

eco urban  
ARBORICULTURAL

**Arboricultural Implications Assessment  
and Method Statement  
for  
Gardeners Farm Barns, Flowers Lane, Plaitford**

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

**Gardeners Farm Barns, Flowers Lane, Plaitford**

Produced by:

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**Arboricultural Consultant**

Report Ref: **231594 - AIA REV B**

Report Date: **21 March 2024**

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## 1 INTRODUCTION

- 1.1 **Instruction:** I am instructed by Clydesdale Group Limited to report on trees which could be affected by proposed site changes at Gardeners Farm Barns, Flowers Lane, Plaitford and prepare an Arboricultural Implications Assessment (AIA) and preliminary Arboricultural Method Statement (AMS) to support changes to the existing site configuration.
- 1.2 **Document disclosure:** Initially, I was provided with a topographical survey (drawing reference 'ADS-0901'). This showed the positions of the significant trees on or near the site, together with any existing or nearby buildings and any other important site features. Subsequently, I was supplied with a copy of the proposed layout, (drawing reference '51532-XX-P1-02\_v6 Prop Site Plan') showing a new site configuration.
- 1.3 **Scope of report:** All my tree observations are of a preliminary nature, with the tree survey carried out from ground level without any investigations using invasive or diagnostic equipment. I was not able to fully view all the trees detailed in this report from all directions, as some were located on adjacent private property. I have therefore confined observations of these trees to what was visible from 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 grey superimposed over the proposed site changes shown in colour. 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 any retained trees which could realistically be affected by the proposed site changes. It shows any activities in Root Protection Areas (RPAs) and if trees are to be removed, they are shown with a red dashed 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.

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1.6 **Ecological issues and statutory tree protection:** Providing guidance on ecological issues is not within my sphere of expertise. However, trees and other vegetation can often provide nesting, roosting and feeding opportunities for protected species. Therefore, before any tree work proceeds on site, I advise that appropriate advice is sought to see whether the trees to be removed are being utilised by any protected species. At the time of writing, I have made no checks to ascertain whether any of the trees discussed are covered by tree preservation orders, or if the site is located within 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 such works are undertaken.

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

- 2.1 **Site visit and description:** I visited the site on 19 December 2023 to gather my tree data. The site is located in Flowers Lane, which is situated in the village of Plaitford. It is positioned on the western side of the road and consists of an area of hardstanding, with agricultural type barns located to the north, south and west of the site. Scattered groups and individual trees are located around the site margins, with the principal trees on the site being a linear grouping of oak trees located adjacent to the southern site boundary.
- 2.2 **Description of proposed site changes:** Change of use of a barn to a dwelling under Class Q of the GDPO.
- 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 Whitecliff Sand Member - Sand. I did not undertake any excavations on site to confirm this and a full geotechnical site investigation may need to be undertaken to provide a more in-depth level of information regarding soil type for the site.
- 2.4 **Tree survey methodology:** My inspection of the trees was visual and did not involve any climbing or exploratory investigations. During my visit, I identified obvious groups where appropriate and I assigned an identification number to each, as shown on the plan in Appendix 1. Tree stem diameters are also indicated on the Tree Protection Plan and for any trees assessed as groups, I have assigned an additional number to the main group figure (e.g., G1-1) to aid identification. 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 BS 5837:2012. I have included the BS categorisations in Appendix 6 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 construction phase has been completed.

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2.5 **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 BS 5837:2012, 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 can then help determine the location of the tree protection barriers and the position of any ground protection measures. Tree protection details are shown on the plan included in Appendix 1. Where there is a need for incursions into RPAs, an assessment of the implications of these activities is set out in Section 3 (Arboricultural Implications Assessment) of this report. Where appropriate, details of suitable work methodologies to 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 proposed site changes 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. Trees and hedges belonging to Category C (low quality) are considered to be generally less important and such vegetation would not normally constrain site development proposals. Category U trees/hedges are in such poor condition that they can be considered for removal, as they cannot realistically be retained as living trees in respect of the current land use for longer than 10 years. Therefore, these can be generally discounted in the context of a planning application. On this site a total of ten individual trees/groups were recorded during the tree survey and these 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 three trees/groups (T2, G6 and T10) were rated Category B	A total of five trees/groups (G1, G3, T4, T7 and G9) were rated Category C	A total of two trees/groups (G5 and T8) were rated Category U

