



Arboricultural Implications Assessment and Method Statement



Land between Beech Grove and Goldring Close
Hayling Island

Arboricultural Implications Assessment and Method Statement
LAND BETWEEN BEECH GROVE AND GOLDRING CLOSE, HAYLING ISLAND

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1 INTRODUCTION

- 1.1 **Instruction:** I am instructed by Tolcarne Drive Developments to report on trees that could be affected by a development proposal at land between Beech Grove and Goldring Close, Hayling island and prepare an Arboricultural Implications Assessment (AIA) and preliminary Arboricultural Method Statement (AMS) to support an outline planning application on the site.
- 1.2 **Document disclosure:** I have been provided with a topographical survey, drawing reference 1375. This shows the positions of the significant trees on or near the site, together with other important features. I was also supplied with a copy of the proposed layout, drawing number 9711 P 02 showing a new outline site configuration.
- 1.3 **Scope of report:** All my observations are of a preliminary nature and the tree survey was carried out from ground level without any investigations using invasive or diagnostic equipment. The site is currently used as horse grazing and it is subdivided by electrical and physical fences into a number of small plots. Consequently, I was not able to fully view all the trees detailed in this report from all directions as access was restricted. I have therefore confined observations of them to what was visible from accessible vantage points within the site. I have not checked the accuracy of the positions of the trees shown on the provided plans and I have estimated most dimensions (including stem diameters due to access problems) 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. The Tree Protection Plan has also been annotated to show tree 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 7.
- 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, no checks have been made 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 carried out.

2 SITE VISIT, DESCRIPTIONS, OBSERVATIONS AND SURVEY METHODOLOGY

2.1 **Site visit:** I visited the site on 13 April 2012 to gather my tree data. The weather at the time of my survey was clear, still and sunny , with good visibility.

2.2 **Description of site and surrounds:** The site is located on land positioned between Beech Grove and Goldring Close on Hayling Island. The site is an area of grassland and it has been sub-divided into a number of small irregular shaped plots by the positioning of physical and electrical fencing/barriers. These plots are currently being grazed by horses. To the east of the site there is additional grazing/farmland, with residential development to the north and south and south-west. There is a school to the north-west.

2.3 **Observations of trees and other vegetation:** The principle vegetation on the site are trees and hedges that are located mainly around or close to the site boundaries. Of those trees of significance, the predominant tree species is oak.

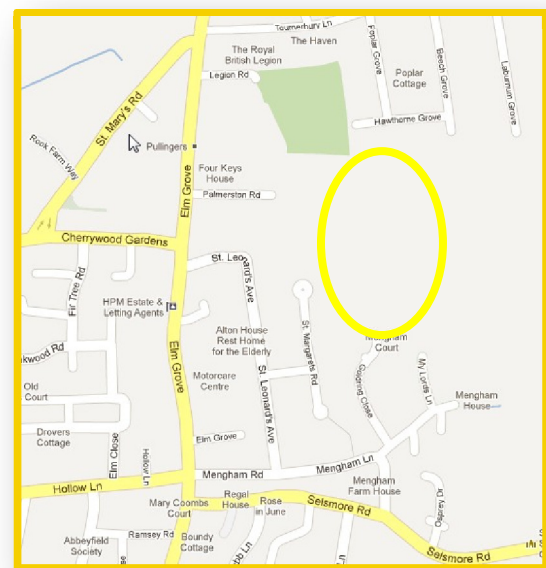


Figure 1: Approximate geographical location of site in yellow

2.4 **Description of proposed development:** This outline development proposal is to construct 131 new dwellings on the site.

2.5 **Soil assessment:** BS 5837 (2012) advocates that a soil assessment should be carried out to inform decision relating to 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 consequently a full geotechnical site investigation needs to be undertaken to provide a more in-depth level of information regarding soil type for the site.

- 2.6 **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 and hedges 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 Trees in relation to design, demolition and 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 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.

- 2.7 **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 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).

