by a development proposal at Yachthaven, Copse Lane, Hayling Island and prepare a Arboricultural Implications Assessment (AIA) and Arboricultural Method Statement (AMS) report.
- 1.2 **Scope of report:** All my observations are of a preliminary nature, and the tree survey was carried out from ground level without detailed investigations. 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.
- 1.3 **Document disclosure:** I have been provided with a topographical survey, drawing number 2000/025-fastnet. This shows the positions of the significant trees on or near the site, together with the existing buildings and other important features. I was also supplied with a copy of the proposed layout, drawing number 4784 1105 1.
- 1.4 **The Tree Protection Plan (TPP):** 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. The TPP has also been annotated to show proposed tree protection measures, and areas where there are activities in Root Protection Areas (RPAs), along with any tree management intentions.
- 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 7.
- 1.6 **Ecological constraints 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 work proceeds on site, I advise that guidance is sought from a qualified ecologist to check whether any statutory wildlife constraints apply to the site.

In addition, I have not checked with the council whether any of the trees on this site are covered by tree preservation orders, or whether it is located in a conservation area. 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 carried out.

2 SITE VISIT, DESCRIPTIONS, OBSERVATIONS AND SURVEY METHODOLOGY

2.1 **Site visit:** I visited the site on 25 October 2010 to gather my tree data. The weather at the time of my survey was clear, still and dry, with good visibility.

2.2 **Description of site and surrounds:** Yachthaven is located off of Copse Lane on Hayling Island (Figure 1). The site is accessed from the southern side of the road, via an unmetalled track and consists of an area of disused land (with some derelict buildings) which is located immediately adjacent to the nearby shore. A public footpath runs along the southern perimeter of the site (adjacent to the shore) and this links to another footpath which runs adjacent to part of the western boundary, before it heads in a north-westerly direction to meet Copse Lane.

2.3 **Observations of trees and other vegetation:** Groups of larger trees (with smaller understorey planting) are located for the most part between the public footpath and the western and north western boundaries of the site and also flanking the northern periphery of the main part of the site. The principal canopy class species within these groups is oak.



Figure 1: Approximate geographical location of the site in yellow

2.4 **Description of proposed development:** This development proposal is for a new marina, with residential development.

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 Appendices 2 and 3 and placed each individual tree or group in one of four categories (A, B, C or R), as set out in British Standard (BS) 5837: Trees in relation to construction – Recommendations. I have included the BS categorisations in Appendix 6 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 shown in the tree schedule in Appendix 2.

Attributing arboricultural values to tree belts/tree groups in this context is not especially helpful in assessing their importance. I have therefore (for the most part) categorised the trees based on their visual importance using the BS 5837 (2005) landscape criteria. I have assigned the more visually prominent trees to the A2 category, with those smaller, poorer quality or less prominent trees and groups assigned to the BS C2 Category accordingly.

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 tree data and Root Protection Area (RPA) calculations are shown in Appendix 3. As set out in paragraph 5.2.4 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 and other protective measures as shown on the plan included in Appendix 1. Where there is a need for incursions into RPAs, an initial 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 **Overview of the implications of the development proposal on trees:** BS 5837 (2005) – Trees in relation to construction – Recommendations sets out in some detail how trees on development sites should be managed. In general terms, the best quality trees or those belonging to the higher BS categories (A and B) are considered as potential constraints on any development proposal, whereas those belonging to Category C would not normally be retained where they would impose a significant constraint on site development or redevelopment. Category R trees are in such poor condition that they are normally removed for sound arboricultural management reasons, regardless of any development proposal. Therefore, these trees can be effectively discounted in the context of the planning process.

On this site a total of EIGHT individual trees and groups were recorded during the tree survey and were assigned to the BS 5837 (2005) categories, as set out in Figure 1 below:

Category A and B trees	A total of SIX trees and groups (G1, G2, G3, T4, G5 and G7) were rated Category A
Category C trees	A total of TWO groups (G6 and G8) was rated Category C
Category R trees	No trees or groups were rated Category R

Figure 1: Tree numbers and BS categories

I have focussed on the implications of the development proposal mainly on the important trees on or near the site (Category A) in terms of tree loss/retention and by the extent of any incursions into and/or disturbance to Root Protection Areas (RPAs).

