



Redrow Homes Limited

Condition 40 of DC/15/2151/OUT

Great Wilsey Park, Wilsey Road, Little Wratting, Suffolk

Arboricultural Method Statement – INFRASTRUCTURE

December 2019

FPCR Environment and Design Ltd

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH

Company No. 07128076. [T] 01509 672772 [F] 01509 674565 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

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1.0 INTRODUCTION

- 1.1 This Arboricultural Method Statement (AMS) has been prepared by FPCR Environment and Design Limited on behalf of Redrow Homes Limited to provide the methods of protection and pruning requirements for retained trees located at Great Wilsey Park, Wilsey Road, Little Wratting, Suffolk, (hereafter referred to as 'the site') during the construction of the Infrastructure as detailed on the accompanying plans.
- 1.2 This statement is also supported by an updated Arboricultural Impact Assessment and Tree Retention Plan produced in March 2019 by FPCR Environment and Design. This arboricultural assessment forms part of the supplementary information to be submitted as part of an application to address and discharge planning conditions for the development Great Wilsey Park (reference: DC/15/2151/OUT). This was concerned with the arboricultural matters only for Condition 41 of DC/15/2151/OUT at Phases 1A, 1B and 1C. Further reference should be made to this assessment where necessary.
- 1.3 This AMS outlines the methodology by which construction will be undertaken in order to safeguard trees in a satisfactory condition for the Infrastructure Application only. A separate AMS has been produced by FPCR (July 2019) outlining a working methodology for the construction of residential development within RMA Parcels A1, A2 and A8. This method statement sets out a definitive account for the treatment of retained trees during construction and specifies industry approved construction methods, where necessary.
- 1.4 The detail and requirements of this Method Statement comprise commitments to complete the construction phase of the development in a specific manner and will inform the production of all relevant tender documents and instructions to contractors.
- 1.5 **Failure to adhere to the correct sequence, manner and timing of operations detailed in this Method Statement may result in irremediable damage to trees or disturbance to retained tree cover. Retained trees are protected by planning law and reckless damage or tree removal could result in the serving of a stop notice or prosecution by the Local Planning Authority.**

Planning Consent

- 1.6 On the 15th August 2018 West Suffolk Council granted the outline application subject to compliance with the specified condition(s) and the submission of 'Reserved Matters'.
- 1.7 This AMS has provides details to discharge Condition 40 of the outline planning consent granted as detailed below.

Condition 40:

- 1.8 *Within any phase or reserved matters application, no development shall commence until an Arboricultural Method Statement for that particular phase or reserved matters application has been submitted to and approved in writing by the Local Planning Authority. The Statement should include details of the following:*

1. Measures for the protection of trees and hedges on the application site which are to be fixed at the start of construction including site clearance and retained for the duration of the works;

2. Details of all construction measures within the 'Root Protection Area' (defined by a radius of $dbh \times 12$ where dbh is the diameter of the trunk measured at a height of 1.5m above ground level) of those trees on the application site which are to be retained specifying the position, depth, and method of construction/installation/excavation of service trenches, building foundations, hardstandings, roads and footpaths;

3. A schedule of proposed surgery works to be undertaken to those trees and hedges on the application site which are to be retained. Planning and Regulatory Services, St Edmundsbury Borough Council, West Suffolk House, Western Way, Bury St Edmunds Suffolk, IP33 3YU 4. A supervision schedule. The development shall be carried out in accordance with the approved Method Statement and supervised on site by an arboricultural consultant.

Reason: To ensure that the most important and vulnerable trees are considered as part of the design process and adequately protected during the period of construction. This AMS sets out the methodology for all proposed works that affect trees on the site. Compliance with this AMS, once approved by the Local Planning Authorities (LPA) Arboricultural Officer, will be a requirement of all relevant contractors associated with the development proposals.

Overview of Trees on Site

- 1.9 A total of sixty-nine individual trees, thirty groups of trees, seven woodlands and twenty-four hedgerows were surveyed as part of the updated arboricultural assessment for the wider Great Wilsey Park, Haverhill. Trees were surveyed as individual trees and groups of trees where examples are clearly present. Refer to Tree Survey Plan and Appendix A – Tree Schedule for full details of the trees included in this assessment.
- 1.10 It should be highlighted that not all of these trees are situated within the Phase 1 developable areas and as such, reference should be made to Tree Survey Plans provided as part of this assessment.

Statutory Constraints

- 1.11 Local authorities reserve the right to create Tree Preservation Orders (TPO) in order to protect specific trees and woodlands in the interests of preserving the amenity value of a particular site or location. A TPO prohibits cutting down, topping, lopping uprooting or willful damage caused to trees covered by the TPO and such actions, if carried out without the prior written consent of the acting LPA, may be prosecuted and incur an unlimited fine.
- 1.12 The presence of any Tree Preservation Orders or Conservation Area designations that may affect the site has yet to be confirmed by West Suffolk Council. Once this information has been received, the report will be updated accordingly. Before any tree works are undertaken confirmation of the presence of the statutory constraints should be sought from the Local Authority.

