

**Arboricultural Implications Assessment  
and Method Statement  
for  
The Cadet Super Centre,  
Pine Grove, Northville, Bristol**

eco **urban**  
ARBORICULTURAL

Ash Fraxinus excelsior Aspen Populus tremula Beech Fagus sylvatica Blackthorn Prunus spinosa Black poplar Populus nigra Box elder Acer negundo Catalpa Catalpa bignonioides Coast redwood Sequoia sempervirens Dawn redwood Metasequoia glyptostroboides Deodar cedar Cedrus deodara Douglas fir Pseudotsuga menziesii Elder Sambucus nigra False acacia Robinia pseudoacacia Field maple Acer campestre Goat willow Salix caprea Hawthorn Crataegus monogyna Hazel Corylus avellana Holm oak Quercus ilex Holly Ilex aquifolium Hornbeam Carpinus betulus Horse chestnut Aesculus hippocastanum Indian bean tree Catalpa bignonioides Japanese cedar Cryptomeria japonica Judas tree Cercis siliquastrum Lawson cypress Chamaecyparis lawsoniana Leyland cypress x Cupressocyparis leylandii Liquidambar Liquidambar styraciflua Lombardy poplar Populus nigra 'Italica' London plane Platanus x hispanica Maidenhair Ginkgo biloba Mimosa Acacia dealbata Monkey puzzle Araucaria araucana Monterey cypress Cupressus macrocarpa Monterey pine Pinus radiata Norway maple Acer platanoides Norway spruce Picea abies Oak Quercus robur Persian ironwood Parrotia persica Red horse chestnut Aesculus carnea Red oak Quercus rubra Rowan Sorbus aucuparia Scots pine Pinus sylvestris Sitka spruce Picea sitchensis Swedish whitebeam Sorbus intermedia Sweet chestnut Castanea sativa Sycamore Acer pseudoplatanus Tulip tree Liriodendron tulipifera Turkey oak Quercus cerris Walnut Juglans regia Western Hemlock Tsuga heterophylla Western red cedar Thuja plicata Whitebeam Sorbus aria Wild cherry Prunus avium Wellingtonia Sequoiadendron giganteum White poplar Populus alba White willow Salix alba Wild Cherry Prunus avium Yew Taxus baccata Ash Fraxinus excelsior Aspen Populus tremula Beech Fagus sylvatica Blackthorn Prunus spinosa Black poplar Populus nigra Box elder Acer negundo Catalpa Catalpa bignonioides Coast redwood Sequoia sempervirens Dawn redwood Metasequoia glyptostroboides Deodar cedar Cedrus deodara Douglas fir Pseudotsuga menziesii Elder Sambucus nigra False acacia Robinia pseudoacacia Field maple Acer campestre Goat willow Salix caprea Hawthorn Crataegus monogyna Hazel Corylus avellana Holm oak Quercus ilex Holly Ilex aquifolium Hornbeam Carpinus betulus Horse chestnut Aesculus hippocastanum Indian bean tree Catalpa bignonioides Japanese cedar Cryptomeria japonica Judas tree Cercis siliquastrum Lawson cypress Chamaecyparis lawsoniana Leyland cypress x Cupressocyparis leylandii Liquidambar Liquidambar styraciflua Lombardy poplar Populus nigra 'Italica' London plane Platanus x hispanica Maidenhair Ginkgo biloba Mimosa Acacia dealbata Monkey puzzle Araucaria araucana Monterey cypress Cupressus macrocarpa Monterey pine Pinus radiata Norway maple Acer platanoides Norway spruce Picea abies Oak Quercus robur Persian ironwood Parrotia persica Red horse chestnut Aesculus carnea Red oak Quercus rubra Rowan Sorbus aucuparia Scots pine Pinus sylvestris Sitka spruce Picea sitchensis Swedish whitebeam Sorbus intermedia Sweet chestnut Castanea sativa Sycamore Acer pseudoplatanus Tulip tree Liriodendron tulipifera Turkey oak Quercus cerris Walnut Juglans regia Western Hemlock Tsuga heterophylla Western red cedar Thuja plicata Whitebeam Sorbus aria Wild cherry Prunus avium Wellingtonia Sequoiadendron giganteum White poplar Populus alba White willow Salix alba Wild Cherry Prunus avium Yew Taxus baccata Ash Fraxinus excelsior Aspen Populus tremula Beech Fagus sylvatica Blackthorn Prunus spinosa Black poplar Populus nigra Box elder Acer negundo Catalpa Catalpa bignonioides Coast redwood Sequoia sempervirens Dawn redwood Metasequoia glyptostroboides Deodar cedar Cedrus

Arboricultural Implications Assessment and Method Statement

**The Cadet Super Centre, Pine Grove, Northville, Bristol**

Produced by:

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**Arboricultural Consultant**