Of the total of EIGHT trees and groups surveyed, SEVEN can potentially be retained, with only ONE group perhaps needing to have some changes to its existing configuration. Of the remaining trees and groups, FOUR will have activities arising from the development occurring within their RPAs. I have summarised the implications in Figure 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
-	G6 (partial)	G2, G3 T4 and G5	

Figure 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 to be retained (trees of high and moderate quality and value): All the high category trees surveyed will be retained and protected in accordance with the guidance set out in BS 5837 (2005). Consequently, no high category trees will need to be removed.

3.2.2 BS Category C trees to be removed (or those of low quality and value): 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, some category C trees/shrubs from group G6 may need to be removed to facilitate the development proposal. This group is located on (or close to) the eastern boundary of the site and consists of a reasonably diverse collection of trees/shrubs orientated in a north/south direction in a more or less linear formation. Many of the trees/shrubs are small in size, whilst others do not appear to be in particularly good condition. In addition, when viewed from a distance the planting gives an overall impression of being uncoordinated, with some trees having tall, drawn up form, whilst others have a more shrubby type appearance. There are also some gaps in the overall formation. Nonetheless, this group occupies a prominent position of the eastern boundary. Some of the vegetation in this area may need to be removed, but this will also provide an opportunity for some new tree and shrub planting that could be more visually coordinated and in keeping with the new development and its maritime environment. I do not perceive this potential limited loss of vegetation to be a particular problem,

provided there is sufficient replanting to maintain (and potentially improve) the boundary screening in this area.

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

3.3.1 **BS Category A and B trees and activities in RPAs:** Groups G2, G3 and G5 and tree T4 will have activities arising from the development occurring in their RPAs, as follows:

- **Upgrading of existing road infrastructure:** The construction of existing roads around the perimeter of the site close to trees in groups G3 and G5 and also tree T4 appears to be compacted aggregate fill. For the new development, it will be necessary to formalise the road access arrangement and also raise the levels slightly above the existing. The consensus following preliminary on-site discussions with PWP Architects is that this could be achieved using a 'low invasive' construction technique that would represent minimal risk of harm to the nearby trees. Clearly, the final design will need appropriate engineering input, but in principle the sub base for the new road configuration could be a cellular confinement system. This will negate the need for significant excavation and excessive disturbance in the RPAs of nearby trees, with the change in levels accommodated by selection of the appropriate depth of cell and also by the use of appropriate aggregate fills, if required. The use of cellular confinement systems is fully supported in BS 5837 (2005 - para 11.8). The removal of the existing compacted informal aggregate road close to the trees and its replacement with a suitably designed, carefully constructed and permeable surfacing would potentially would also be of benefit to the trees and be an improvement on the current situation.
- **Protection of trees adjacent to main access during construction:** There are important groups of trees (G1 and G2) positioned on either side of the existing access drive into the site. Issues regarding the movement of construction traffic in and out of the site have not been fully explored. However, in the event that construction traffic would utilise the existing access, appropriate consideration needs to be given to the potential implications of this on the nearby trees to be retained. The trees either side of the existing drive have RPA radii in the 5.5m to 8m range and I would tentatively suggest that the roots from these trees are likely to be

present under the existing access drive. Therefore, the individual BS derived RPAs of the trees can be viewed as coalescing to form a single sensitive area under the drive that needs to be protected. The drive is unmetalled and appears to be mainly compacted aggregate fill. Consequently, this will need to be upgraded to provide some degree of tree root protection, if the intention is to bring construction traffic into the site using the existing access. The protection of the ground and trees could be achieved by either the placing of a cellular confinement system (this could be temporary or permanent depending on the final intentions for surfacing), or could be achieved by the installation of a temporary metal roadway, such as that provided by Eve Trakway (www.evetrakway.co.uk). The protective barriers around the trees would need to be set back to allow sufficient space for construction traffic to enter and exit, with a combination of ground protection and tree barriers effectively protecting the trees during this crucial phase.