Limitations

- 1.13 This arboricultural method statement is concerned solely with the matters arising from the development of the Infrastructure only (as demonstrated on drwg.no. PB8301-RHD-DE-H1-DR-D-0157 Red Line Boundary) and does not comment upon any Archaeological and Geotechnical Investigations.
- 1.14 Reference should be made to the supporting letters produced by FPCR Environment and Design Ltd (December 2018) and February 2019 (document reference: 8755 Condition 41 - Geotechnical Investigation) for further information on any arboricultural impacts pertaining to these aspects of the development.
- 1.15 These documents were provided to support DCON(A)/15/2151 - Application to Partially Discharge Conditions 39 (archaeology) in relation to phases 1a, 1b and 1c only, and Conditions 41 (tree survey), 42 (ecological implementation strategy), and 45 (biodiversity monitoring) of application DC/15/2151/OUT | Great Wilsey Park Wilsey Road Little Wratting Suffolk.
- 1.16 The areas proposed for development as part of the Infrastructure Application are accurate to the date of this method assessment and the dates cited on the supplied drawings. Any further amendments or alterations to the positioning of the developable areas shown on these plans may require further arboricultural review.
- 1.17 Any changes in ground level, or excavations near to tree roots not detailed within this AMS has the potential of adversely affecting the stability and physical condition of the retained trees and as such further examinations would be required.
- 1.18 The timescales for the construction program are not absolute. The timescales set out in this AMS are based on all supplied preliminary information available at the time of writing and is subject to change. As such the processes set out in the AMS may need to be reviewed and amended to suit as required.

2.0 CONDITION REQUIREMENTS

Specific Condition Requirements

2.1 To satisfy planning Condition 40 the following table provides a summary of the specific requirements of the AMS and how evidence of its action shall be provided.

Table 1: Condition Requirements and Evidence of Action

Condition Reference	Evidence of Action
<p>Condition 40(2,3) <i>Updated Tree Schedule within calculated RPA's</i></p>	<p>A tabulated Tree Schedule has been provided as Appendix A of this AMS and details species; height; canopy spread; stem diameter; age class and overall condition / health. This has been used to formulate positioning of fencing and to assess the need for any facilitation pruning. An updated Tree Survey and Retention plan/s have been provided in the Impact Assessment which has been supplied alongside this AMS.</p>
<p>Condition 40(1) <i>Tree Protection details in the form of a Tree Protection Plan (TPP)</i></p>	<p>A series of Tree Protection Plans have been produced and accompany the AMS. The plans show:</p> <ul style="list-style-type: none"> • Trees to be retained (green) • Tree Groups to be retained (green stripe hatch) • Hedgerow to be retained (solid green line) • Extent of calculated Root Protection Areas (blue circle) • Overlaid development proposals for reference • The position of Temporary Tree Protection fencing (orange line) • The position of Primary / Fixed Tree Protection fencing (pink line) • Measurements and Annotations for ease of interpretation (pink text) <p>The Tree Protection Plans have been annotated for ease of interpretation.</p>
<p>Condition 40(1) <i>Tree protection prior to / during construction as indicated on TPP</i></p>	<p>Specific Tree Protection Plans produced and appended to this AMS.</p> <p>Tree Protection erected to specification – dimensions and specifications shown on plans. Protective Fencing Signage (Appendix B) to be firmly affixed to fencing.</p> <p>Pre-commencement site meeting, tool box talks, periodic site supervision and reporting shall be carried out to ensure compliance.</p>

General Condition Requirements

- 2.2 This AMS and accompanying Tree Protection Plans should be reproduced in their entirety in colour and copies should be kept on file in the site office for reference.
- 2.3 The relevant contractors should be provided with copies of the Tree Protection Plans, where relevant to their work.
- 2.4 The Site Manager will read this AMS. It will be the responsibility of the Site Manager to ensure its compliance throughout the construction processes.

- 2.5 All operations will be monitored by the Site Manager and they will be responsible for ensuring that any sub-contractors do not carry out any process or operation which is likely to impact adversely upon any retained tree or hedge.
- 2.6 The contractor carrying out each task specific to their work shall be responsible for ensuring the AMS is adhered to at all times, The Site Manager is to ensure there is a monitoring regime for the maintenance of tree protection adopted on site.

3.0 TREE PROTECTION METHODOLOGY

Pre-commencement Tree Work

- 3.1 All agreed works will need to be undertaken prior to the main construction activities commencing and so that tree protection fencing can be erected in the positions demonstrated on the Tree Protection Plans.
- 3.2 A number of trees may require facilitation pruning in the form of crown lifting to allow for the erection of the protective fencing in the correct positions. Where this is necessary, the Tree Protection Plan has been annotated with a working methodology. Those trees which will be removed to facilitate the approved development layout are not detailed within the appendix.
- 3.3 All tree works undertaken will comply with *British Standard 3998 'Tree Work - Recommendations' (2010)* and be carried out by skilled tree surgeons preferably those approved by the Arboricultural Association (AA). The AA is the recognised authority for certification of tree work contractors. To become an Approved Contractor a company must satisfy the Associations Professional Committee of its consistently high standard of tree work.
- 3.4 All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (March - September inclusive) as all birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. Where this is not possible, vegetation should be checked for the presence of nesting birds prior to removal by an experienced ecologist.

