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Arboricultural Implications Assessment and Method Statement
'WINDROOS NURSERY', WORTHING ROAD, LITTLEHAMPTON

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1 INTRODUCTION

- 1.1 **Instruction:** I am instructed by Mr Lyons to survey the trees that could be affected by a development proposal at Windroos Nursery, Worthing Road, Littlehampton and prepare an Arboricultural Implications Assessment (AIA) and Arboricultural Method Statement (AMS) report to support the current outline planning application on the site.
- 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. I was not able to fully assess the trees outside the boundaries on the adjacent site because of access restrictions. I have therefore confined observations of them to what was visible from within the site.
- 1.3 **Document disclosure:** I have been provided with a topographical survey, drawing number 022.1831-S1. 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 SARU 161283 03, dated 08.07.10.
- 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 8.

- 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.

tree, hedge 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, group or hedge 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 7 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 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 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).

2.7 Revisions to the provided land survey: During my site visit, I noted that some trees (part of G8 and H17) were not shown on the provided topographical survey. I have illustrated their approximate positions on the plan in Appendix 1, but these tree positions have not been precisely surveyed.

Of the total of TWENTY TWO trees, groups and hedges surveyed, FIVE will be retained and FOURTEEN will need to be removed to facilitate the redevelopment of the site. An additional THREE trees are in such poor condition that they will need to be removed for management reasons unconnected with the development. Of the trees and groups to be retained, ONE group will have activities arising from the development occurring in its 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
T15	T6, G7, G8, T9, G10, T11, T12, H13, T14, G19, G20, G21 and G22	G18 (PART OF GROUP)	-

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 removed (trees of high and moderate quality and value): Only ONE Category B tree (T15) will need to be removed to facilitate the development. This tree is internal to the site and as such it makes no significant contribution to local landscape character. I therefore do not believe that its loss will have any impact on public amenity. The central area of public open space will afford the opportunity for significant new tree planting and there are also spaces around the site that could also accommodate new trees. Indicative new tree positions are shown on the plan in Appendix 1. My view is that if carefully selected, the new planting would more than compensate for the loss of these trees and provide a pleasant long term treed landscape for incoming residents. Details relating to new tree planting could be dealt with as reserved matters or by way of a suitably worded planning condition.

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, THIRTEEN category C trees, groups and hedges (T6, G7, G8, T9, G10, T11, T12, H13, T14, G19, G20, G21 and G22) will need to be removed to facilitate the development proposal. These are either small in size, in poor condition (with limited safe and useful life expectancy) or are typical unremarkable domestic conifer type planting with little aesthetic or amenity value. Again, with the large areas of open space available for new tree planting, my view is that new good quality trees could easily mitigate the loss of these low quality and low value trees and hedges.

3.3 Additional implications arising from the development proposal

3.3.1 BS Category A and B trees and activities in RPAs: Trees in Group G18 would have activities arising from the development occurring in their RPAs, as follows:

- **New surfacing:** New 'low invasive' surfacing would need to be installed within the RPAs of some trees in group G18. I do not perceive any reason why this could not be installed using a 'low invasive' technique. This will negate the need for significant excavation and excessive disturbance in the RPAs of any nearby trees. The use of cellular confinement systems is fully supported in BS 5837 (2005 - para 11.8). The surfacing would need to be installed before any clearance or construction activities occur on site and would act as ground protection throughout the construction phase. Consequently, the protective barrier positions shown on the plan included in Appendix 1 are set back from the full BS protection distances to allow space for this to be installed. As well as car parking spaces, the end of the access road has also been shown as 'low invasive' type surfacing. I understand from my discussions with the design team that for the purposes of the outline application that access will halt at the boundary and not proceed to link up with the Faulkner Gardens at the current time. I have shown this area to be 'low invasive' surfacing allowing the two trees either side of the access road to be retained.
- **Removal of soil heaps in RPAs of trees in G18:** There is some heaped areas of what appears to be 'made up' ground toward the south western corner of the site and this is in the RPAs of some trees in this group. This does not look to me to be a natural 'topographical' feature and is probably a remnant from the former

agricultural/horticultural use of the site. The removal of this would be beneficial to the nearby trees and I have set out preliminary detail of how this could be done with minimal risk in Section 5 of this report.