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

No Category A trees were recorded during my survey and I have therefore focussed on the implications of the site changes mainly on the Category B trees on or near the site, but I have also considered the implications for the Category C and U trees present. Of the total of ten trees/groups surveyed, only a small number of trees in one group are scheduled to be removed to facilitate the site changes. However, three trees will have activities occurring within their RPAs. I have summarised the tree 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		Activities in RPAs	
Category A and B	Category C and U	Category A and B	Category C and U
None	Some tree loss in group G5	G6-3 (new surfacing and removal of existing structure) and T10 (building incursion and ground protection issues)	T7 (removal of existing structure)

**Table 2:** Trees lost and activities within RPAs

3.2 **Direct implications arising from the site changes - 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 trees surveyed will be retained and protected in accordance with the guidance set out in BS 5837:2012. Consequently, no high, moderate or low category trees will need to be removed to facilitate the proposed site changes.

3.2.2 **Tree removal:** A small number of trees in group G5 will need to be removed to allow the visibility splay south of the existing access to be achieved. Most of the trees in the group are elm species and I think it likely that these will succumb to Dutch Elm Disease at some stage in the future. Nonetheless, in the interim time, the bulk of the tree group can be retained and protected in accordance with BS5837 guidance. Consequently, I feel that the loss of the small number of trees required to facilitate the visibility splay is unlikely to have any particular visual implications in the locality.

3.3 **Additional implications arising from the proposed site changes**

3.3.1 **Trees and activities within RPAs:** Three trees (see Table 2) will have activities arising from the site changes occurring within their RPAs. My comments on these issues are as follows:

- **New surfacing:** New 'low invasive' surfacing will be installed within the RPA of tree G6-3 and after careful consideration and discussions with the client, it has been agreed that the sub base for this will be a cellular confinement system. This will reduce the need

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for significant excavation and excessive disturbance within the RPA of this tree. The use of cellular confinement systems is fully supported in BS 5837:2012, together with bespoke suspended engineered solutions (paragraph 7.4.2.7). I have set out some guidance in sections 5.1.2, 5.1.3 and 5.2.2 of this report detailing how the tree protection and sensitive work should proceed in order to help reduce the likelihood of impact on the health and wellbeing of this tree. Provided the work proceeds in accordance with this methodology, then I feel that the risk of implications for the tree are likely to be low.

- **Removal of existing structure within RPA:** The existing structure within the RPA of trees G6-3 and T7 is indicated for removal, with the area returned to soft landscaping. Provided the work proceeds with care, the removal of the existing structure has the potential of being of some benefit for the tree. I have indicated some guidance in section 5.2.3 of this report on how this work should proceed in order to help safeguard these particular trees. Provided the work is carried out with care, then I would not envisage any particular tree implications arising from this activity.
- **Building within tree RPA:** The position of the existing barn to be converted sits within the RPA of tree T10 and the extent of this is indicated on the plan in Appendix 1. The conversion of the existing barn to residential occupancy will likely require some ground works within the footprint of the existing building, with a working space of around 0.5m outside of the building footprint for any required foundation upgrade work. I have isolated the affected part of the RPA in a CAD drawing programme and can confirm that this would be around 2.6m<sup>2</sup> (of a total RPA of 102m<sup>2</sup>). This represents only around 2.5% of the total RPA of this tree. In my view, this area is so small that any required ground works would be unlikely to have any significant implications for this tree.
- **Ground protection:** The protective barriers around tree T10 will need to be set back to allow sufficient room for the movement of materials and personnel during the construction phase of the project. The protective barrier positions around the tree are shown on the plan in Appendix 1. The extent of the RPA 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 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 and remains in situ during the construction phase of the project.

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3.4 **Additional site tree issues**

3.4.1 **BS Category U trees:** As discussed, category U trees are in such poor condition that they can be considered for removal. On this site, in addition to the trees in group G5 covered in section 3.2.2 above, I have also assessed tree T8 as belonging to Category U. However, the tree appears to be located on the adjacent property and therefore outside the control of the site owners. The tree is somewhat distant from the barn conversion and could therefore, in my view, be retained for ecological benefit with a limited risk of harm for any incoming residents. However, the tree will need to be the subject of ongoing monitoring and discussions with the adjacent site owners regarding any works required to maintain acceptable levels of risk.

3.4.2 **Tree protection during the construction phase:** A preliminary Arboricultural Method Statement is included in Section 5 and this details the various issues associated with successful tree protection in a construction context on this site.