3 ARBORICULTURAL IMPLICATIONS ASSESSMENT

- 3.1 **Overview of the implications of the development proposal on trees:** BS 5837 (2012) – Trees in relation to design, demolition and construction – Recommendations 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 considered 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 as they cannot realistically be retained as living trees in the context of the 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 a total of THIRTY SIX individual trees, hedges 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	A total of TWENTY trees and groups (T2, G5, G6, T7, G12, G15, T19, T20, T21, G23, G25, T26, G27, G29, T30, T31, G32, G33, G34 and G35) were rated Category B
Category C trees	A total of FOURTEEN trees, groups and hedges (G1, T3, H4, T8, G9, G10, G11, T13, G14, G17, G18, G22, G24 and G36) were rated Category C
Category U trees	A total of TWO trees (T16 and T28) were rated Category U

Table 1: Tree numbers and BS categories

No Category A trees were recorded during my survey and I have focussed on the implications of the development proposal mainly on the Category B trees on or near the site and to a lesser extent on any Category C trees present.

Of the total of THIRTY SIX trees, groups and hedges surveyed, only FIVE will need to be wholly or partially removed. Additionally, only TWO trees and parts of ONE group will have activities arising from the development occurring in their RPAs. I have

summarised the implications on Category B and C 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 B	Category C	Category B	Category C
Small part of G15 and part of G32	G1, G24 and G33	T2 (formation of new access) T30 and part of G34 (installation of ground protection for temporary access) Part of G34 (car parking and surfacing)	n/a

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 B trees to be removed (trees of high and moderate quality):** A small part of G15 and part of G32 (Category B) will need to be removed to facilitate the development. I set out my views on the implications of the loss of these trees, as follows:

- **Small part of G15:** Group G15 is a group of closely spaced trees that forms a screen on the eastern boundary. A new pedestrian footpath is shown on the plan and a small opening will need to be made to allow this new access into the site to be formed. This will result in the loss of a small number of trees/shrubs. However, most of the belt will remain intact and I do not believe that this is likely to have any significant implications.
- **Part of G32:** This is a group of internal trees that forms a linear grouping that runs in an east/west direction. The position of an apartment block will mean that the two end trees of the group will need to be removed. However, these two trees are located well within the site and I do not believe that their loss will be particularly noticeable from external viewpoints. The bulk of the tree group will be retained and I do not believe that the loss of the trees indicated will have any particular impact.

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, THREE Category C groups (G1, G24 and G33) will need to be removed to facilitate the development proposal. I set out my views on the implications of the loss of these trees, as follows:

- **Group G1:** These trees will need to be removed to allow the new access into the site to be realised. These trees are not in particularly good condition and I have categorised them as belonging to Category C. Whilst their loss will be noticeable in the immediate vicinity, I do not believe that these trees are of sufficient quality to be a constraint on the position of any new access.
- **Group G24:** This group is located on the southern portion of the site and is a collection of scattered small trees and shrubs with similar attributes. They are positioned behind significant boundary trees that are to be retained and this, together with their small size, means that they make no significant contribution to local amenity. I therefore believe that their loss will have no particular implications.
- **Group G33:** This group of small, trees/shrubs is located well within the site and positioned behind boundary trees to be retained. The group will need to be removed to allow the main access drive to be formed and a nearby apartment block to be constructed. I do not believe that the loss of these small trees/shrubs will be particularly noticeable and the impact of their removal is likely to be fairly limited.

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

3.3.1 **BS Category B trees and activities in RPAs:** Tree/groups T2, T30 and part of G34 will have activities arising from the development occurring in their RPAs. My brief comments on these issues are as follows:

- **New access drive:** This will need to be formed within the RPA of tree T2. This tree is not in fantastic condition, having been severely pruned in the past due to its position next to the nearby power line. Nonetheless, I think it could be retained, provided appropriate consideration is given to the issue of construction within the protected area. The planning application before the council is for outline permission and at this stage the detailed information was not available. However, the principle of the construction of roads/access drives in RPAs is well established and can include the use of three dimensional cellular confinement systems, or piles, pads and beams to bridge over RPAs. The detail of this can be provided (with suitable engineering input) at the reserved matters stage, or could be secured via a suitably worded planning condition. In any event, provided care is taken during both the design and implementation stage, my view is that this tree could be retained in a satisfactory condition post development.

- **New surfacing:** Additional new surfacing will be installed within the RPAs of a small number of trees in G34 and in principle this could be constructed using a suitable low invasive method, such as a cellular confinement system. This will negate the need for significant excavation and excessive disturbance to the RPAs of the trees. Again, full details were not available at the time this report was written, but the use of cellular confinement systems is supported in BS 5837 (2012) and such construction techniques are widely used. I believe that the trees near to the surfacing indicated on the attached plan could be retained and protected in accordance with the BS, subject to the appropriate detailed design work being undertaken and due care exercised during implementation.