Report Ref: **221474 - AIA**

Report Date: **2 August 2022**

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## 1 INTRODUCTION

- 1.1 **Instruction:** I am instructed by S C Architecture Ltd to report on trees which could be affected by a development proposal for the Cadet Super Centre, Pine Grove, Northville, Bristol and prepare an Arboricultural Implications Assessment (AIA) and preliminary Arboricultural Method Statement (AMS) to support a planning application on the site.
- 1.2 **Document disclosure:** Initially, I was provided with a topographical survey (drawing reference 'Cadet Super Centre - Topographical Survey'). This showed the positions of the significant trees on or near the site, together with the existing buildings and any other important features. Subsequently, I was supplied with a copy of the proposed layout, (drawing reference '4392\_P\_02\_A') showing a new site configuration, along with a sectional drawing of the new building (drawing reference '4392\_P\_05').
- 1.3 **Scope of report:** All my tree observations are of a preliminary nature, with the tree survey carried out from ground level without any investigations using invasive or diagnostic equipment. I was not able to fully view all the trees detailed in this report from all directions, as they were located on adjacent private property. I have therefore confined observations of them to what was visible from certain 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 all dimensions unless otherwise indicated.
- 1.4 **The Tree Protection Plan:** This is included in Appendix 1 and is a composite drawing derived from the information provided. It shows the existing landscape features (from the land survey) in blue, superimposed over the proposed layout shown in black outline. This allows the relationship between the two to be clearly seen and an appropriate analysis of the implications of the proposed site changes to be undertaken. The Tree Protection Plan has also been annotated to show protection measures for the trees which could realistically be affected by the proposed development. It shows any activities in Root Protection Areas (RPAs) and if any trees are to be removed, they are shown with a red dashed crown outline.
- 1.5 **Qualifications and experience:** This report is based on my site observations and I have come to my conclusions in the context of my experience as a former local government tree officer and a private practice arboricultural consultant. I have qualifications in both arboriculture and forestry and details of these, together with a career summary are provided in Appendix 6.

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## 2 SITE VISIT, DESCRIPTIONS, OBSERVATIONS AND SURVEY METHODOLOGY

- 2.1 **Site visit and description:** I visited the site on 17 May 2022 to gather my tree data. The site is located in Pine Grove, which is situated in the Northville area of Bristol. The access to the existing cadet facility (2152 [NORTH BRISTOL] Squadron ATC) is situated at the far end of the road and this leads to a car parking area and a linear configuration of buildings/classrooms running in a north/south orientation. Scattered groups and individual trees are located around the site margins, with most positioned on adjacent private property.
- 2.2 **Description of proposed development:** This development proposal is to demolish the existing site buildings and replace them with a new cadet super centre.
- 2.3 **Soil assessment:** British Standard (BS) 5837:2012 Trees in relation to design, demolition and construction – Recommendations advocates that a soil assessment should be carried out to inform decisions relating to Root Protection Areas (RPAs), tree protection, new planting and foundation design. I have consulted the British Geological Survey (BGS) website and their Geology Viewer and this advises that the bedrock geology for the site is Rugby Limestone Member - Limestone and Mudstone. I did not undertake any excavations on site to confirm this and a full geotechnical site investigation may need to be undertaken to provide a more in-depth level of information regarding soil type for the site.
- 2.4 **Tree survey methodology:** My inspection of the trees was visual and did not involve any climbing or exploratory investigations. During my visit, I identified individual trees and obvious groups where this was appropriate and I assigned an identification number to each, as shown on the plan in Appendix 1. I then collected the tree data included in Appendix 2 and placed the vegetation in one of four categories (U, A, B or C), as set out in British Standard (BS) 5837:2012. I have included the BS categorisations in Appendix 5 for easy reference. Where of relevance, I also estimated the crown spreads for each tree/group at the appropriate cardinal compass points and this information is also shown in the tree schedule in Appendix 2. Although this document is not 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. However, this report is not a tree condition survey and a full post development tree inspection is recommended to establish that the trees retained pose acceptable levels of risk once the development has been completed.

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- 2.5     **Tree survey restrictions:** As discussed, some trees detailed in this report are located offsite. This, together with their close proximity to one another meant that clear line of sight was not always achievable. These restrictions placed some significant limits on the capacity to assess tree condition and also on the use of laser measuring equipment, where clear line of sight is also required. I have therefore relied on an assessment of tree quality based on what was visible from vantage points around the site and provided estimates of tree attributes.
- 2.6     **Data interpretation:** The Root Protection Area (RPA) figures 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 important tree roots. These modified (or unmodified) RPAs dictate the location of the tree protection barriers and also determine the position of any ground protection measures or precautionary areas. Tree protection details are shown on the plan included in Appendix 1. Where there is a need for incursions into RPAs, an assessment of the implications of these activities is set out in Section 3 (Arboricultural Implications Assessment) of this report. Where appropriate, details of suitable work methodologies to protect trees and also mitigate any impact are set out in Section 5 (Arboricultural Method Statement).