I have reviewed the above very carefully and considered any possible implications on the nearby trees arising from these activities close to their positions. My view is that provided these activities are appropriately supervised and correctly implemented, the trees indicated can be successfully retained with minimal risk of adverse effects.

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

3.4.1 Tree protection during development: The means of protecting trees on development sites can include the installation of protective barriers/ground protection, as well as the prohibition of potentially damaging activities. An Arboricultural Method Statement is included in Section 5 setting out the various issues associated with successful tree retention and protection in a development context on this site.

3.4.2 Strategy for new tree planting: At the current time the main part of the site is bereft of trees. The development proposal is therefore an opportunity to provide some substantial new tree planting that will complement the existing groups of trees located on the periphery of the site. The new trees will need to be carefully selected to ensure that they are in keeping with the development and appropriate to the maritime environment. However, my view is that with appropriate arboricultural input, the site

could accommodate new tree planting that would be able to attain a significant size in maturity, adding considerable amenity to an area that is currently devoid of trees.

4 SUMMARY OF THE IMPLICATIONS OF THE DEVELOPMENT ON TREES

- 4.1 **Summary:** Of the total of EIGHT trees and groups surveyed, SEVEN will be retained, with only ONE group needing to be remodelled, possibly requiring the removal of some of the existing shrubs and trees. Of the retained trees and groups, FOUR will have activities arising from the proposed development occurring within their RPAs. These activities include the installation of ground protection in the main access drive during the construction phase of the project and also the upgrading and formalising of the existing road infrastructure close to nearby trees. Details relating to these aspects, together with tree protection information are included in this report.

I have considered the situation in some detail, and my view is that in principle the development is arboriculturally acceptable. If careful planning is undertaken and appropriate care is adopted during construction, I believe that there will be little risk of any adverse impact on the nearby trees to be retained and any contribution that they make to public amenity or local landscape character.

5 ARBORICULTURAL METHOD STATEMENT

5.1 Tree protection issues

5.1.1 **Tree Protection Plan (TPP):** The plan in Appendix 1 is illustrative, and 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 Consulting. Normally, all the existing trees will have been numbered, with high categories (A and B) highlighted in green and blue rectangles and low categories (C and R) highlighted in grey and red respectively. However, on this site no Category B or R trees were recorded. The plan also shows the locations of the proposed protective measures, including areas where special care may be required.

5.1.2 **Protective barriers:** Information on barrier design based on BS 5837 (2005) guidance is included in Appendix 4, and the approximate location of the barriers is illustrated on the plan in Appendix 1. The protective barriers would need to 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.

5.1.3 **Ground protection:** The position of suitable ground protection is shown on the plan included in Appendix 1. This would need to be installed before any materials or machinery are brought onto the site, and before any clearance or construction activities occur. The final specification for the ground protection is to be finalised at a later date, but options include a temporary metal roadway or installation of a suitable load spreading cellular system to be installed as set out in 5.2.2 below.

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. Additionally, qualified arboricultural supervision is also needed to minimise the risk of misinterpretation and to reduce the chances of tree injury occurring. Accordingly, site personnel would need to be properly briefed before any activities start and all sensitive work will be inspected regularly during the course of operations. I have detailed appropriate work practices in the following paragraphs to reduce the potential of damage occurring to any nearby trees.

5.2.2 **Upgrading of existing road infrastructure:** Trees and groups G3, T4 and G5 may be affected by this activity. I have shown the position of 'low invasive' type surfacing on the plan included in Appendix 1, based on the BS derived RPAs. This would also need to act as ground protection for the parts of the trees RPA's that are outside the protective barriers, and so will need to be installed before any other construction activity occurs on site. The use of a cellular confinement system is advocated in BS 5837 (2005) as an appropriate way to achieve hard surfacing over tree roots, and the following guidance is based on this principle. However, the information below and the specifications included in the Appendix 5 will need to be reviewed by an engineering specialist at an early stage to ensure that the final construction is appropriate from an engineering viewpoint, suitable for the purpose intended and ties in with the new site levels.