I have reviewed all the above issues 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 are appropriately supervised and correctly implemented, these trees can be successfully retained without any adverse effects.

3.4 BS Category R trees normally removed for management reasons: Trees categorised as R are generally in such poor condition that they are normally removed for management because of their physiological or structural condition. On this site, I have assessed THREE trees (T3, T4 and T5) as falling into Category R. Consequently, these trees are scheduled for removal, but in line with guidance set out in BS 5837 (para. 4.3.4), I do not believe that they should not be seen as a consideration in the planning process.

3.5 Residential occupancy and post development pressure on trees: The issues surrounding trees, new buildings and acceptable levels of daylight are complex. Issues such as orientation and aspect of the buildings, proximity to the tree or trees, tree type, foliage size and density are all important aspects. In this instance, I have considered the potential impact of trees in G18 to cause problems once residential occupancy occurs. I believe that it is relevant that these trees are positioned to the west of the development and have tall, thin crown profiles, with light canopies. There may be some interception of sunlight toward the end of the day, but my view is that this will not be too detrimental for incoming residents because of the aforementioned characteristics of the trees. If these trees are appropriately managed, I do not think that there will be significant future pressure to remove these trees because of nuisance or perceived insufficient levels of daylight or sunlight.

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

3.6.1 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. In addition, the use of specialist

engineering solutions is sometimes required to reduce any potential impact to an acceptable level. As well as physical tree protection, monitoring/supervision may also be required to ensure that the specified protective measures remain in place during the construction phase. A preliminary Arboricultural Method Statement is included in Section 5, and details the various issues associated with successful tree protection in a development context on this site.

- 3.6.2 **New tree planting:** Some trees and hedges will be lost from the site to facilitate the development proposal. However, most of these are from the lower BS 5837 (2005) categories and given the low quality of these trees I believe that their loss could be mitigated by the provision of new tree planting within the site. If carefully selected the new tree planting would be more sustainable than the existing poor quality trees and could make a significant contribution to the overall tree cover of the area.

4 SUMMARY OF THE IMPLICATIONS OF THE DEVELOPMENT ON TREES

- 4.1 **Summary:** Of the total of TWENTY TWO trees, groups and hedges surveyed, FIVE will be retained and FOURTEEN will need to be removed to facilitate the redevelopment of the site. An additional THREE trees are in such poor condition that they will need to be removed for management reasons unconnected with the development. Of the trees and groups to be retained, ONE will have activities arising from the development occurring in their RPAs. These activities include the installation of new hard surfacing and removal of existing soil heaps. These aspects could be the subject of special measures to minimise any risk of impact on trees, and preliminary details relating to this and tree protection are included in this report. I have considered the situation in some detail, and my view is that the principle of development as outlined in the proposed plans is arboriculturally acceptable, with any new tree planting making a positive impact with regard to the landscape character of the area.

5 PRELIMINARY 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 A trees were recorded.

The plan also shows the locations of the proposed protective measures, including areas where special care may be required and new indicative tree planting positions. 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 (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 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.

5.1.3 **Ground protection:** RPAs outside protective barriers will be covered in ground protection and the position of ground protection is shown on the plan included in

completion of the removal of the heaped soil and vehicular or repeated pedestrian access across the RPA will not be permitted.

5.2.3 Installation of new surfacing: Some trees in group G18 may also 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. This will also need to act as ground protection for the parts of the RPAs that are outside the protective barriers, and so will have 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, 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.

- **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 (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 compacted top layer of soil 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.

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 clean angular stone (typically 20-40mm), 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 building 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 6, 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.