- **Ground protection:** The protective barriers around trees T30 and part of G34 would need to be set back to allow sufficient room for the positioning of scaffolding and to provide suitable space for the movement of materials and personnel around the buildings during construction. The protective barrier positions around the trees are shown on the plan in Appendix 1. The area of the RPAs that is outside of the barriers will be covered in ground protection and this will be installed after the erection of the barriers, but before any clearance or construction work starts on site. The provision of ground protection to allow pedestrian access in RPAs is supported in

paragraph 6.2.3 of BS 5837 (2012) and I do not perceive this to be a particular problem provided it is implemented correctly.

- 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 as they cannot realistically be retained as living trees in the context of the 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 TWO trees (T16 and T28) as falling into Category U. Consequently, these trees are scheduled for removal for management reasons and as they are unsuitable for retention in the context of the current site use, I do not believe that their loss should be a consideration in the context of the current planning application for the site.
- 3.5 **Protection of trees during construction:** A preliminary Arboricultural Method Statement (AMS) is included in Section 5 and it details the various issues that would need to be addressed for successful tree protection in a development context on this site. However, a full and detailed AMS (with appropriate engineering input) will be needed before construction work on the site is undertaken.

4 SUMMARY OF THE IMPLICATIONS OF THE DEVELOPMENT ON TREES

- 4.1 **Summary:** Of the total of THIRTY SIX trees, groups and hedges surveyed, only FIVE will need to be wholly or partially removed. Additionally, only TWO trees and part of ONE group will have activities arising from the development occurring in their RPAs. These activities include the installation of a new access driveway and other surfacing, and the use of temporary ground protection to allow access across RPAs. My view is that provided suitable detail is requested and approved by the council at a later stage, then the granting of outline consent for the site is arboriculturally acceptable and there is likely to be minimal risk of any adverse impact on the trees to be retained.

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 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 trees were recorded. The plan also shows the locations of the proposed protective measures, including areas where special care and detailed design work is required in the future. 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 or subsequent updated documentation 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.

5.1.3 Ground protection: The position of ground protection is shown on the plan included in Appendix 1, with guidance for ground protection design from BS 5837 (2012) included in Appendix 4. The ground protection will be installed before any materials or

machinery are brought onto the site, and before any clearance or construction activities occur.

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 on the site 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.

- **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:** 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, roots smaller than 25mm diameter may be pruned back, preferably to a side branch, 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 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. 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 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:** 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:

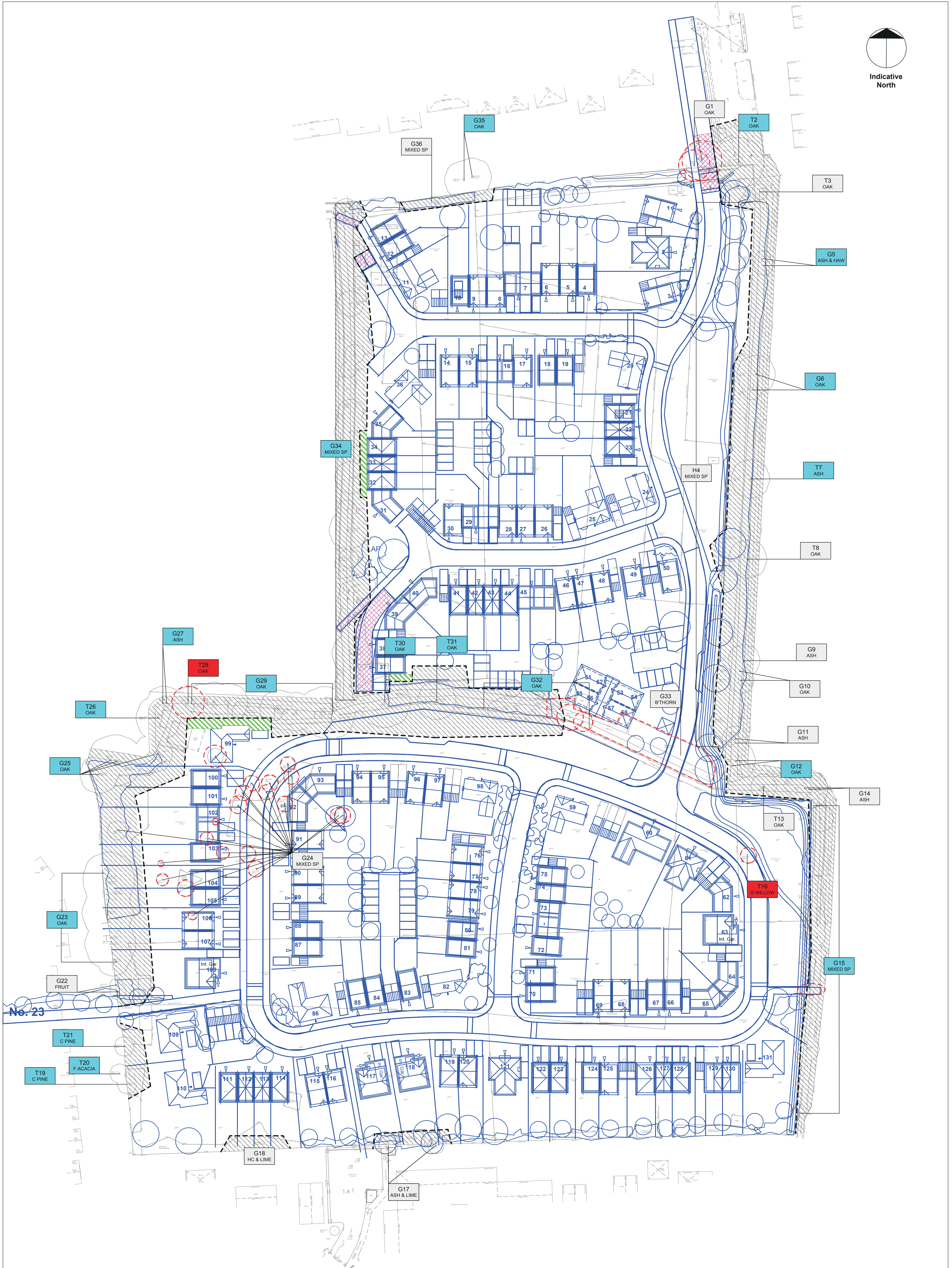
1. Pre-commencement site meeting
2. Extent of arboricultural supervision agreed
3. Tree works undertaken
4. Protective barriers erected before any clearance or construction activities occur on site and notification to the council that this is in place
5. Ground protection installed before any clearance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

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Arboricultural Consultant

Date: **2 September 2012**

APPENDIX 1: TREE PROTECTION PLAN

1 A1 plan



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 dia. at 1.5m (cm)	STEM DIAMETERS (MULTIPLE)								Branch spread (m)				Height above ground (m)	Age class	Notes	Management proposals	BS cat	RPA area (m ²)	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							
G1	Oak	13	60*	-	-	-	-	-	-	-	-	7	6	5	5	4	M	Closely spaced trees, one with significant stem wound and unbalanced canopy.	FELL	C1	163	7.2
T2	Oak	15	101*	-	-	-	-	-	-	-	-	9	10	3	5	4	M	Unbalanced canopy due to proximity to power line. Marginal category B tree.		B1	461	12.1
T3	Oak	6	38*	-	-	-	-	-	-	-	-	3	2	2	2	2	Y	Small tree with poor structural framework multi stemmed at ground level.		C1	65	4.6
H4	Mixed species incl. dogwood, hawthorn and blackthorn	4	20*	-	-	-	-	-	-	-	-	-	3	-	3	n/a	Y/MA	Boundary hedge.		C1	18	2.4
G5	Ash and hawthorn	9	26*	-	-	-	-	-	-	-	-	4	4	4	4	3	MA	Boundary hedgerow trees .		B1	31	3.1
G6	Oak	10	<65*	-	-	-	-	-	-	-	-	6	7	5	7	3	MA	Boundary hedgerow trees.		B1	191	7.8
T7	Ash	10	68*	-	-	-	-	-	-	-	-	7	9	7	7	3	MA	Some dieback in upper canopy, boundary hedgerow tree.	Monitor	B1	209	8.2
T8	Oak	10	83	-	-	-	-	-	-	-	-	6	8	6	8	3	MA	Boundary hedgerow tree, cavity at ground level with some decay into main stem.	Monitor	C1	312	10.0
G9	Ash	10	85*	-	-	-	-	-	-	-	-	7	6	4	5	3	MA	<i>Innotus hispidus</i> infection.	Monitor	C1	327	10.2