Tree Protection Programme – Construction Phase

- 3.5 The key stages where tree protection are to be implemented along with the requirements for site supervision have been outlined in the following sections and within the relevant tables.
- 3.6 The timing of these stages may be subject to alteration in line with any future amendments of the construction program and as such, it is important to emphasise that the timeframe is designed to be flexible to accommodate these alterations whilst ensuring the protection of the trees on site.

Table 2: Timelines of Tree Protection for Construction Works

Timetable	Actions	Project Arboricultural Clerk of Works (ACoW) requirements	Task Specific Method Statement / Appendix reference
<p>Prior to any construction works</p>	<p>Client to liaise with manufacturer / provider of Cellular Confinement system to ascertain exact specification required and to arrange supply and installation requirements.</p> <p>Cellular Confinement required for footpath west of T64</p>	<p>Arboricultural Clerk of Works to be present to supervise installation of the system/s once an engineer has approved the specification. Details of supervision shall be recorded and photographic evidence shall be collected during the installation. This can be shared with the LPA upon request.</p> <p>Record of visit to be completed by Arboricultural Clerk of Works and a copy is to be handed to Site Manager. Continuous checks that the Tree Protection Induction Record has been completed shall be made.</p> <p>Supervision and inspections accompanied by robust auditing.</p>	<p>Refer to engineer's drawings and specifications provided by the supplier</p> <p>Appendices C4 & F</p> <p>Tablet based Auditing App (Arboricultural Clerk of Works use only)</p>

Timetable	Actions	Project Arboricultural Clerk of Works (ACoW) requirements	Task Specific Method Statement / Appendix reference
<p>Pre-commencement site meeting (est. Spring 2020)</p>	<p>Pre-commencement site meeting prior to the start of construction works on site.</p> <p>Timeline of construction processes to be shared with Arboricultural Clerk of Works and changes made to the AMS as required.</p>	<p>Site meeting / Tool box talk by Arboricultural Clerk of Works (refer to Section 3.10 - 3.12) to ensure that the AMS has been read by the relevant person, including the Site Manager and Tree Surgeon. Site Manager to provide working Gantt Chart or Timetable of construction processes and to ensure that Tree Protection measures have been included.</p> <p>Arboricultural Clerk of Works to check that copies of the Method Statement and Tree Protection Plans are present.</p>	<p>AMS.</p>
<p>During Pre-commencement site meeting (est. Autumn / Winter 2019)</p>	<p>Temporary and Permanent Tree Protection Fencing positions to be marked out and pegged (where applicable) by the Arboricultural Consultant to ensure that all fencing is erected in the correct positions.</p>	<p>Arboricultural Clerk of Works to assist with measuring out distances from trees in accordance with the Tree Protection Plans. Photos of evidence to be taken for auditing purposes.</p>	<p>Tree Protection plans</p>
<p>Commence Earthworks</p>			

Timetable	Actions	Project Arboricultural Clerk of Works (ACoW) requirements	Task Specific Method Statement / Appendix reference
<p>Permanent Tree Protective Fencing installed</p> <p>Dates TBC during Pre-commencement site meeting and in line with construction program)</p>	<p>Check fencing has been erected.</p> <p>Supervision of Earthworks where required</p> <p>Tree Protective Fencing position and suitability checked by Arboricultural Clerk of Works. Compliance with AMS checked and recorded.</p>	<p>Arboricultural Clerk of Works to check that all Tree Protective Fencing has been erected and is of the required type and specification (as shown on the plans). Any contingencies or action points required shall be outlined.</p> <p>Exact supervision requirements to be determined during Pre-commencement site meeting.</p> <p>Record of visit to be completed by Arboricultural Clerk of Works and a copy is to be handed to Site Manager and LPA upon request.</p>	<p>Tablet based Auditing App (Arboricultural Clerk of Works use only)</p>
<p>Installation of primary road layout within RPA of single Veteran tree (T64)</p>	<p>ACoW to supervise all works within the RPA of T64 (the impacts were originally discussed in the AIA). Record of visit to be completed by Arboricultural Clerk of Works and a copy is to be handed to Site Manager. Arboricultural Clerk of Works to be present to ensure that no major / structural roots are severed or unnecessarily damaged. An assessment shall be made prior to any decision on cutting toots is made.</p> <p>Chlorophyll Fluorescence test should be carried out prior to works commencing.</p>	<p>Arboricultural Clerk of Works to take measurements on T64 using handheld Arborcheck system to conduct chlorophyll fluorescence tests, enabling a quick, non-invasive, physiological assessment of tree health. The Arborcheck system enables early detection of potentially severely damaging stress factors.</p>	<p>Tablet based Arborchek system (Arboricultural Clerk of Works use only)</p>
<p>Earthworks Completed</p>			