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#### 4 SUMMARY OF THE IMPLICATIONS OF THE PROPOSED SITE CHANGES ON TREES

- 4.1 **Summary:** Of the total of ten trees/groups surveyed, only a small number of trees in one group are scheduled to be removed to facilitate the site changes. However, three trees will have activities occurring within their RPAs. The small number of trees to be removed to facilitate the visibility splay are poor quality and the bulk of the trees within the group will be retained. Consequently, the loss of the trees indicated is unlikely to have any significant implications in the locality. Activities within tree RPAs have been carefully considered and details of appropriate work methodologies to reduce implications are set out in this report. Therefore, provided the tree protection measures set out in this document 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 any significant implications for the retained trees are likely to be 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. Additionally, any trees to be removed are indicated with a red dashed outline. The TPP is an important document and a copy of it should be kept on site for reference during the construction phase of the project.

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 before any materials or machinery are brought onto the site, and before any clearance or construction activities occur. With the exception of the barrier positions around tree G6-3 (see below), once the protective barriers have been positioned, these will stay in situ for the duration of the construction, unless previously agreed with the project 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, 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 **Temporary repositioning of barriers:** With regard to tree G6-3, the barriers around this tree encompass an area where new low invasive surfacing is indicated (see section 5.2.2 below). The barriers in this location will be redeployed to the edge of the construction zone to allow this activity to commence. However, the movement of the barriers will only occur immediately prior to the commencement of these tree sensitive works, so as to reduce the risk of any incidental construction related damage occurring to trees scheduled for retention.

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5.1.4 **Ground protection measures:** Where the positioning of tree protection barriers is not feasible due to the need for construction access, then ground protection measures will be needed to help safeguard RPAs. The position of ground protection is shown on the plan included in Appendix 1, with guidance for ground protection design included in Appendix 4 and an installation video for proprietary ground protection is available to view at <https://www.youtube.com/watch?v=QiaRgNUacKY>. The ground protection will also be installed before any materials or machinery are brought onto the site and prior to any clearance or construction activities occurring. Again, once the ground protection has been positioned, it will stay in situ for the duration of the construction phase, unless previously agreed with the project arboricultural consultant or council's tree officer.

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 **Installation of new surfacing:** Tree G6-3 may be affected by the installation of new car parking spaces. I have shown the minimum extent of 'low invasive' type surfacing required to successfully retain this tree on the plan included in Appendix 1 and the extent of this is based on its 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 may 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://www.youtube.com/watch?v=OuyMiguyIBM>. Generally, any required changes in topography will be accomplished by the use of fill materials rather than significant cutting into the existing site soil levels, which could have a significant impact on tree health. Suitable fill materials include uncompacted crushed stone or sharp sand. The removal of any vegetation to a depth of 50mm (to provide a flat surface for the installation of the cellular sub base) is unlikely to encounter or damage any tree roots. Any additional excavation will need to be assessed by an arboriculturist, in consultation with the council's tree officer. However, in the event that roots may need

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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 tree 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 Type 4/20mm or 20/40mm clean angular stone), with no fines, as per the manufacturer's specification. 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 help minimise any adverse risk of implications for the nearby tree.

5.2.3 **Removal of existing structure:** Trees G6-3 and T7 could be potentially affected by this activity and great 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 impact occurring:

- **Working in RPAs:** Care will need to be taken during the demolition of the existing corrugated shed and removal of any surfacing within its footprint. Where appropriate, work may need to take place from inside the existing building footprint. In addition, attention will need to be paid to dealing with any surfacing removal. In some instances, it may be possible for this to be left in situ just below ground level to minimise the potential for ground/root disturbance. However, if any surfacing is to be removed, all works will generally be undertaken using appropriate hand operated tools. A machine with a suitable reach may be used (under supervision) if it can work from outside the RPAs indicated, or from parts of the existing surfacing or surrounding hard standing areas. 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 surfacing, where tree roots may be found.