APPENDIX 2: TREE SCHEDULE AND INVENTORY

Tree No.	Species	Ht (m)	Single stem dia. at 1.5m (cm)	STEM DIAMETERS (MULTIPLE)								Branch spread (m)				Height above ground (m)	Age class	Notes	Management proposals	BS cat	RPA area (m ²)	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							
G10	Oak	10	<37	-	-	-	-	-	-	-	-	3	6	5	5	2	MA	Unbalanced canopy due to proximity to adjacent tree and stem defect on southern tree.	Monitor	C1	62	4.4
G11	Ash	9	<24*	-	-	-	-	-	-	-	-	7	4	1	4	2	Y	Closely spaced trees with poor structural framework and unbalanced canopy due to proximity to adjacent tree.		C1	26	2.9
G12	Oak	9	68*	-	-	-	-	-	-	-	-	6	7	6	7	3	MA	Closely spaced trees, wound with decay at base of main tree.	Further investigation required	Prelim B1	209	8.2
T13	Oak	7	72*	-	-	-	-	-	-	-	-	7	5	4	4	2	MA	Multi stemmed at ground level with poor structural framework		C1	235	8.6
G14	Ash	7	<24	-	-	-	-	-	-	-	-	4	4	4	4	2	Y	Closely spaced trees with poor structural framework		C1	26	2.9
G15	Mixed species incl. blackthorn hawthorn ash and field maple	<8	<45	-	-	-	-	-	-	-	-	-	4	-	4	n/a	MA	Closely spaced trees/unmanaged hedgerow.	Feel part (see plan) to accommodate new footpath	B2	92	5.4
T16	Goat willow	4	70*	-	-	-	-	-	-	-	-	5	5	1	1	n/a	M	Collapsed tree.	FELL	R	222	8.4
G17	Ash and lime	7	35*	-	-	-	-	-	-	-	-	4	4	4	4	3	Y/MA	Small offsite trees with poor structural framework.		C1	55	4.2
G18	Horse chestnut and lime	6	35*	-	-	-	-	-	-	-	-	4	4	4	4	3	Y/MA	Small offsite trees with poor structural framework.		C1	55	4.2

ARBORICULTURAL IMPLICATIONS APPRAISAL FOR LAND BETWEEN BEECH GROVE AND GOLDRING CLOSE,
HAYLING ISLAND

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APPENDIX 2: TREE SCHEDULE AND INVENTORY

Tree No.	Species	Ht (m)	Single stem dia. at 1.5m (cm)	STEM DIAMETERS (MULTIPLE)								Branch spread (m)				Height above ground (m)	Age class	Notes	Management proposals	BS cat	RPA area (m ²)	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							
T19	Corsican pine	8	36*	-	-	-	-	-	-	-	-	3	3	3	3	3	MA	Boundary tree - part of group.		B2	59	4.3
T20	False acacia	10	38*	-	-	-	-	-	-	-	-	4	4	4	4	4	M	Offsite boundary tree - part of group.		B2	65	4.6
T21	Corsican pine	10	45*	-	-	-	-	-	-	-	-	5	7	3	4	4	M	Boundary tree - part of group.		B2	92	5.4
G22	Fruit	7	25*	-	-	-	-	-	-	-	-	3	3	3	3	n/a	MA	Small offsite trees.		C1	28	3.0
G23	Oak	12	90*	-	-	-	-	-	-	-	-	-	9	-	-	4	M	Offsite boundary trees with unbalanced canopies.		B2	366	10.8
G24	Goat willow and hawthorn	8	45*	-	-	-	-	-	-	-	-	4	4	4	4	n/a	M	Small, scattered trees/shrubs with poor structural framework.	FELL	C1	92	5.4
G25	Oak	11	75*	-	-	-	-	-	-	-	-	-	6	-	-	4	M	Boundary trees with unbalanced canopies.		B2	254	9.0
T26	Oak	12	71	-	-	-	-	-	-	-	-	4	5	6	-	4	M	Some fire damage to lower branches and decay at base into main stem.	Remove damaged branches and monitor	B1	228	8.5
G27	Ash	13	60*	-	-	-	-	-	-	-	-	4	4	4	4	4	MA	Some fire damage to lower branches and decay at base into main stem.	Remove damaged branches and monitor	B1	163	7.2
T28	Oak	9	45	-	-	-	-	-	-	-	-	-	2	5	2	n/a	MA	Fire damaged and dying.	FELL	R	92	5.4
G29	Oak	14	<70*	-	-	-	-	-	-	-	-	-	-	7	-	4	M	Boundary trees.		B2	222	8.4
T30	Oak	16	80*	-	-	-	-	-	-	-	-	9	9	9	9	4	M	Boundary tree.		B2	290	9.6
T31	Oak	11	85*	-	-	-	-	-	-	-	-	7	7	7	7	4	M	Boundary tree.		B2	327	10.2