- **General points:** Extensive areas of surfacing in RPAs will generally be of a permeable construction to allow water ingress to tree roots, and to assist the movement of gases in and out of the soil profile. To avoid localised compaction and other ground disturbance, the sub base for the surfacing will generally be a cellular and load spreading construction, requiring no excavation (or very limited excavation) during installation.
- **Installation:** 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 aggregate fill to a depth of 50-100mm (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.

In exceptional circumstances where roots may need to be cut, those less than 25mm in diameter will normally only be cut under appropriate supervision. Any exposed roots over 25mm will only be severed on the advice of the arboriculturalist, in consultation with the council's tree officer.

- **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 stone (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. A temporary wearing course of tarmac and/or aggregate, separated by a geotextile membrane is likely to be the most appropriate way of providing a suitable ground protection/working surface during the clearance and construction phase of the project. At the final stages of the construction, the temporary wearing course will be removed (under arboricultural supervision), and the final surfacing will be installed. 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 pre-formed edging, wooden boards or railway sleepers is suggested in BS 5837 (2005) 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 5, 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:** Whilst it is possible to work within RPAs, high levels of care and supervision will generally be required. Qualified arboricultural supervision is essential during arboriculturally sensitive operations to minimise the risk of any confusion, which could result in mistakes and damage occurring. Therefore, site personnel will be properly briefed (where appropriate) before any work starts, and the ongoing activities will be inspected by the arboriculturalist at crucial times to assure that the work is carried out 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.

5.3.6 **Planning, communication and 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 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
5. Ground protection installed before any clearance or construction activities occur on site
6. Installation of new surfacing – Where this is to also act as ground protection, this must be installed before any clearance or construction activities occur on site
7. Installation of services

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Arboricultural Consultant

Date: **31 March 2010**

APPENDIX 1: TREE PROTECTION PLAN

1 A1 plan



APPENDIX 2: TREE SCHEDULE AND INVENTORY

Background fill colour represents BS 5837 codes: A Category trees have green backgrounds, B Category trees have light blue backgrounds, C Category trees have grey backgrounds and R Category trees have red backgrounds.

Tree number	Species	Height (m)	Stem diameter (cm)		Branch spread (m)				Height crown clearance (m)	Age class	Notes: Including physiological and structural condition	Management proposals	BS category
			@1.5 m	Base	N	E	S	W					
All trees												Crown clean all trees. Where appropriate, crown lift trees to 4m over site and 5m over public carriageway	
G1	Oak	<12	<65		<8	<8	<8	<8	4	M	Two trees flanking the entrance to the site. Ivy on main stems		A2
G2	Oak with mainly hawthorn and field maple understorey	<12	<45*		<8	<8	<8	<8	n/a	MA	Trees with similar attributes flanking the side of the compacted aggregate access drive into the site.		A2
G3	Oak with mainly hawthorn and field maple understorey	<10	<45*		<6	<6	<6	<6	n/a	MA	Trees with similar attributes adjacent to northern boundary, with compacted aggregate drive to south		A2
T4	Oak	12	58		<8	<8	<8	<8	4	MA	Single tree positioned between G2 and G5		A2
G5	Oak with mainly hawthorn and field maple understorey	<9	<40*		<5	<5	<5	<5	n/a	MA	Trees with similar attributes adjacent to western and north western boundary		A2

APPENDIX 2: TREE SCHEDULE AND INVENTORY

Tree number	Species	Height (m)	Stem diameter (cm)		Branch spread (m)				Height crown clearance (m)	Age class	Notes: Including physiological and structural condition	Management proposals	BS category
			@1.5 m	Base	N	E	S	W					
G6	Mixed species including poplar with goat willow, hawthorn and field maple shrubs	<13		<40*	<6	<6	<6	<6	n/a	MA	Poorer quality boundary planting toward western perimeter. Gappy and sporadic in places	Remodel group removing trees and shrubs where appropriate and replanting with new suitable species	C1/C2
G7	Oak with mainly hawthorn and field maple understorey	<14	<80		<8	<8	<8	<8	n/a	M	Trees with similar attributes adjacent to far western boundary		A2
G8	Mainly hawthorn and blackthorn	<4		<25*	<4	<4	<4	<4	n/a	MA	Scattered individual and groups of small trees/shrubs with similar attributes		C2

ABBREVIATIONS:

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

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.
Stem diameter	Measurement of stem diameter either at ground level or 1.5m above ground 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.
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
Height crown clearance	Distance in metres from where main crown begins to ground level and the point beyond where crown lifting would not be appropriate.
Age class	Simplistic estimate of tree age in one of three categories (young, maturing or 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 (2005) Category	Either R, A, B or C based on the BS 5837 (2005) guidance.