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- **Dealing with tree roots:** During digging, care will be taken to locate any substantial tree roots. Any roots temporarily exposed will be protected from direct sunlight, drying out and extremes of temperature by appropriate covering. Again, 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.
  - **Debris removal:** Work to remove any surfacing will start at a point closest to the trees and then work backward away from them. In this way, there should be no need to repeatedly traverse the areas where the surfacing has been removed. Debris and other material will be moved manually across the existing surfacing in a way that prevents any soil compaction. Alternatively, debris or spoil can be lifted out by machines working from outside the RPAs. Once the surfacing has been removed, the newly exposed soil and any roots beneath are vulnerable to compaction damage. Therefore, vehicular or repeated pedestrian access across the RPAs will be restricted during this activity.
  - **Installation of new soft landscaping:** Soft landscaping activity after construction can also be damaging to tree roots. Therefore, no significant level changes, deep excavation or cultivation shall occur within RPAs. Where necessary, good quality top soil can be used around the trees and this should be firmed into place, but not overly compacted in preparation for turfing or grass seeding. As discussed, exposed soil and tree roots are vulnerable to damage by compaction. Therefore, vehicular access will not be permitted in RPAs during the soft landscape installation phase and pedestrian movements required to carry out the necessary work will be kept to a minimum. In order to protect the recently exposed soil, new soft landscaping and tree root activity beneath, the tree protection barriers will be extended out to encompass the RPAs indicated on the plan in Appendix 1 until such times as all construction related activities are complete.

### 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.



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- 5.3.2 **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 for any reason, then 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 **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.
- 5.3.4 **Site offices, welfare facilities and contractor's car parking:** 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 **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 confirmed once the planning position has been formalised. 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. In the interim, 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 further agreement with the council:
1. Pre-commencement site meeting
  2. Extent of any arboricultural supervision agreed
  3. Tree works undertaken

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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. Removal of structure undertaken
  7. Redeployment of barriers and installation of new surfacing
  8. Tree protection only removed at the end of the construction phase when there is no longer any risk to trees

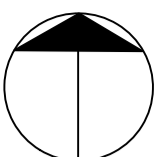
Barrie Draper BSc (Hons) Arb TechCert(ArborA) CertArb(RFS)  
**Arboricultural Consultant**

Date: **21 March 2024**

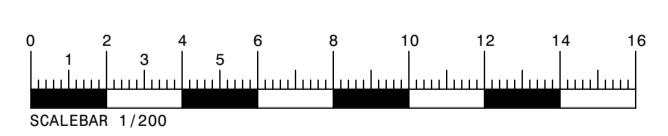
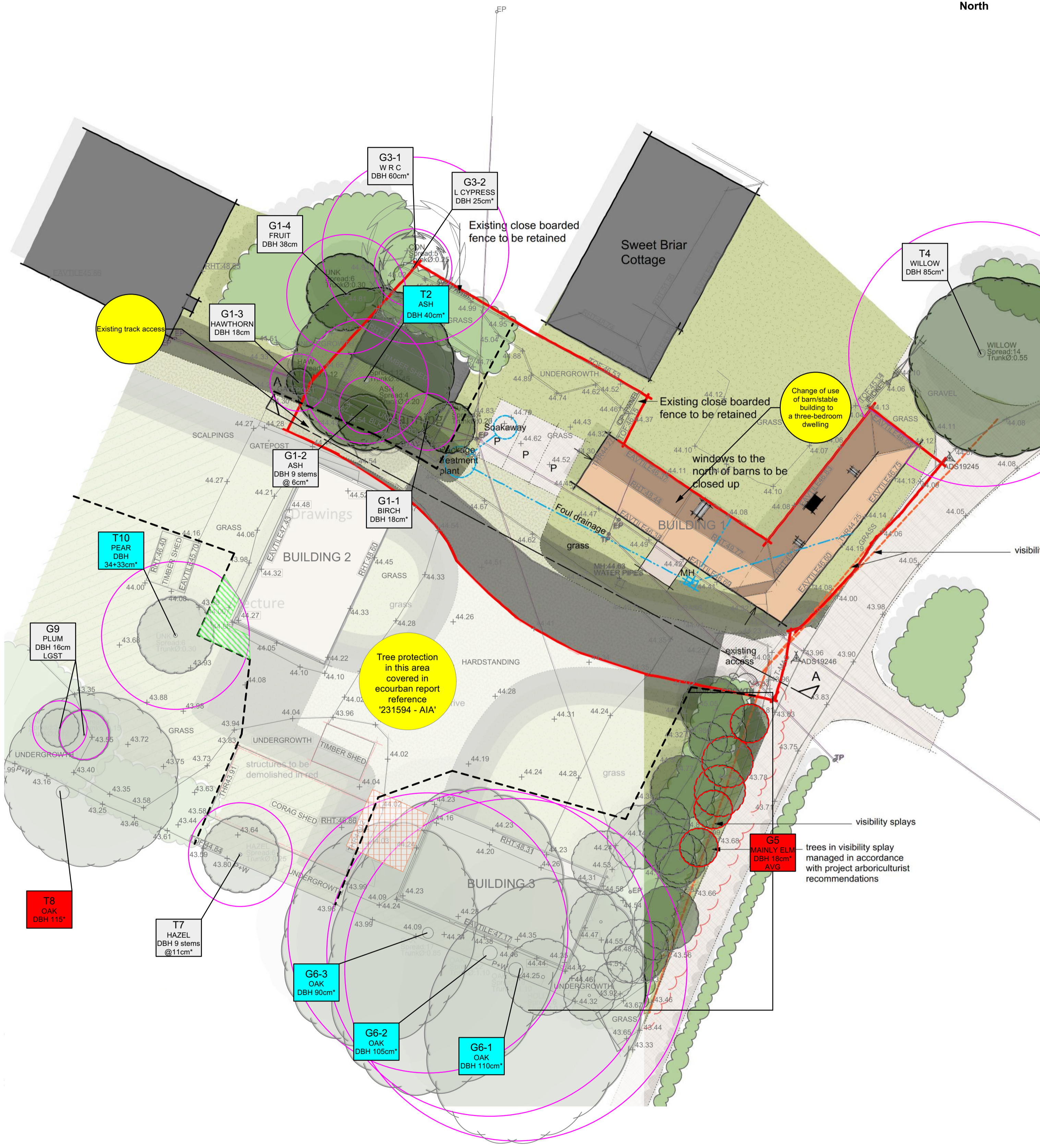
## Appendix 1: Tree Protection Plan