### 3 ARBORICULTURAL IMPLICATIONS ASSESSMENT

- 3.1 **Introduction to the implications of the development proposal on trees:** BS 5837:2012 sets out in some detail how trees on development sites should be managed. It is usually accepted amongst arboriculturists that Category A (high quality) and Category B (moderate quality) trees are potential constraints on any development proposal, whereas vegetation belonging to Category C (low quality) is considered to be generally less important. Category U trees/hedges are in such poor condition that they are considered unsuitable for retention. This is because they cannot realistically be retained as living entities in respect of the current land use for longer than 10 years. Therefore, these can be effectively discounted in the context of a planning application. On this site a total of eight individual trees/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	Category C trees	Category U trees
A total of one tree (T5) was rated Category B	A total of seven trees/groups (T1, T2, G3, G4, G6, T7 and G8) were rated Category C	No trees, groups or hedges were rated Category U

**Table 1:** Tree numbers and BS categories

No Category A trees were recorded during my survey and so I have therefore focussed on the implications of the development proposal on the Category B and C trees on or near the site. Of the total of eight trees/groups surveyed, all will be retained and no trees are scheduled to be removed to facilitate this development proposal. However, three trees/groups will have activities arising from the development occurring within their RPAs. I have summarised the development related implications on trees in Table 2 below and set out the site tree issues 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
None	None	T5 (building demolition and new building and surfacing provision within RPA)	T2 (building demolition and new surfacing provision within RPA) and G6 (building demolition and new surfacing provision within RPAs)

**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 and C trees to be retained (trees of moderate and low quality):** All the Category B and C trees surveyed will be retained and protected in accordance with the guidance set out in BS 5837:2012. Consequently, no trees will need to be removed to facilitate this development proposal.

### 3.3 Additional implications arising from the development proposal

3.3.1 **Trees and activities within RPAs:** Trees/groups T2, T5 and G6 will have activities arising from the development occurring within their RPAs. My comments on these issues are as follows:

- **Demolition of existing buildings:** Two existing buildings within tree RPAs are indicated for removal. It is not clear at this stage what the position of these structures may have had on tree root distribution within the site. However, assuming that there may be tree root activity beneath the existing buildings I have indicated some guidance in section 5.2.2 of this report on how this work should proceed in order to help safeguard the health and wellbeing of the nearby trees. Provided the work is carried out with care, then I feel that the risk of significant tree impact arising from this activity is likely to be relatively low.



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- **New cadet building:** As discussed, existing buildings within tree RPAs are indicated for removal and in the instance for tree T5, the building will be replaced with the new cadet centre. As discussed above, it is not clear what impact the position of the existing structures may have had on root growth within the site. However, adopting a precautionary approach, the project architect has indicated a foundation ground beam spanning over the RPA of the tree in the critical area., although no detailed drawings were available at the time this report was written. Nonetheless, I feel that the principle of this is sound in order to reduce the potential of tree root disturbance, if indeed these are present in abundance on the site. The concept of custom designed foundations in RPAs to help safeguard trees is supported in BS 5837:2012. Further detailed design work is required, but provided appropriate arboricultural input is sought during the final foundation design stage, then I feel that the risk of significant tree implications could be quite low. If deemed appropriate, the final foundation design could be secured and reviewed by the council via a suitably worded planning condition attached to any subsequently issued planning consent.
  
  - **New surfacing:** New car parking and other hard surfacing is indicated within the RPAs trees. In principle, the sub base for these elements could be a cellular confinement system. This would reduce the need for ground disturbance within the RPAs of these nearby trees. The use of cellular confinement systems is supported in BS 5837:2012. The surfacing will be installed before any clearance or construction activities occur on site and will 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. I have set out some guidance in section 5.2.3 of this report detailing how this work should proceed in order to reduce the risk of implications for the nearby trees. Provided the work proceeds in accordance with this methodology, then I feel that the risk of implications for the trees is also likely to be relatively low.

### 3.4 Additional site tree issues

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

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## 4 SUMMARY OF THE IMPLICATIONS OF THE DEVELOPMENT ON TREES

- 4.1 **Summary:** Of the total of eight trees/groups surveyed, all will be retained and no trees are scheduled to be removed to facilitate this development proposal. However, three trees/groups will have activities arising from the development occurring within their RPAs. Provided the tree protection measures set out in this report are realised and care is taken during the sensitive works within tree RPAs, then the proposal is acceptable from an arboricultural perspective and the risk of implications for retained trees is likely to be quite low.

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## 5 PRELIMINARY ARBORICULTURAL METHOD STATEMENT

### 5.1 Tree protection issues

5.1.1 **Tree Protection Plan (TPP):** The plan in Appendix 1 is illustrative, but is based on the layout drawings and topographical survey provided. Therefore, all scaled measurements should be checked against the original design documents. The attached plan and all other information in this report should only be used for dealing with the tree protection issues and all other uses are prohibited, unless authorised by ecourban Ltd. All the existing trees will have been numbered, with any higher categories (A and B) highlighted in green and blue rectangles and any low categories (C and U) highlighted in grey and red respectively. The plan also shows the locations of the proposed protective measures, including areas where special care may be required. The TPP is an important document and a copy of it should be kept on site for reference during the construction phase.

5.1.2 **Protective barriers:** The approximate location of the barriers is illustrated on the plan in Appendix 1 and information on barrier design based on BS 5837:2012 guidance is included in Appendix 3. The protective barriers will be erected after the demolition phase (see section 5.2.2 below). 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 areas and the storage of excavated debris and building materials will be prohibited in RPAs, unless authorised by the arboricultural consultant, after discussion with the council's tree officer. No fires or fuel storage will be allowed within or near to protected areas under any circumstances.