APPENDIX 2: TREE SCHEDULE AND INVENTORY

TREE INVENTORY:

Common Tree Names	Scientific Tree Names		Common Tree Names	Scientific Tree Names
Blackthorn	<i>Prunus spinosa</i>		Hawthorn	<i>Crataegus monogyna</i>
Field maple	<i>Acer campestre</i>		Oak	<i>Quercus robur</i>
Goat willow	<i>Salix caprea</i>		Poplar	<i>Populus sp</i>

APPENDIX 3: ROOT PROTECTION AREA (RPA) DATA

Tree No	Diameter (cm)		RPA radius (m)	RPA area (m ²)
	@1.5m	Base		
G1	<65		7.8	191
G2	<45*		5.4	92
G3	<45*		5.4	92
T4	58		7.0	152
G5	<40*		4.8	72
G6		<40*	4.0	50
G7	<80		9.6	290
G8		<25*	2.5	20

Notes:

General	Tree numbers and stem diameters are the same as those identified in the tree schedule in Appendix 2. RPA radius and RPA area calculations have been undertaken in accordance with the guidance set out in BS 5837 (2005).
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APPENDIX 4: ILLUSTRATIVE SPECIFICATION FOR TREE PROTECTION BARRIERS

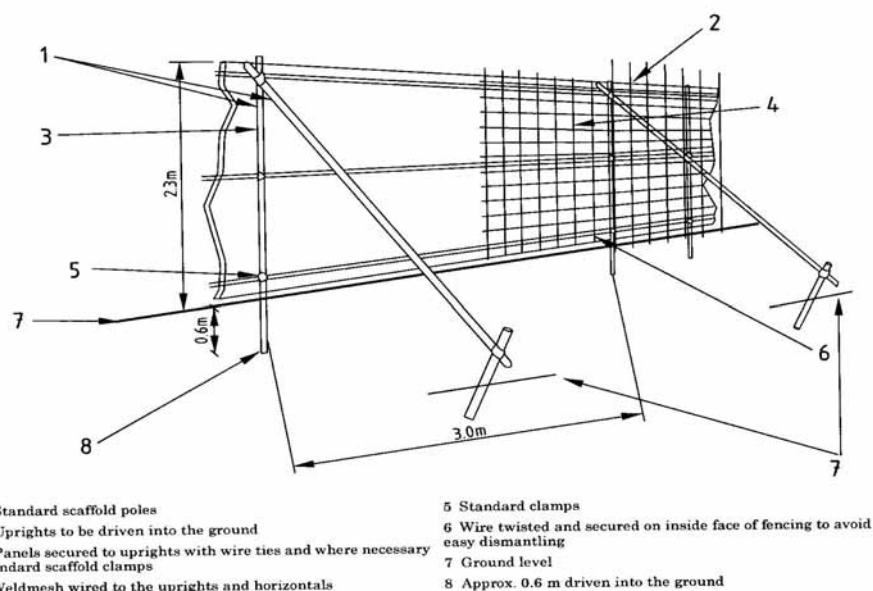


Illustration taken from British Standard (BS) 5837: Trees in relation to construction – Recommendations.

‘Barriers shall be fit for purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around retained trees. On all sites, special attention should be paid to ensuring that barriers remain rigid and complete. In most cases barriers should consist of a scaffold framework, comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at maximum interval of 3m. Onto this, weld-mesh panels should be securely fixed with wire or scaffold clamps.’