Timetable	Actions	Project Arboricultural Clerk of Works (ACoW) requirements	Task Specific Method Statement / Appendix reference
Construction Works Commence			
<p>Date TBC during Pre-commencement site meeting and in line with construction program)</p>	<p>Client to liaise with manufacturer / provider of Cellular Confinement system to ascertain exact specification required and to arrange supply and installation requirements.</p> <p>Cellular Confinement required for footpath north of T66, T67, T68, T69, T70 & T71</p>	<p>Arboricultural Clerk of Works to be present to supervise installation of the system/s once an engineer has approved the specification. Details of supervision shall be recorded and photographic evidence shall be collected during the installation. This can be shared with the LPA upon request.</p> <p>Record of visit to be completed by Arboricultural Clerk of Works and a copy is to be handed to Site Manager. Continuous checks that the Tree Protection Induction Record has been completed shall be made.</p> <p>Supervision and inspections accompanied by robust auditing.</p>	<p>Refer to engineer's drawings and specifications provided by the supplier</p> <p>Appendices C4 & F</p> <p>Tablet based Auditing App (Arboricultural Clerk of Works use only)</p>
<p>Date TBC during Pre-commencement site meeting and in line with construction program)</p>	<p>Periodic compliance inspections accompanied by robust auditing of visits.</p> <p>Tree Protective Fencing position and suitability checked by Arboricultural Consultant. Compliance with AMS checked and recorded.</p>	<p>Record of visit to be completed by Arboricultural Clerk of Works and a copy is to be handed to Site Manager and LPA upon request.</p>	<p>Tablet based Auditing App (Arboricultural Clerk of Works use only)</p> <p>Refer to relevant plans</p>

Timetable	Actions	Project Arboricultural Clerk of Works (ACoW) requirements	Task Specific Method Statement / Appendix reference
<p>Following completion of works within the RPA of T64 (as detailed)</p>	<p>Second Chlorophyll Fluorescence measurements to be taken.</p>	<p>Arboricultural Clerk of Works to take measurements using handheld Arborcheck system to conduct chlorophyll fluorescence tests, enabling a quick, non-invasive, physiological assessment of tree health. The Arborcheck system enables early detection of potentially severely damaging stress factors.</p> <p>Results of Chlorophyll measurements to be assessed and any recommendations for remedial management to be implemented shall be reported to Site Manager / Client and LPA (upon request)</p>	<p>Tablet based Arborchek system (Arboricultural Clerk of Works use only)</p>
<p>Date TBC during Pre-commencement site meeting and in line with construction program</p>	<p>Soft landscaping to be planted in accordance with the approved landscape proposals.</p> <p>Remove barriers to allow landscaping works to be completed.</p> <p>Use of tracked machinery to be restricted in the RPA's of retained trees.</p>	<p>Tool box talk for contractor (refer to Section 3.10 - 3.12)</p>	
<p>Construction Works Completed</p>			
<p>Post Construction</p>			
<p>Date TBC during Pre-commencement site meeting and in line with construction program</p>	<p>Removal of Tree Protective Fencing</p>	<p>Arboricultural Clerk of Works to check if all Tree Protective Fencing has been removed and in doing so no damage has occurred to retained trees and hedgerows.</p>	

Timetable	Actions	Project Arboricultural Clerk of Works (ACoW) requirements	Task Specific Method Statement / Appendix reference
<p>Following completion of works within the RPA of T64 (as detailed)</p>	<p>Third Chlorophyll Fluorescence measurements to be taken.</p>	<p>Arboricultural Clerk of Works to take measurements using handheld Arborcheck system to conduct chlorophyll fluorescence tests, enabling a quick, non-invasive, physiological assessment of tree health. The Arborcheck system enables early detection of potentially severely damaging stress factors.</p> <p>Results of Chlorophyll measurements to be assessed and any recommendations for remedial management to be implemented shall be reported to Site Manager / Client and LPA (upon request)</p>	<p>Tablet based Arborchek system (Arboricultural Clerk of Works use only)</p>
<p>Tree Protection Program Completed</p>			

Arboricultural Supervision

Appointment of Arboricultural Clerk of Works

3.7 The Site Manager / Project Manager will be responsible for appointing the Arboricultural Clerk of Works in advance of any operations detailed in this Method Statement and in any instance where full compliance cannot be guaranteed i.e. where construction works within areas fenced off to protect trees may be required.