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1 A2 plan



Indicative North



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ECO 4 - TREE PROTECTION AT GARDENERS FARM BARN, FLOWERS LANE, PLAITFORD

SCALE: 1:200 @ A2

COMPOSITE PLAN: LAND SURVEY IN GREY, PROPOSED CHANGES IN COLOUR

- |  |  |  |   |  |
|--|--|--|---|--|
| <p><b>BS Category B:</b> Trees of moderate quality and value.<br/>DBH (Stem diameter @ 1.5m in cm. * Indicates estimates).</p> | <p><b>BS Category U:</b> Trees normally unsuitable for retention.<br/>DBH (Stem diameter @ 1.5m in cm. * Indicates estimates).</p> | <p> Tree protection barriers</p> <p> RPA where 'Low Invasive' type surfacing is to be installed</p> <p> RPA outside barriers requiring ground protection</p> | <p> Trees to be removed</p> <p> Root Protection Areas (RPAs): Preliminary tree constraints for Category B and C trees based on BS 5837 guidance</p> | <p>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</p> |
| <p><b>BS Category C:</b> Trees of low quality and value.<br/>DBH (Stem diameter @ 1.5m in cm. * Indicates estimates).</p>      |  |  |   |  |

## 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 (m <sup>2</sup> )	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									N	E	S	W	
					1	2	3	4	5		Mean stem dia. (cm)													No. of stems
All trees																		Where needed for construction access, crown lift trees by up to 4m over site.						
G1	Mixed species including birch, ash, hawthorn and fruit	10 Avg	38	* Lgst	-	-	-	-	-	-	-	-	2	4	3	3	2	Y	Small sized and self-sown trees. Generally poor form and in close proximity to overhead service. No direct access to survey.	C1	65	4.6		
T2	Ash	15	40	-	-	-	-	-	-	-	-	-	5	4	4	4	4	Y/MA	Self-sown tree. No direct access to survey. Close proximity to overhead service. Marginal Cate B tree.	B2	72	4.8		
G3	Western red cedar and Lawson cypress	14	60	* Lgst	-	-	-	-	-	-	-	-	-	4	4	4	3	Y/MA	Closely spaced offsite trees. Unremarkable domestic conifer type planting. Only one tree shown on land survey.	C1	163	7.2		

## 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										N	E	S	W
					1	2	3	4	5		Mean stem dia. (cm)	No. of stems												
T4	Willow	15	85	*	-	-	-	-	-	-	-	-	7	8	8	7	3	M/OM	Offsite tree, main stem covered in ivy, limiting access to survey. Pollarded previously.		C1	327	10.2	
G5	Mainly elm with holly	11	18	* Avg	-	-	-	-	-	-	-	-	3	-	3	3	3	Y	Linear grouping of roadside trees. Elm species likely Dutch Elm Disease candidates. Not all trees shown on land survey.	Fell trees within vis splay.	U	15	2.2	
G6	Oak	22	110	* Lgst	-	-	-	-	-	-	-	-	10	9	-	9	5	M	Linear grouping of large sized boundary trees. Ivy on main stems and scaffolds, this and position of adjacent shed limits access to survey. Some large diameter dead wood in canopies and localised dieback of branch extremities. Eastern tree with patches of dead bark lower stem.		B1	547	13.2	
T7	Hazel	6	-	*	-	-	-	-	-	-	11	9 main	2	3	-	3	2	MA	Small sized multi stemmed tree/shrub.		C1	49	4.0	