APPENDIX 2: TREE SCHEDULE AND INVENTORY

Tree No.	Species	Ht (m)	Single stem dia. at 1.5m (cm)	STEM DIAMETERS (MULTIPLE)								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							
G32	Oak	8	60*	-	-	-	-	-	-	-	-	6	6	6	6	3	MA	Internal boundary trees.	Fell eastern part of group (see plan)	B2	163	7.2
G33	Mainly blackthorn	3	30*	-	-	-	-	-	-	-	-	2	-	2	-	n/a	M	Internal hedgerow.	FELL	C2	41	3.6
G34	Mixed species incl. field maple and oak with a blackthorn understorey		45*	-	-	-	-	-	-	-	-	-	5	-	5	n/a	MA// M	Overgrown hedge with scattered larger trees.		B2	92	5.4
G35	Oak	13	<60*	-	-	-	-	-	-	-	-	-	6	6	5	4	M	Offsite trees. Severely pruned with decay into old pruning wounds. Marginal B category trees.		B2	163	7.2
G36	Mixed sp, mainly ash	6	10	-	-	-	-	-	-	-	-	1	-	1	-	n/a	Y	Closely spaced self sown young trees		C1	5	1.2

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:

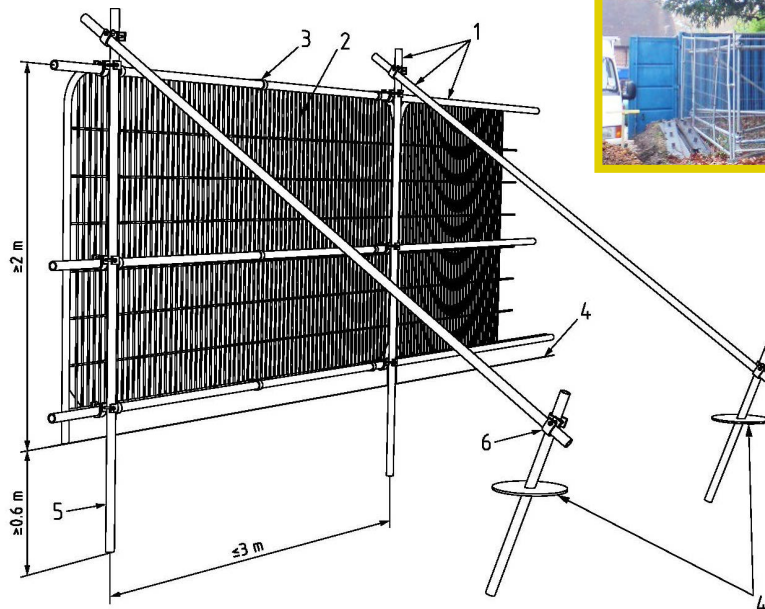
Tree number	Assigned during the site visit and also referenced on the plan in Appendix 1.
Species	Common name and referenced to scientific name in the above list. Where I have some doubt over the actual tree species, the genus will have been noted followed by sp. Where trees are numerous and present in groups, not every individual species may have been noted.
Height	Measurement of total tree height using a laser hypsometer to nearest metre.
Stem 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.
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
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
Ash	<i>Fraxinus excelsior</i>		Fruit	<i>Malus</i> sp, <i>Prunus</i> sp or <i>Pyrus</i> sp
Blackthorn	<i>Prunus spinosa</i>		Goat willow	<i>Salix caprea</i>
Corsican pine	<i>Pinus nigra</i> var. <i>calabrica</i>		Hawthorn	<i>Crataegus monogyna</i>
Dogwood	<i>Cornus</i> sp		Horse chestnut	<i>Aesculus hippocastanum</i>
False acacia	<i>Robinia pseudoacacia</i>		Lime	<i>Tilia x europaea</i>
Field maple	<i>Acer campestre</i>		Oak	<i>Quercus robur</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 GROUND SURFACE PROTECTION IN RPAs



Photograph 1



Photograph 2 (courtesy
www.groundtrax.com)

New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.