5.3.6 **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
5. Ground protection installed before any clearance or construction activities occur on site
6. Removal of soil heaps/made up ground
7. 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
8. Installation of services

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Arboricultural Consultant

Date: **8 July 2010**

APPENDIX 1: TREE PROTECTION PLAN

1 A2 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													
G1	Ash & cherry	<5	<35*	-	-	-	-	-	3	MA	Small trees	Crown clean all trees. Where appropriate, crown lift trees to 4m over site	C1
G2	Mainly hawthorn	<5	<40*	-	-	-	-	-	N/A	MA	Small trees/screening		C1
T3	Monterey cypress	4	41	-	-	-	-	-	N/A	MA	DEAD		FELL
T4	Monterey cypress	13	80	-	5	5	6	3	4	M	Dying	FELL	R
T5	Monterey cypress	14	110*	-	6	6	6	4	4	M	Multi stemmed at ground level, one trunk removed, Severely pruned, with extensive deadwood	FELL	R
T6	Lawson cypress	<6	22	-	2	2	2	2	N/A	Y	Small unremarkable domestic conifer	FELL	C1
G7	Leyland cypress	<10	<25*	4	-	3	-	-	N/A	Y	Unremarkable domestic conifer in poor condition	FELL	C1
G8	Willow & pittosporum	<12	<35*	-	<6	-	<6	<6	3	MA	Trees with poor architectural framework	FELL	C1

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						
T9	Monterey cypress	17	114		4	5	6	6		5	OM	Twin stemmed with tight fork, excessively crown raised with multiple old pruning wounds	FELL	C1
G10	Lawson cypress	<5		<30*	-	-	-	-		N/A	Y	Small unremarkable domestic conifers	FELL	C1
T11	Oak	9	45		2	-	4	4		3	Y	Poor architectural framework and unbalanced crown	FELL	C1
T12	Holly	8	20		2	2	2	2		N/A	MA	Small tree/shrub in close proximity to adjacent tree	FELL	C1
H13	Mainly privet	<6		<24*	-	-	-	<4		N/A	M	Boundary hedge	FELL	C1
T14	Monterey cypress	11	86		2	4	5	4		4	M	In poor condition, severely pruned with unbalanced crown	FELL	C1
T15	Eucalyptus	12		107	8	8	10	9		3	M	Internal site tree. Multi stemmed at 1.5m, cable constriction of one stem	FELL	B2
G16	Monterey pine	<10	<50*		-	<4	-	<4		3	Y/MA	Offsite trees - Largest tree in middle with estimated stem diameter, two smaller trees either side	Cut back canopies to boundary	B1
H17	Mainly hawthorn	<5		<20*	-	2	-	-		N/A	MA	Hedge		C1
G18	Lombardy poplar	<21		<80*	-	<6	-	-		4	M	Some trees with tight fork, one tree with stem defect (see plan)	FELL TREE WITH STEM DEFECT FIFTH IN LINE FROM THE NORTHERN END OF GROUP	B1

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					
G19	Lawson cypress	<7		<40*	3	3	3	3	N/A	M	Unremarkable domestic conifer. Lawson cypress cultivar with multiple stems and tight forks	FELL	C1
G20	Leyland cypress	<15		<65	4	4	4	4	3	MA	Unremarkable domestic conifer	FELL	C1
G21	Lawson cypress	<7		<35*	4	4	4	4	N/A	MA	Unremarkable domestic conifer	FELL	C1
G22	Leyland cypress	<15		<60*	-	4	-	4	3	MA	Unremarkable domestic conifer	FELL	C1

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.
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
Ash	<i>Fraxinus excelsior</i>		Lombardy poplar	<i>Populus nigra 'Italica'</i>
Cherry	<i>Prunus</i> sp		Monterey cypress	<i>Cupressus macrocarpa</i>
Eucalyptus	<i>Eucalyptus</i> sp		Monterey pine	<i>Pinus radiata</i>
Hawthorn	<i>Crataegus monogyna</i>		Oak	<i>Quercus robur</i>
Holly	<i>Ilex aquifolium</i>		Pittosporum	<i>Pittosporum tenuifolium</i>
Lawson cypress	<i>Chamaecyparis lawsoniana</i>		Privet	<i>Ligustrum vulgare</i>
Leyland cypress	x <i>Cupressocyparis leylandii</i>		Willow	<i>Salix</i> sp