FPCR Arboricultural Consultant Contact Details

FPCR Arboricultural Consultant: Tom Bennett

Contact Email: tom.bennett@fpcr.co.uk

Contact Number: 01509 672772 / 07957641779

- 3.8 An overview of the specific involvement of the Arboricultural Clerk of Works has been provided in Tables 1 and 2.
- 3.9 An initial site meeting prior to starting any construction works, implementing tree surgery and erection of tree protection fencing, shall be a requirement of this AMS. At the meeting the Site Manager and Arboricultural Clerk of Works will discuss the methodology and various tree protection measures to be implemented subject to approval by the LPA.
- 3.10 A toolbox talk will also be given to the Site Manager and any on site operatives on the day of the meeting. The purpose of this toolbox talk will be to inform the Site Manager and Operatives of how to protect all retained trees. The toolbox talk shall then be repeated by the Site Manager when new external trades / Contractors commence work on site.
- 3.11 The toolbox talk shall focus on informing Contractors on the following topics:
- The protection of trees is a requirement of planning approval and failure to comply could result in stop notices being applied or fines;
 - How trees can be harmed on development sites;
 - How the trees on this site will be protected by tree protection fencing and ground protection;
 - Discussion on particular methods of working near the trees as outlined in this Method Statement;
 - How to report an issue before it becomes a problem;
- 3.12 Evidence of the toolbox being carried out shall be collected. This evidence can be viewed at any time by the Arboricultural Clerk of Works and shared with both the client and the LPA upon request. A periodic review shall be conducted to ensure continued compliance.
- 3.13 The Arboricultural Clerk of Works will periodically verify compliance with this AMS and sign-off elements of the work as various stages of the development commence. This shall be recorded using an online form which the Arboricultural Clerk of Works can share with the client and LPA.
- 3.14 The Arboricultural Clerk of Works will be responsible for specifying any tree work requirements and shall assist in, where required, the appointment of a suitably qualified Arboricultural Contractor to undertake the removal and pruning of trees.

Key Appointment, Supervision and Monitoring Stages of the Arboricultural Clerk of Works

- 3.15 The following stages of supervision shall be required:
- Pre-commencement site meeting and Tool box talk to be carried out.
 - Marking trees to be removed and to be pruned with the appointed tree contractor where relevant (**pre-commencement meeting**)
 - Walking the site with the Site Manager / Fencing Contractor to measure out the locations of the fencing (**pre-commencement meeting**)
 - Full auditing of these visits / supervision requirements to be carried out (**ongoing**)

- Ongoing visits in accordance with Table 2 to inspect the tree protection fencing and compliance with the AMS. Any other arboricultural matters arising which are unforeseen will need to be discussed with the Arboricultural Clerk of Works during these visits to decide the most appropriate course of action.
- After each site visit a short report/record will be compiled which will be sent to the client and local authority upon request as a record of evidence.

General Tree Protection Measures

- 3.16 This section details non-specific precautionary measures to be applied at all times.
- 3.17 No trees will be removed or pruned during construction other than those detailed within this method statement. Any proposed deviation from the tree removal and retention presented in this document must be discussed with the project Arboricultural Consultant prior to implementation.
- 3.18 All the retained trees will need to be adequately protected during works. Measures to protect these trees should follow the best practice principles set out in *BS5837: Trees in Relation to Construction Recommendations (2012)*. These have been broadly summarised below.
- 3.19 No Root Protection Areas will be affected by excavation works, storage of materials, plant or machine access, other than as described by this Method Statement.
- 3.20 Site compounds, Portakabins, Containers and other temporary buildings can in some cases be used in root protection area if prior consent is agreed by the acting local planning authority. The method for installing the buildings and an assessment of whether temporary ground protection is required is to be agreed with the project Arboriculturist and specified prior to installation.
- 3.21 No materials or soils are to be stored within the Root Protection Area of the retained trees.
- 3.22 Oil, bitumen, cement or other material that is potentially injurious to trees will not be stacked or discharged within 10m of a tree stem. No concrete mixing will be done within 10m of a tree. Allowance will be made for the slope of ground to prevent materials running towards the tree.
- 3.23 Wide or tall loads etc. should not come into contact with retained trees. Banks man should supervise transit of vehicles where they are in close proximity to retained trees.
- 3.24 No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.
- 3.25 Notice boards, telephone cables or other services will not be attached to any part of a retained tree.
- 3.26 If unexpected large roots (>25mm diameter) are encountered during excavation for construction works the arboricultural consultant should be contacted immediately. No exposed roots will be left uncovered. They will be covered over as soon as possible to minimise the risk of drying out and dying.
- 3.27 As recommended within section 8.8.3 of BS5837 Post Development Management of Existing Trees, all retained trees should be subjected to sound arboricultural management where there is public access in order to satisfy the landowner's duty of care.

Removal of Tree Protection Measures and Protective Fencing

- 3.28 Following the completion of all construction works and in agreement with the project arboriculturist the tree protection fencing will be removed carefully as to avoid causing root disturbance.

4.0 ARBORICULTURAL MONITORING AND TREE MANAGEMENT

- 4.1 Trees will require several years to adjust to environmental changes that occur during construction. Stressed trees are more prone to health problems, such as disease and insect infestations. Despite the enforcement of the recommendations continued within this AMS and the best intentions of the developer, including the implementation of the most stringent tree protection measures across the site, injury to trees may still occur.