### 5.2 Arboriculturally sensitive operations

5.2.1 **Activities within Root Protection Areas (RPAs):** Work within RPAs must be undertaken 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 **Demolition of existing structures:** Trees could be potentially affected by this activity and care must be taken to avoid damage, particularly to tree roots. With this in mind, I set out the following guidance to help minimise the risk of significant tree impact occurring:

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- **Minimal ground disturbance:** Care will need to be taken during the demolition of structures close to trees. Where appropriate, work may need to take place from inside the existing building footprint in a 'top down, pull back' type operation. In addition, attention will need to be paid to dealing with any foundation removal. In some instances, it may be possible for elements of this to be left in situ just below ground level to minimise the potential for ground/root disturbance. However, if foundations are to be removed, all works will generally be undertaken using appropriate hand operated tools. A machine with a suitable reach may be used (under arboricultural supervision) if it can work from outside the RPAs indicated, or from part of the existing floor slab of the structures. If an excavating machine is being used, the bucket of the excavator should only be utilised in a careful scraping or lifting motion to minimise disturbance to soil beneath the foundation, where tree roots may be found.
  
  - **Dealing with tree roots:** During digging, care will be taken to locate any substantial tree roots. Once roots have been located, soil will be carefully cleared away from them. Those roots temporarily exposed will be protected from direct sunlight, drying out and extremes of temperature by appropriate covering. Where roots may need to be cut, those smaller than 25mm diameter may be pruned back, preferably to a side junction, using a cutting tool such as bypass secateurs or handsaws. Roots larger than 25mm should only be severed following consultation with an arboriculturist, as they may be essential to the tree's health and stability.
  
  - **Removal of demolished building material:** Any work to remove the foundation will proceed starting at a point closest to the trees and working backward away from them. In this way, there should be limited need to repeatedly traverse the areas where the foundations have been taken up. Debris will then be removed manually across the existing floor slab in a way that prevents any soil compaction. Alternatively, debris or spoil will be lifted out by machines working from outside the RPAs shown, or positioned on parts of the existing floor slabs.

5.2.3 **Installation of new surfacing:** Trees T2, T5 and group G6 may be affected by the installation of new car parking and other surfacing. I have shown the minimum extent of 'low invasive' type surfacing required to successfully retain the trees on the plan included in Appendix 1 and the extent of this is based on their BS derived RPAs. The cellular system will act as ground protection for the parts of the RPAs that are outside the protective barriers and so will need to be installed after the building demolition phase, but before any other construction activity

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occurs on site. The use of a cellular confinement system is suggested in BS 5837:2012 as one appropriate way to achieve hard surfacing over tree roots and the following guidance is based on this principle. However, before implementation the following specifications and guidance will need to be reviewed by an engineering specialist, to ensure that the final construction is appropriate from an engineering viewpoint and suitable for the purpose intended.

- **Installation:** An installation video for a proprietary cellular confinement system is available to view at <https://tinyurl.com/bbs7tsf5>. Generally, any required changes in topography will be accomplished by the use of fill materials rather than cutting into the existing site levels, which could have a significant impact on tree health. Suitable fill materials include uncompacted crushed stone or sharp sand. However, again, in the event that roots may need to be cut, those smaller than 25mm diameter may be pruned back, preferably to a side junction, using a cutting tool such as bypass secateurs or handsaws. Roots larger than 25mm should only be severed following consultation with an arboriculturist, 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 cellular system will be installed on top of the existing soil, with no compaction of its structure. The cell infill material will be crushed aggregate (typically 20-40mm, clean angular stone), with no fines, as per the manufacturer's specification. 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 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 resin bound gravel, paving slabs, washed gravel or block pavements set on a sand base, although other surfacing may be appropriate after consultation with an arboriculturist.
  
- **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 ground disturbance within RPAs) will be used to minimise any adverse risk of impact on trees.

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- **Illustrative specifications:** Final drawings will be prepared by the project engineer. These will be based on the illustrative manufacturers specifications for special surfacing included in Appendix 4, or an alternative 'low invasive' construction technique. These definitive plans can be secured by way of a suitably worded planning condition and approved by the council before any construction activity occurs on site.

### 5.3 **Additional tree-related issues**

- 5.3.1 **Site supervision:** As discussed, 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 **Material storage areas and site compounds:** All construction material storage areas, cement silos or cement mixing areas, fuel storage points and compounds for machinery etc. will be outside protected areas, unless otherwise agreed with the council.
- 5.3.3 **Installation of new services or upgrading of existing provision:** Where practicable, all new services will be outside the protected areas indicated on the plan in Appendix 1, but where existing services within RPAs require upgrading or new provision is needed, 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.
- 5.3.4 **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 tree RPAs, unless agreed previously with the council. Contractor's car parking facilities will also be located away from retained trees.
- 5.3.5 **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

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commencement site meeting is critical in terms of avoiding damage to trees and this particular aspect, along with tree protection issues can 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 the 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 and extent of any arboricultural supervision agreed
2. Demolition of existing buildings
3. Protective barriers erected and notification to the council that this is in place
4. 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
5. Installation of new building foundation incorporating a beam spanning over RPA of tree T5
6. 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**