NOTE The ground protection might comprise one of the following:

- a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame (**Photograph 1**), so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;
- b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards (**Photograph 2**), placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;
- c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

– BS 5837 (2012)

Ref: Ground Protection	Drawing No. GP1
Scale: N/A	

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

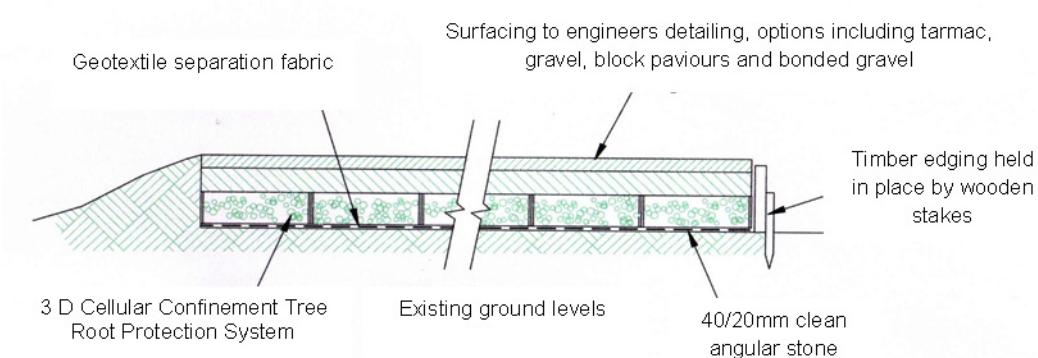
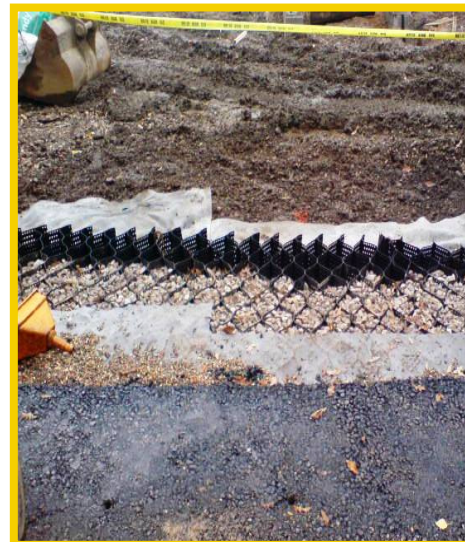


Illustration adapted from original drawings provided by Geosynthetics Ltd.

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 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.

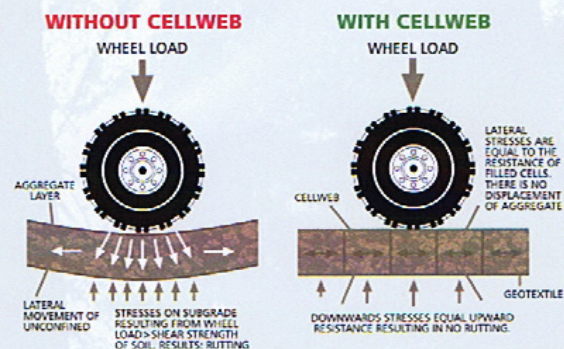
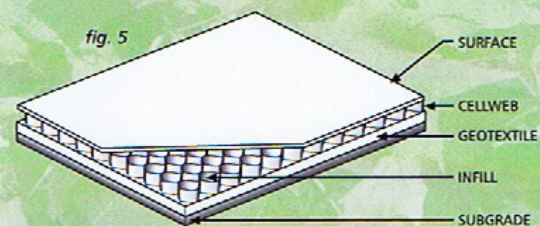


fig. 3

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 (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 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 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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