## 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 (m <sup>2</sup> )	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										N	E	S	W
					1	2	3	4	5		Mean stem dia. (cm)	No. of stems												
T8	Oak	16	115	*	-	-	-	-	-	-	-	-	8	9	-	9	5	M	Extensive dieback of canopy and copious deadwood. Dying.		U	598	13.8	
G9	Plum	7	-	* Lgst	11	10	10	-	-	-	-	-	3	3	-	-	3	Y	Small trees. Part of larger group.		C1	15	2.1	
T10	Pear	10	-	-	33	34	-	-	-	-	-	-	2	2	2	-	3	MA	Ivy on main stem and scaffolds, restricting access to survey. End tree of linear group.		B1	102	5.7	

### Abbreviations:

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

## 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.



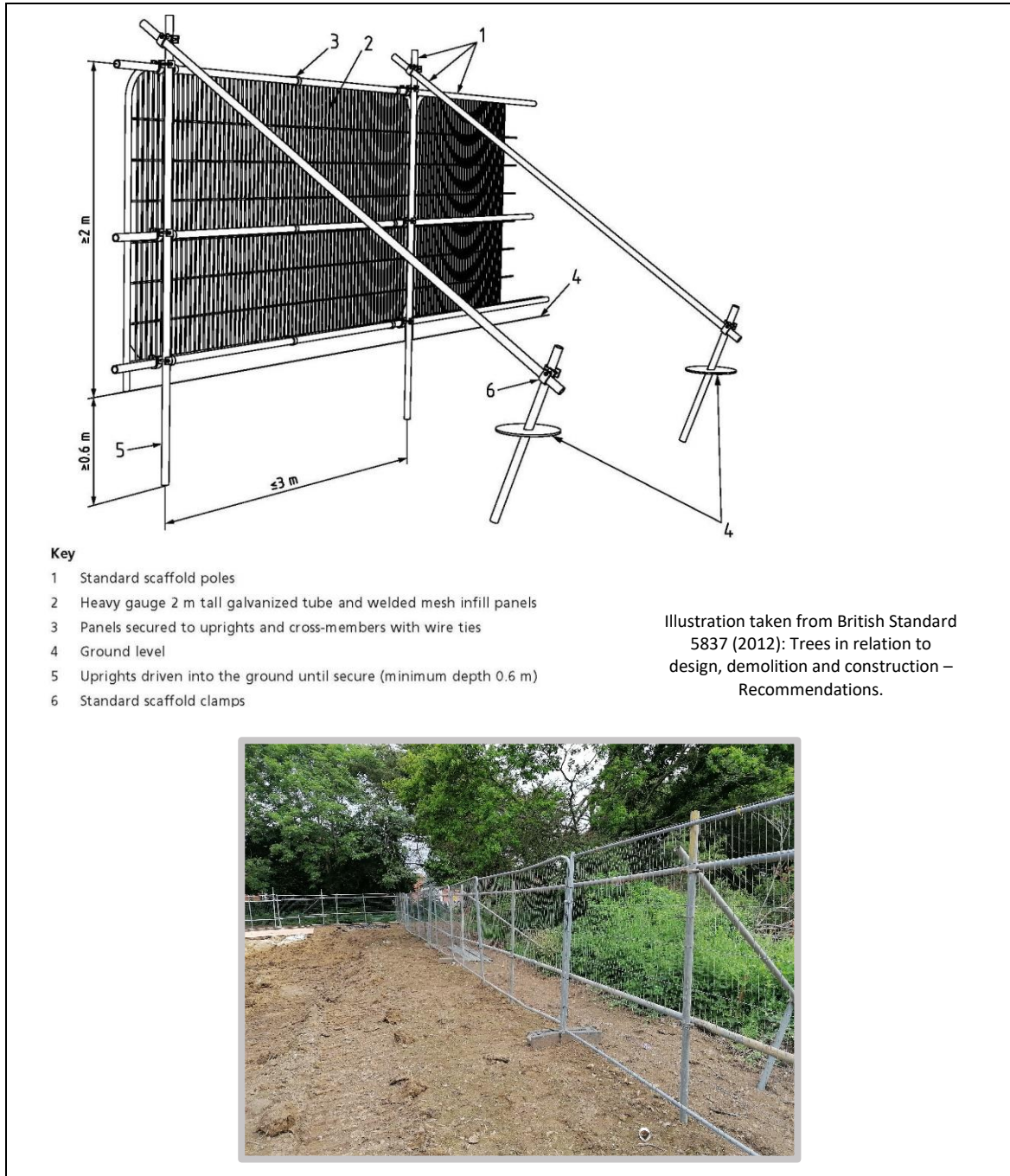
## Appendix 2: Tree Schedule and Inventory