– BS 5837 (2005)

Ref: Tree Protection Barriers

Drawing No. TPB1

Scale: N/A

APPENDIX 5: ILLUSTRATIVE SPECIFICATION FOR 'LOW INVASIVE' TYPE SURFACING IN RPAs

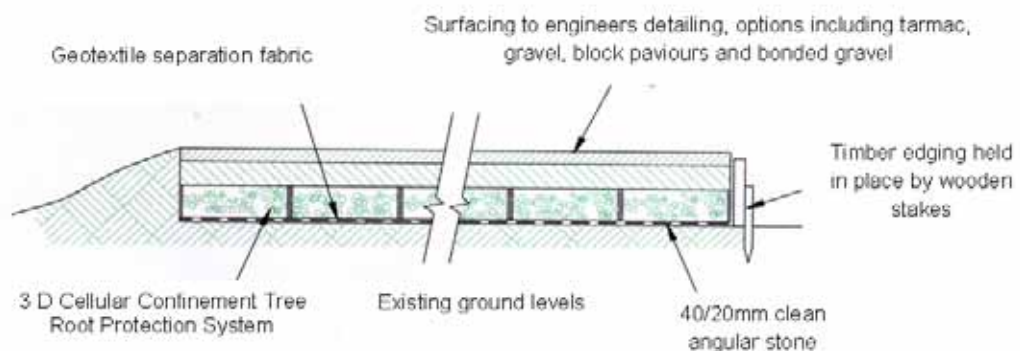


Illustration adapted from original drawings provided by Geosynthetics Ltd.

'Where the construction of hard surface access cannot be avoided within the root protection area, a no-dig design should be used to avoid root loss due to excavation. In addition the structure of the hard surface should be designed to avoid localized compaction by evenly distributing the carried weight over the track width and wheelbase of any vehicles that will use the access. Such designs might include the use of a three dimensional cellular confinement system as an integral component of the sub-base, to act as a load suspension layer....Where the new access would cover in excess of 20 % of the RPA or be wider than 3 m within it, it should be constructed so as to allow moisture infiltration and gaseous diffusion.... If a hard surface is proposed above the granular material, a permeable and gas-porous finished surface (wearing course) should be installed'.

– BS 5837 (2005)

Ref: No dig surfacing

Drawing No. NDS1

Scale: N/A

APPENDIX 5: 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.

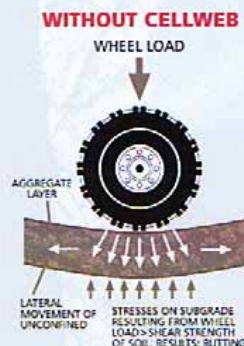


fig. 3

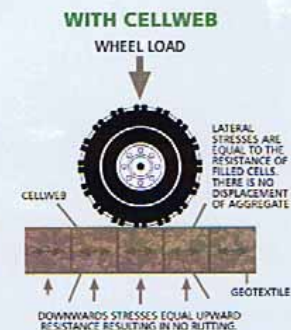
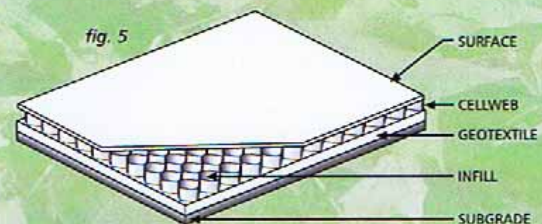


fig. 4

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.



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,
Harrowbrook Ind. Estate,
Hinckley, LE10 3DU.

Telephone: 01455 617139

Facsimile: 01455 617140 Email: sales@geosyn.co.uk

www.geosyn.co.uk

APPENDIX 6: BS 5837 (2005) – ASSESSMENT CATEGORIES

TREES FOR REMOVAL

Category and definition	Criteria	Identification on plan
Category R Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be 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 NOTE Habitat reinstatement may be appropriate (e.g. R Category tree used as a bat roost: installation of bat box in nearby tree).	RED

TREES TO BE CONSIDERED FOR RETENTION

Category and definition	Criteria — Subcategories			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
<u>Category 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 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 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 150 mm	Trees not qualifying in 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	GREY
	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 150 mm should be considered for relocation			

APPENDIX 7: 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 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. More recently, (since 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 have been working as an independent consultant since.
- 3 Continuing professional development:** I also keep professionally current through regular attendance at seminars and conferences.



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