Chlorophyll Fluorescence Assessment of T64

- 4.2 Prior to, during and post construction works, a series of Chlorophyll Fluorescence measurements shall be taken from T64, with two further tests carried out on a periodic basis. The Arborcheck system enables early detection of potentially severely damaging stress factors well before any visible symptoms are apparent.










A plant's leaves will take energy from the sun and convert it into complex carbohydrates that it can use for nutrition, a process known as photosynthesis. Normally a healthy tree will use about 80-84% of the sunlight it receives at the leaf surface. The rest is dispersed by non-photochemical processes: re-emitting in the form of infra-red radiation (heat) or far-red radiation (referred to as chlorophyll fluorescence).

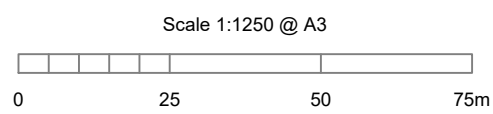
- 4.3 Trees which are not at optimum health do not have this balance. For example, after a period of drought or a change in growing conditions e.g. increased soil compaction or root damage resulting from construction works, the rate of photosynthesis will be slowed in response and a tree will have to increase its dissipation of energy by chlorophyll fluorescence.
- 4.4 By reading the intensity and nature of a tree's fluorescence, and also by measuring the foliar chlorophyll concentrations in a leaf (leaf greenness), an informed assessment of the tree's overall health can be made, even before there are the usual visible signs of stress.
- 4.5 Decisions shall be made as to recommending the most appropriate course of remedial treatment to be applied to reverse the stressed state and promote good healthy tree growth.

5.0 CONCLUSIONS

- 5.1 Provided that the protection methods in this AMS are followed on site, there shall be no unnecessary or adverse Arboricultural impacts.
- 5.2 Subject to the finalising a precise timeline of construction works and further information being provided on all demolition and earthworks required to facilitate the development; to be confirmed during the pre-commencement site meeting, the AMS is sufficient to satisfy the requirements of the planning Condition 40.
- 5.3 Due to the presence of temporary ground protection for the duration of the development, it is recommended that ground improvement works are carried out following the completion of the development and prior to any hard or soft landscaping.

KEY

-  Tree/Group to be Retained
-  Category U - Unsuitable for retention on arboricultural grounds
-  Hedgerow Proposed to be Retained and Incorporated into the New Development
-  Root Protection Area (Shown for retained trees only)
-  Veteran Tree Root Protection Area (in accordance with Ancient and Other Veteran Trees: Further Guidance on Management)
-  Line of High Intensity Protective Barriers - as per single 3500mm Heras Panel Specification (and distance from tree or retained structure)
-  Line of Low Intensity Protective Barriers (and distance from tree or retained structure where applicable)
-  RMA Parcels
-  Individual / Group Number and BS Category



NOTES

All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with project Arboriculturalist. Drawing to be read in conjunction with Arboricultural Assessment and Appendix A - Tree Schedule.

Drawing has been produced in colour and is based on digital information in .dwg format, aerial images and/or GPS location where appropriate. A monochrome copy should not be relied upon. The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further assessment may therefore be required where deemed necessary.

Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the project Arboriculturalist should works commence 12 months after the date of this survey.

SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

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A	01.09.19		CTT
B	11.12.19	Tree constraints updated	TCB

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masterplanning
 environmental assessment
 landscape design
 urban design
 ecology
 architecture
 arboriculture

FPCR Environment and Design Ltd
 Lockington Hall
 Lockington
 Derby DE74 2RH

t: 01509 672772
 f: 01509 674565
 e: mail@fpcr.co.uk
 w: www.fpcr.co.uk

client
Redrow Homes Ltd

project
Great Wilsey Park Haverhill

drawing title
TREE PROTECTION PLAN INFRASTRUCTURE RM APPLICATION

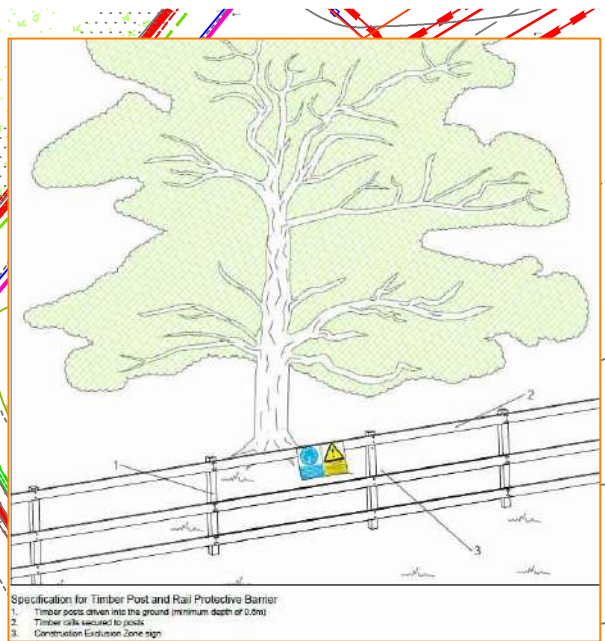
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TCB