<b>Management proposals</b>	<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>
<b>BS 5837 :2012 Category</b>	<i>Either U, A, B or C based on the BS 5837:2012 guidance.</i>
<b>RPA and RPA radius</b>	<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>		Lawson cypress	<i>Chamaecyparis lawsoniana</i>
Birch	<i>Betula pendula / pubescens</i>		Oak	<i>Quercus robur</i>
Elm	<i>Ulmus sp.</i>		Pear	<i>Pyrus sp.</i>
Fruit	<i>Malus sp., Prunus sp. or Pyrus sp.</i>		Plum	<i>Prunus sp.</i>
Hawthorn	<i>Crataegus monogyna</i>		Western red cedar	<i>Thuja plicata</i>
Hazel	<i>Corylus avellana</i>		Willow	<i>Salix babylonica / x sepulcralis 'Chrysocoma'</i>
Holly	<i>Ilex aquifolium</i>			

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



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

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

## Appendix 4: Illustrative Specification for Ground Protection within RPAs



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, 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, 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' Surfacing within RPAs

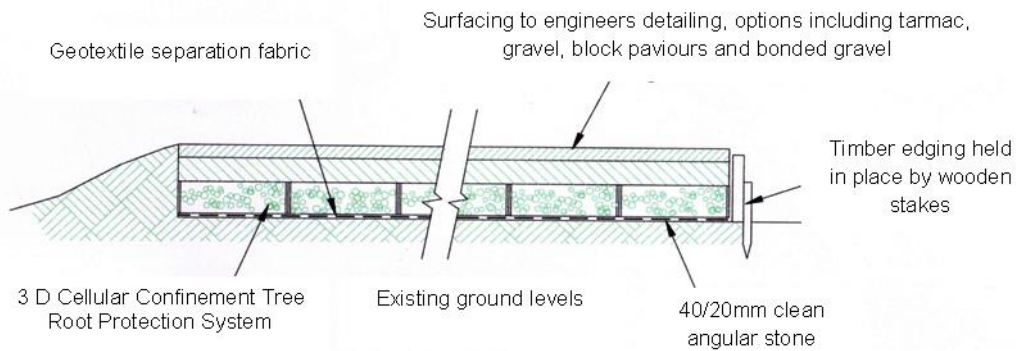



Illustration adapted from original drawings provided by Geosynthetics Ltd.

*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	



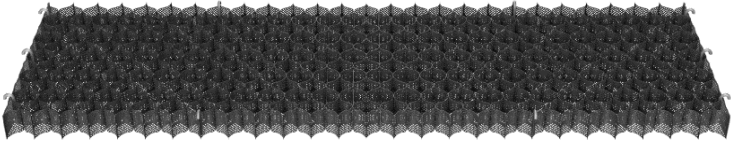
# Cellweb®TRP

## 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.

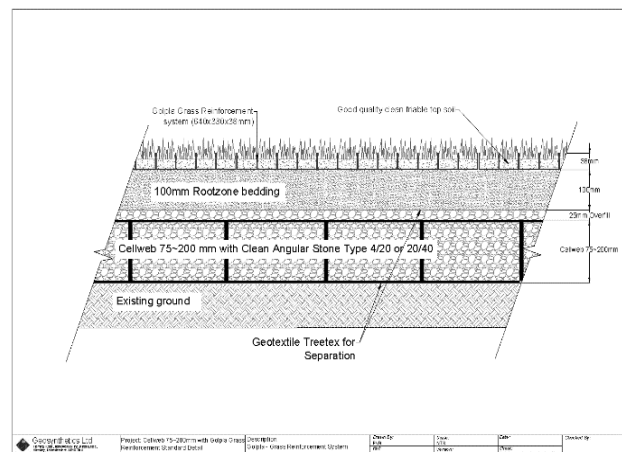
## From the drawing board to installation, we are here to help.