APPENDIX 3: ROOT PROTECTION AREA (RPA) DATA

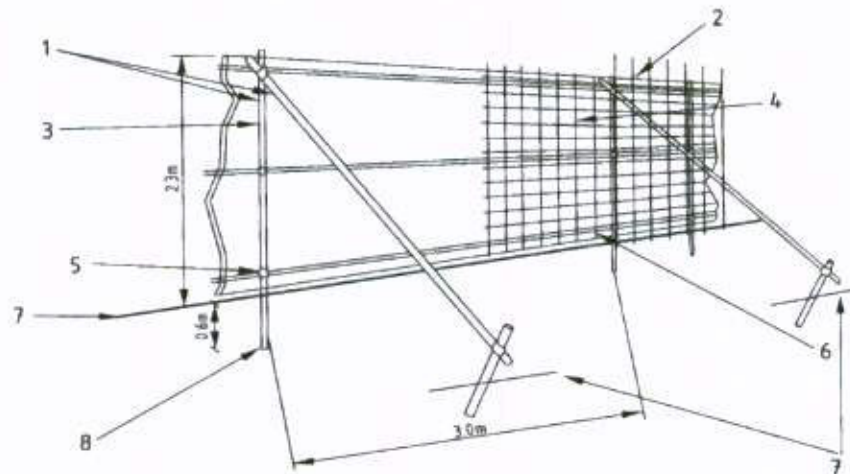
Tree No	Diameter (cm)		RPA radius (m)	RPA area (m ²)
	@1.5m	Base		
G1		<35*	3.5	38
G2		<40*	4.0	50
T3	41		4.9	76
T4	80		9.6	290
T5		110*	11.0	380
T6	22		2.6	22
G7		<25*	2.5	20
G8		<35*	3.5	38
T9	114		13.7	588
G10		<30*	3.0	28
T11	45		5.4	92
T12	20		2.4	18
H13		<24*	2.4	18
T14	86		10.3	335
T15		107	10.7	360
G16	<50*		6.1	118
H17		<20*	2.0	13
G18		<80*	9.6	290
G19		<40*	4.0	50
G20		<65	6.5	133
G21		<35*	3.5	38
G22		<60*	6.0	113

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).

APPENDIX 4: ILLUSTRATIVE SPECIFICATION FOR TREE PROTECTION BARRIERS



- | | |
|--|--|
| 1 Standard scaffold poles | 5 Standard clamps |
| 2 Uprights to be driven into the ground | 6 Wire twisted and secured on inside face of bracing to avoid easy dismantling |
| 3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps | 7 Ground level |
| 4 Weldmesh wired to the uprights and horizontals | 8 Approx. 0.6 m driven into the ground |

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 GROUND SURFACE PROTECTION IN RPAs

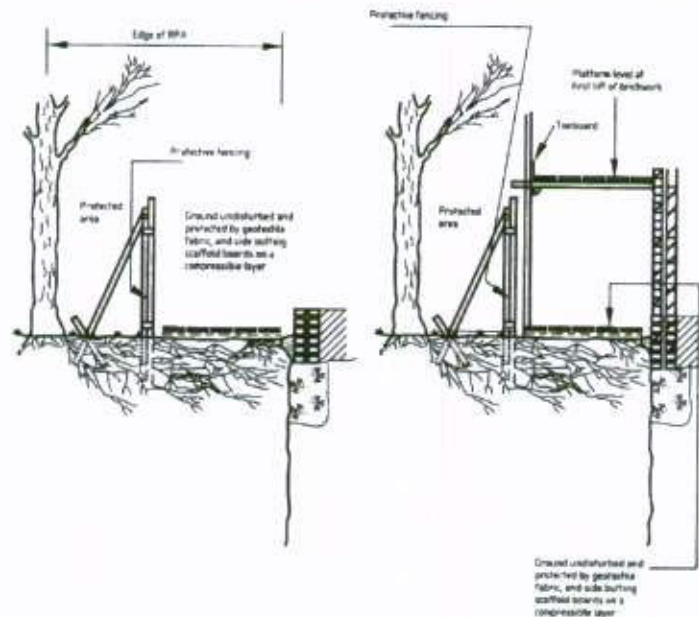


Illustration taken from British Standard (BS) 5837: Trees in relation to construction – Recommendations.