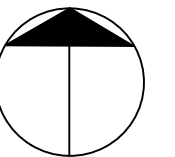
Date: **2 August 2022**

## Appendix 1: Tree Protection Plan

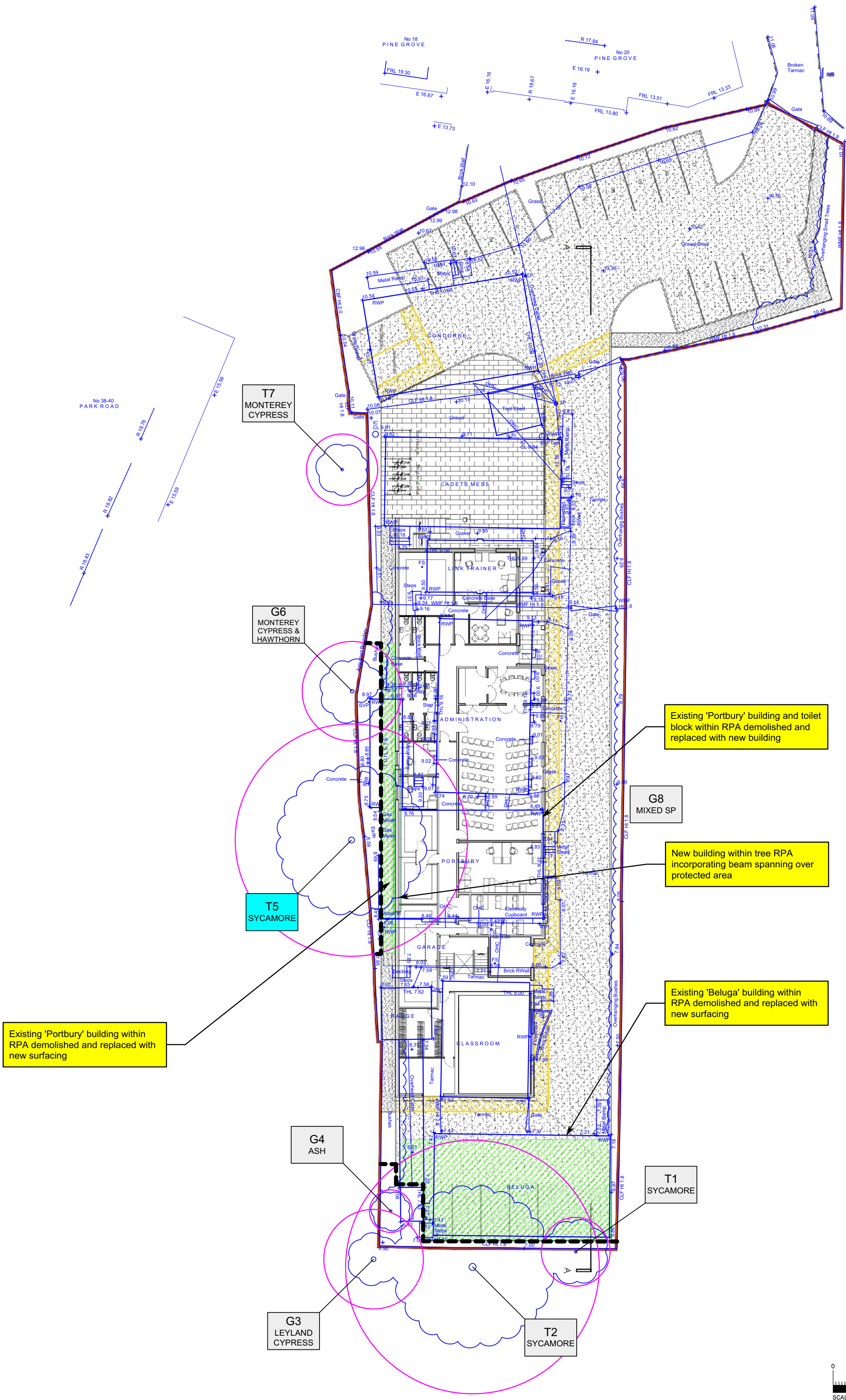
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1 A2 plan





Indicative  
North



ecourban  
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ECO 2 - TREE PROTECTION FOR THE CADET SUPER CENTRE,  
PINE GROVE, NORTHVILLE, BRISTOL

SCALE: 1:250 @ A2

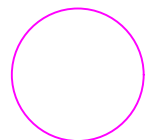
COMPOSITE PLAN:  
LAND SURVEY IN BLUE,  
PROPOSED LAYOUT OUTLINED IN BLACK

T1  
Tree sp

BS Category B: Trees of  
moderate quality and value



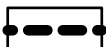
RPA outside barriers where 'Low  
Invasive' type surfacing is to be installed



Root Protection Areas (RPAs):  
Below ground tree constraints for  
trees based on BS 5837 guidance

T1  
Tree sp

BS Category C: Trees  
of low quality and value



Tree protection barriers

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

## Appendix 2: Tree Schedule and Inventory

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

Tree No.	Species	Ht (m)	Single stem dia. at 1.5m (cm)	Est. Dia. *	STEM DIAMETERS (MULTIPLE)								Branch spread (m)				Ht above ground (m)	Age class	Notes	Management proposals	BS cat	RPA area (m²)	RPA radius (m)
					Multi stemmed trees with 1 - 5 stems (cm)					Multi stemmed trees with 1 - 5 stems combined (cm)	Multi stemmed trees >5 stems												
					1	2	3	4	5		Mean stem dia. (cm)	No. of stems	N	E	S	W							
All trees/hedges																		Where appropriate, crown lift trees by up to 5m over site for construction access. Cut back hedges where appropriate					
T1	Sycamore	11	24	-	-	-	-	-	-	-	-	-	3	3	-	1	4	Y/MA	Boundary tree, limited access to survey and restricted clear line of sight. Unbalanced canopy, influenced by proximity to adjacent tree.		C1	26	2.9
T2	Sycamore	17	-	-	76	47	-	-	-	89	-	-	7	8	-	7	4	M	Offsite tree, limited access to survey and restricted clear line of sight. Multi stemmed with tight forks and included bark unions. Old pruning wound with decay at 2m.		C1	361	10.7