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Dec 2019

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8755-TPP-04 B

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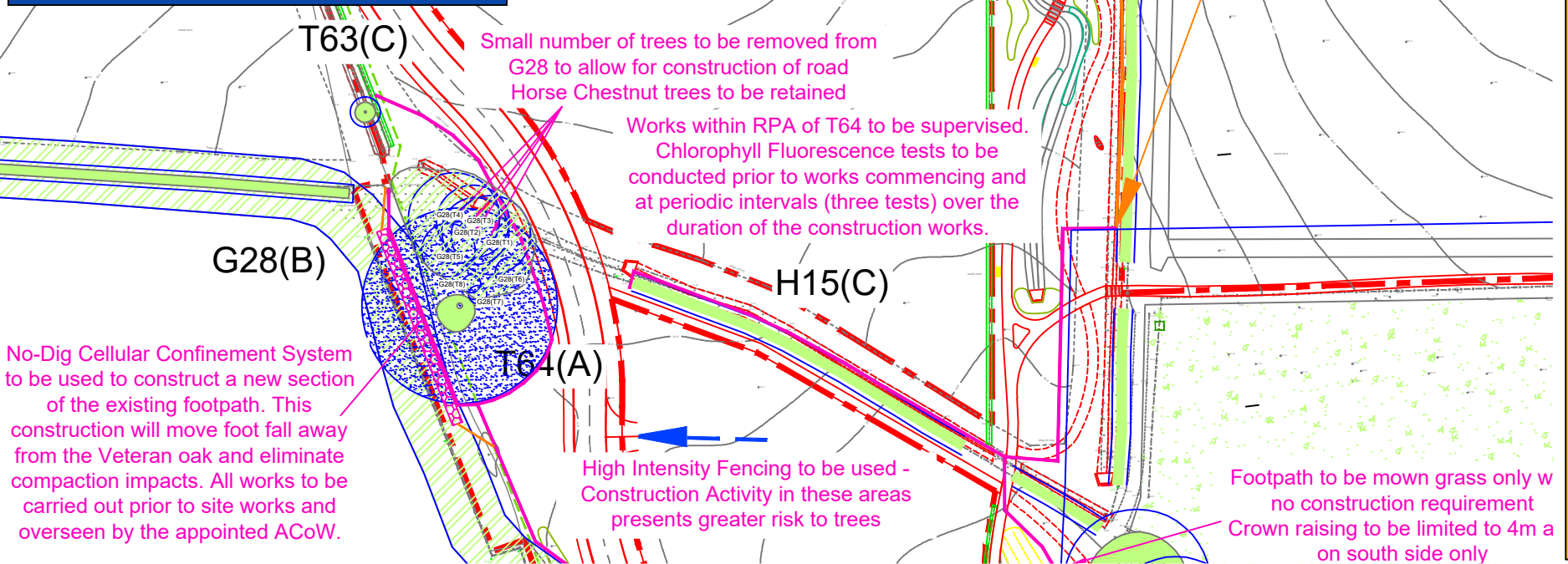
INSTALLATION OF NO-DIG CELLULAR CONFINEMENT - WORKING METHODOLOGY

The use of "no-dig" industry led specialist engineering solutions i.e. three dimensional load bearing cellular confinement systems shall be used to construct the footpath within the RPA's of trees T66-T71.

The use of a geotextile membrane will help support the sub-base and form a partial filter (a last line of defence) for contaminants such as oil and road salt. The sub-base will be porous to enable gaseous exchange and water infiltration. A suitable material is washed angular stone with a diameter between 20 - 40mm with no fine aggregates. Aggregates or stones must have a near neutral PH. The surface material will be permeable paving.

INSTALLATION

- Under arboricultural supervision remove the upper surface layer vegetation / turf. The depth of the excavation will be determined by the arboriculturalist and shall commence until the shallowest root with a diameter greater than 25mm, or a mat of fine fibrous tree roots, is encountered.
- Immediately after an even soil surface layer has been prepared, a geo textile membrane will be laid. The geo-textile membrane sheets should overlap by a minimum of 300mm. The sub-base will be laid to a depth and specification prescribed by the Structural Engineer.
- Lay out the collapsed cellular confinement system on-top of the membrane. Use a J pin (usually supplied) into the centre cell at the end of the panel and secure into the ground.
- Pull the cellular confinement sheet out to its full length and secure its length with another J pin. Measure its width to 2.56m and secure in each of the corners with the J pins. Use 10 pins per panel to create a panel measuring 8.1m x 2.56m. Each cell must be fully extended and under tension.
- Staple adjacent panels together at each cell (200mm: 5 staples. 150mm: 4 staples)
- Infill the Clean Angular Stone. The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm. Do not use M.O.T type 1 or crushed stone with fines for tree root protection.
- Infill the cells with the clean angular stone, working towards the tree and using the infilled panels as a platform - working from one end to the other. Minimum 25mm overfill of clean angular stone when used in conjunction with a hard surface. No compaction is required of the infill. Do not use a whacker plate or other means of compaction.
- Encourage settlement of the stone with the use of a light roller or with 2-3 passes of the construction plant used for installation.
- Where edging is required for footpath and light structures, the edge will comprise treated timber boards pegged every 500mm with a wooden peg on the outside.