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: Illustrative Specification for 'Low Invasive' Surfacing within RPAs

PRODUCT DATA SHEET

Geosynthetics Limited Tel: 01455 617 139 Fax: 01455 617 140 Email: sales@geosyn.co.uk

## Clean Angular Stone

### Type 4/20

Specification for open graded subbase for use as storage below pervious pavements (also Coarse Aggregate in accordance with Series 500 Clause 503) Type 4/20.

**Material to BS EN 13242 or BS EN 12620**

Material to comprise crushed rock, concrete or blast furnace slag or similar approved. Crushed rock from granite, basalt, gabbro Concrete with more than 90% fractures faces.

Materials NOT permitted/NOT recommended:

Crushed gravel  
Limestone  
River gravel  
Single size aggregate  
Rounded aggregate

Properties	Test Method	Value	Comments
Grading	BS EN 13242	Grading 4/20 (Preferred) or 4/40, Gc 80/20, GTC 20/15	Aggregate size in mm
Fines Content	BS EN 13242	$f_4$	Mass fraction of passing 0.063mm sieve <4%
Shape	BS EN 13242	$FI_{20}$	Flakiness Index <20
Resistance to Fragmentation	BS EN 13242	$LA_{30}$	Los Angeles coefficient <30
<b>Durability:</b>			
- Water absorption to BS En 1097-6:2000, Clause 7	BS EN 13242	$WA_{24}^2$	Water abs 24h <2%
- For WA > 2%, magnesium sulfate soundness	BS EN 13242	$MS_{18}$	Magnesium Sulfate loss (by mass) <18%
Resistance to Wear	BS EN 13242	$M_{DE}^{20}$	Micro Deval Coefficient <20
<b>Acid-soluble sulfate content:</b>			
- Aggregates other than air-cooled blast-furnace slag	BS EN 13242	$AS_{0.2}$	Less than 0.2% by mass
- Air-cooled blast-furnace slag	BS EN 13242	$AS_{0.1}$	Less than 0.1% by mass
<b>Total Sulfur:</b>			
- Aggregates other than air-cooled blast-furnace slag	BS EN 13242	≤ 1 % by mass	
- Air-cooled blast-furnace slag	BS EN 13242	≤ 2 % by mass	
<b>Volume Stability of blast-furnace and steel slags:</b>			
- Air-cooled blast-furnace slag	BS EN 13242	Free from dicalcium silicate and iron disintegration in accordance BS EN 13242:2002, 6.4.2.2: $V_5$ (expansion by volume less than 5%)	
- Steel slag	BS EN 13242		
Leaching of contaminants	BS EN 13242	Blast furnace slag and other recycled materials should meet the requirements of the Environment Waste Acceptance Criteria for inert waste when tested in accordance with BS EN 12457-3	

If compaction is required should be in 150mm layers with 4 passes of a smooth wheeled roller max weight of 1000kg/m width **without vibration**.

**Aggregate gradings for sub-base materials to BS EN 12620**

Recommended grading is 4mm to 20mm Type 4/20. Other gradings may be used such as 4/40, if they meet all the requirements.

NOT to use single size aggregate.

Sieve Size (mm)	Percentage Passing (%)	
	Coarse aggregate 4/40	Coarse aggregate 4/20
80	100	-
63	98-100	-
40	90-99	100
31.5	-	98-100
20	25-70	90-99
10	-	25-70
4	0-15	0-15
2	0-5	0-5

This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentation. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge becomes available. Since we cannot anticipate all variations in actual end use conditions, Geosynthetics Limited makes no warranties and assumes no liabilities in connection with this information. Nothing in this publication is to be considered as a licence to operate under or a recommendation to infringe any patent right.

DR: 97/V2/04.06.2021



## Appendix 6: BS 5837:2012 – Assessment Categories

TREES FOR REMOVAL				
Category and definition	Criteria			Identification on plan
<p><u>Category U</u></p> <p>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</p>	<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	
<p><u>Category A</u></p> <p>Trees of high quality with an estimated remaining life expectancy of at least 40 years</p>	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
<p><u>Category B</u></p> <p>Trees of moderate quality with an estimated remaining life expectancy of at least 20 years</p>	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
<p><u>Category C</u></p> <p>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</p>	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

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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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