## Appendix 2: Tree Schedule and Inventory

Tree No.	Species	Ht (m)	Single stem dia. at 1.5m (cm)	Est. Dia. *	STEM DIAMETERS (MULTIPLE)								Branch spread (m)				Ht 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							
G3	Leyland cypress	17	35	* Avg	-	-	-	-	-	-	-	-	3	3	-	-	3	MA	Offsite trees, no direct access to survey and restricted clear line of sight. Not all trees shown on land survey. Unremarkable domestic conifer type planting.		C1	55	4.2
G4	Ash	10	-	* Lgst	14	6	-	-	-	15	-	-	3	3	0	-	3	Y	Closely spaced self-sown trees. Structurally deficient and influenced by close proximity to one another. Unbalanced canopies.		C1	10	1.8
T5	Sycamore	17	-	*	55	60	-	-	-	81	-	-	6	7	7	-	4	M	Offsite tree, no direct access to survey and restricted clear line of sight. Stem covered in ivy.		B2	300	9.8
G6	Monterey cypress and hawthorn	9	35	* Lgst	-	-	-	-	-	-	-	-	3	3	3	-	4	Y/ MA	Offsite trees, no direct access to survey and restricted clear line of sight. Hawthorn tree position not shown on land survey. Unremarkable domestic conifer type planting and small tree.		C1	55	4.2

Appendix 2: Tree Schedule and Inventory

Tree No.	Species	Ht (m)	Single stem dia. at 1.5m (cm)	Est. Dia. *	STEM DIAMETERS (MULTIPLE)								Branch spread (m)				Ht 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							
T7	Monterey cypress	9	25	*	-	-	-	-	-	-	-	-	1	3	4	-	3	Y/MA	Offsite tree, no direct access to survey and restricted clear line of sight. Unremarkable domestic conifer type planting. Severely unbalanced		C1	28	3.0
G8	Mixed species including sycamore, hawthorn, dogwood and hazel.	7	8	* Avg	-	-	-	-	-	-	-	-	2	-	2	2	2	Y	Linear grouping of closely spaced offsite, young boundary trees. No direct access to survey and limited clear line of sight.		C2	3	1.0

Abbreviations:

Abbreviations	Meaning	Abbreviations	Meaning	Abbreviations	Meaning
T	Individual tree	M	Mature	>	More than
G	Groups of trees	MA	Maturing	<	Less than
H	Hedge	Y	Young	Lgst	Largest tree diameter within group
W	Woodland	RPA	Root Protection Area	Avg	Average tree diameter within group

## Appendix 2: Tree Schedule and Inventory

### Tree Schedule Notes:

Tree number	Assigned during the site visit and also referenced on the plan in Appendix 1.
Species	Common name and referenced to scientific name in the above list. Where I have some doubt over the actual tree species, the genus will have been noted followed by sp. Where trees are numerous and present in groups, not every individual species may have been noted.
Height	Measurement of total tree height using a laser hypsometer to nearest metre or where clear line of site is not possible then an estimate based on interpolation of heights of nearby measured trees.
Stem diameters	Measurement of stem diameter either at 1.5m above ground (or in accordance with BS guidance where trees have multiple stems) with a forester's girth measuring tape. <b>Diameters followed by asterisk symbol indicate estimated diameters because of access difficulties, presence of ivy or other obstructions.</b> Where trees are present in a group, the tree with the largest stem diameter within the group will have been measured/estimated.
Est. Dia.	Estimated diameters due to access restrictions are indicated with an asterisk
Branch spread	Where appropriate and where ground conditions allow, an estimate of the crown spread at each of the cardinal compass points. Where only part of the site is affected by trees, measurement may be in one or two directions only
Existing height above ground level	Distance in metres to first significant branch or canopy or a height above which crown lifting operations would not be appropriate
Age class	Simplistic estimate of tree age in one of FOUR categories (young, maturing, mature or over mature).
Notes	Although this document is not intended to be a full and detailed report on tree health and safety, any significant structural defects or physiological conditions have been identified where these were visible. Where no entries are recorded, this indicates no observable issues were identified. Where there is restricted access to the base of a tree, its attributes are assessed from the nearest point of access. Climbing inspections are not carried out during a walkover tree survey and, if heavy ivy is present, tree condition is assessed from what can be seen from the ground.