'For pedestrian access within the RPA, the installation of ground protection in the form of single thickness of scaffold boards on top of a compressible layer laid onto a geotextile, or supported by a scaffold may be acceptable.'

– BS 5837 (2005)

Ref: Ground Protection

Drawing No. GP1

Scale: N/A

APPENDIX 6: ILLUSTRATIVE SPECIFICATION FOR 'LOW INVASIVE' TYPE SURFACING IN RPAs

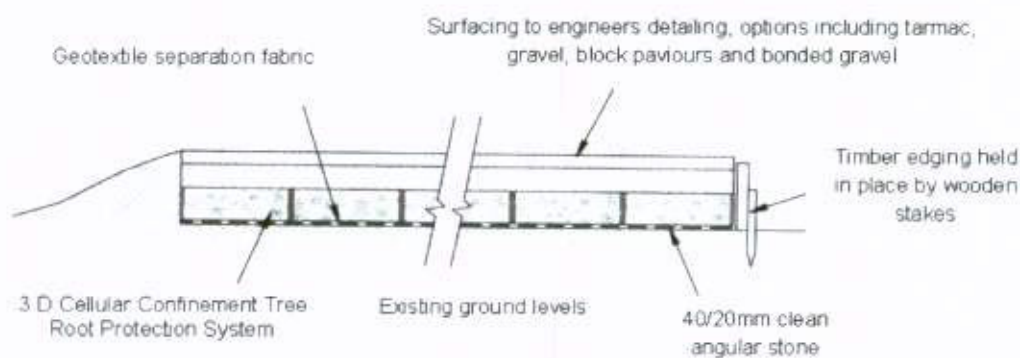


Illustration adapted from original drawings provided by Geosynthetics Ltd.

'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 6: 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.

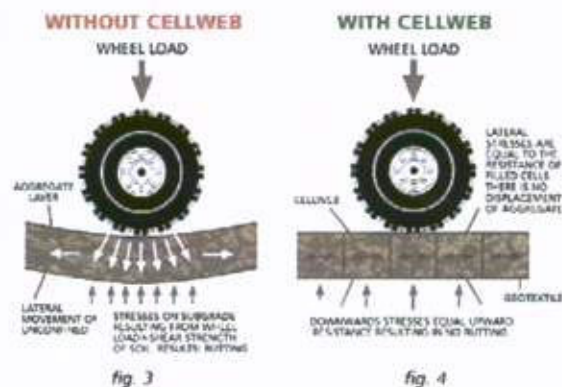


fig. 3

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.

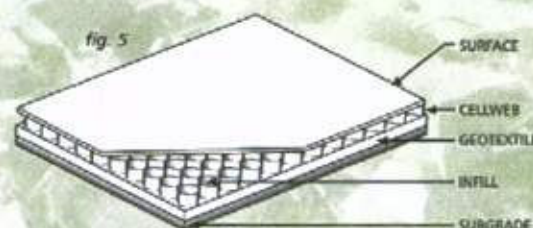


fig. 5

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

Telephone: 01455 617139

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

www.geosyn.co.uk

APPENDIX 7: BS 5837 (2005) – ASSESSMENT CATEGORIES

TREES FOR REMOVAL

Category and definition	Criteria	Identification on plan
<u>Category R</u> 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 8: 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 in Forestry (Lowland Management), the Arboricultural Association's Technician's Certificate in Arboriculture, the Royal Forestry Society's Certificate in Arboriculture 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.