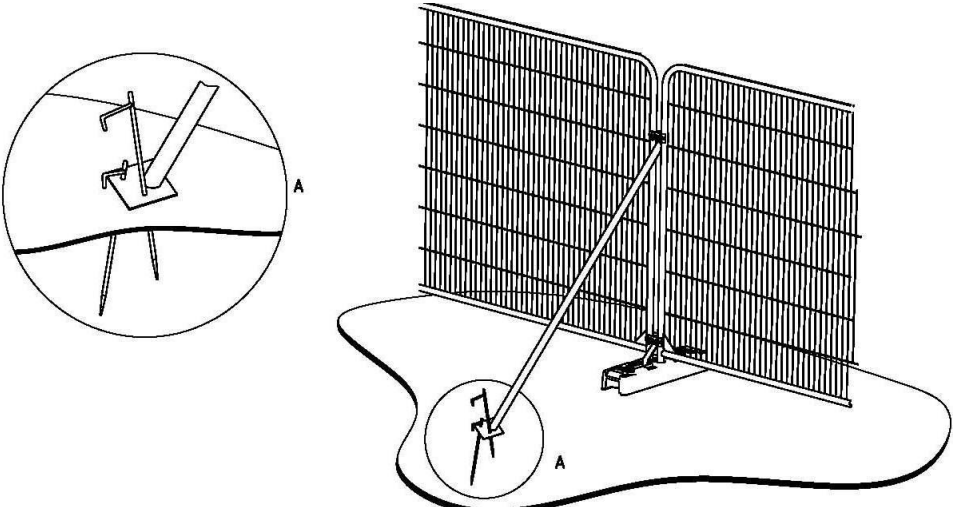
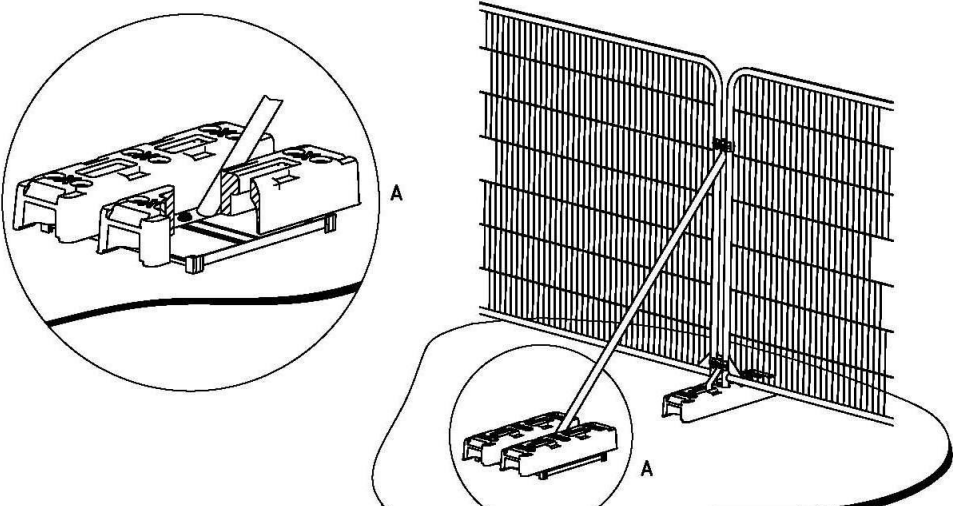
## Appendix 2: Tree Schedule and Inventory

Management proposals	<i>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.</i>
BS 5837 :2012 Category	<i>Either U, A, B or C based on the BS 5837:2012 guidance.</i>
RPA and RPA radius	<i>RPA and RPA radius calculations have been undertaken in accordance with the guidance set out in BS 5837:2012.</i>

### Tree Inventory:

Common Tree Names	Scientific Tree Names		Common Tree Names	Scientific Tree Names
Ash	<i>Fraxinus excelsior</i>		Leyland cypress	<i>x Cupressocyparis leylandii</i>
Dogwood	<i>Cornus</i> sp		Monterey cypress	<i>Cupressus macrocarpa</i>
Hawthorn	<i>Crataegus monogyna</i>		Sycamore	<i>Acer pseudoplatanus</i>
Hazel	<i>Corylus avellana</i>			

### Appendix 3: Illustrative Specification for Tree Protection Barriers

 <p>a) Stabilizer strut with base plate secured with ground pins</p>	
 <p>b) Stabilizer strut mounted on block tray</p>	
<p>Illustration taken from British Standard 5837:2012 - Trees in relation to design, demolition and construction – Recommendations.</p>	
<p>2m tall welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins</p> <p>– BS 5837:2012</p>	
<p><b>Ref: Tree Protection Barriers (Type 2)</b></p>	<p><b>Drawing No. TPB2</b></p>
<p><b>Scale: N/A</b></p>	

## Appendix 4: Illustrative Specification for ‘Low Invasive’ Surfacing within RPAs

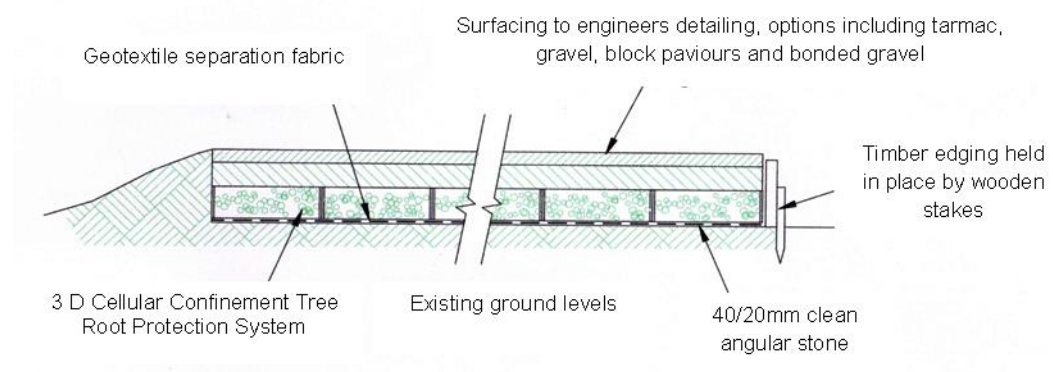



Illustration adapted from original drawings provided by Geosynthetics Ltd.

*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	





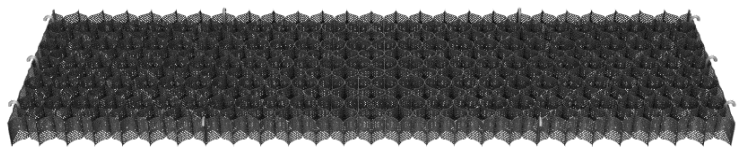
# Cellweb®TRP

## Why protect trees?

*Trees provide a wealth of benefits within the urban environment including cleaning the air, prevention of flooding and moderation of the climate.*

*As a result, within the UK it is an offence to cut down, lop, uproot, top, wilfully damage or destroy a protected tree without authorisation. Fines, if the defendant is found guilty in a Crown Court, are unlimited.*

*To minimise the environmental impact and avoid legal proceedings, we offer the independently tested Cellweb®TRP system.*




## What is Cellweb®TRP?

*Cellweb®TRP is a cellular confinement system specifically designed for tree root protection. The system creates a stable, load-bearing surface for traffic or footfall whilst eliminating damage to roots through compaction and desiccation.*

The Cellweb®TRP system comprises of three specific elements, Cellweb®TRP, Treetex™ pollution control geotextile and an infill of clean angular stone. The system has been designed to create an unparalleled solution to tree root protection applications.

Cellweb®TRP is a no-dig solution that ensures that the load placed upon it is laterally dissipated rather than transferred to the soil and roots below. The use of Treetex™ pollution control geotextile allows for drainage and separation whilst preventing contaminants from reaching the roots.

The walls of the cells are perforated and when combined with the infill of clean angular stone, enables free movement of water and oxygen, ensuring that supplies to the tree roots are maintained.



**Geosynthetics**  
Engineered Solutions

**"Creating Innovative Solutions with Outstanding Products"**



### What makes Cellweb®TRP different?

*With over 15 years of captured data and thousands of installations, the Cellweb®TRP system has developed a reputation for excellence.*

We are so confident in our system, we offer a guarantee that covers the replacement of the trees and of the system itself. With Cellweb®TRP being quick to install and having a 100% success rate it is clear to see why the Cellweb®TRP is regularly specified by tree officers and arboriculturalists across the country.

### From the drawing board to installation, we are here to help.

We have been supplying the Cellweb®TRP system since 1998 and our technical team have vast experience with tree root protection and the associated legislation.

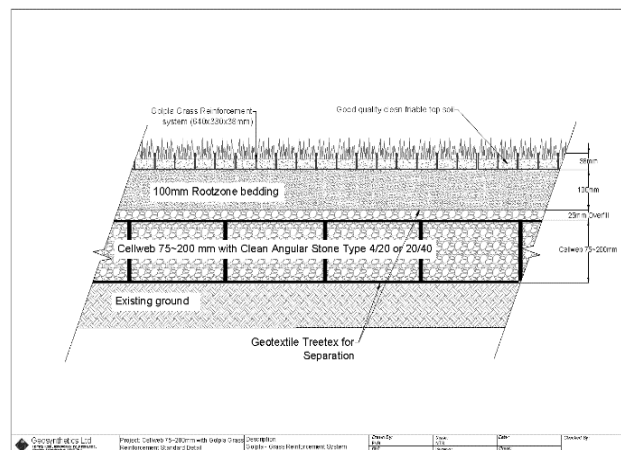
Delivering complete peace of mind to customers is our number one priority. As part of this customer care package we offer free on site consultations, technical recommendations and on site installation guidance on all projects.

Our in-house engineering team provide site specific recommendations to ensure the solution used is cost effective and environmentally sound.

*For more information on Cellweb®TRP or Geosynthetics Limited please contact our sales office on 01455 617139 or visit [www.geosyn.co.uk](http://www.geosyn.co.uk).*



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## Appendix 5: BS 5837:2012 – Assessment Categories

TREES FOR REMOVAL				
Category and definition	Criteria			Identification on plan
<u>Category U</u>  Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none"><li>• 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)</li><li>• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li><li>• 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</li></ul> <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.</i></p>			RED
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria — Subcategories			Identification on plan
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
<u>Category A</u>  Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	GREEN
<u>Category B</u>  Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation)	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	BLUE
<u>Category C</u>  Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	GREY

## Appendix 6: Qualifications and Experience of Barrie Draper

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- 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.



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W: [www.eco-urban.co.uk](http://www.eco-urban.co.uk)