HIGH INTENSITY TREE PROTECTIVE FENCING - WORKING METHODOLOGY

Tree Protection Fencing will be installed as detailed on the Tree Protection Plan at, where possible, the extent of the root protection areas or the edge of the crowns of the retained trees. The positioning of the Tree Protective Fencing shall be measured out with assistance from the Arboricultural Clerk of Works and, where deemed necessary, with the Site Manager present. Highly visible fluorescent paint and / or marker pegs / stakes will be used to assist in identification.

STANDARD TEMPORARY FENCING SPECIFICATION

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INSTALLATION GUIDE

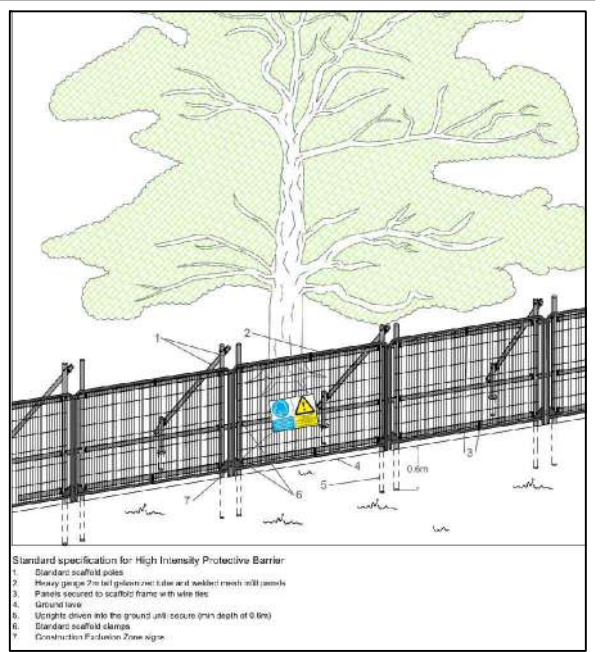
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- No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.

GENERAL TREE PROTECTIVE FENCING METHODOLOGY

The fencing will be strong and suitable for the location, type and proximity of construction activity and prevent access of machinery, plant or operative beyond the area required to construct the development.

Tree Protection Fencing and work exclusion zones will be clearly marked using appropriate signage. These signs shall be laminated to ensure they last the duration of the construction works and shall be fixed to the fencing panels every 10 metres along its length.

All Tree Protective Fencing will remain rigid and in place for the duration of the development and should be inspected at weekly intervals by the Site Manager alongside regular inspections to be carried out by the Arboricultural Clerk of Works.



LOW INTENSITY TREE PROTECTIVE FENCING - WORKING METHODOLOGY

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LOW INTENSITY FENCING SPECIFICATION

Where site circumstances and associated risk of damaging incursions into the RPA do not necessitate the default level of protection (as above) an alternative specification may be used if agreed with the local authority. An example would be 'Heras' type (Heras HSG151) welded mesh panels on rubber or concrete feet.

It may also be appropriate to utilize a 2m high post and rail fence which is suitably stabilized (as per the example shown).

INSTALLATION GUIDE










- Heras Fence Panel to be supported by rubberised stabiliser blocks with a base plate which is secured to the ground using ground pins (as shown).
- No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
- Where using a timber post and rail fence, this shall be at least 2m high with the gaps between each of the horizontal boards not exceeding 50cm.

GENERAL TREE PROTECTIVE FENCING METHODOLOGY

The fencing will be strong and suitable for the location, type and proximity of construction activity and prevent access of machinery, plant or operative beyond the area required to construct the development. Tree Protection Fencing and work exclusion zones will be clearly marked using appropriate signage. These signs shall be laminated to ensure they last the duration of the construction works and shall be fixed to the fencing panels every 10 metres along its length.

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KEY

-  Tree/Group to be Retained
-  Category U - Unsuitable for retention on arboricultural grounds
-  Hedgerow Proposed to be Retained and Incorporated into the New Development
-  Root Protection Area (Shown for retained trees only)
-  Veteran Tree Root Protection Area (in accordance with Ancient and Other Veteran Trees: Further Guidance on Management)
-  Line of High Intensity Protective Barriers - as per single 3500mm Heras Panel Specification (and distance from tree or retained structure)
-  No-dig Cellular Confinement Footpath Construction
-  RMA Parcels
-  Individual / Group Number and BS Category

Scale 1:1250 @ A3



NOTES

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SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

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environmental assessment ■

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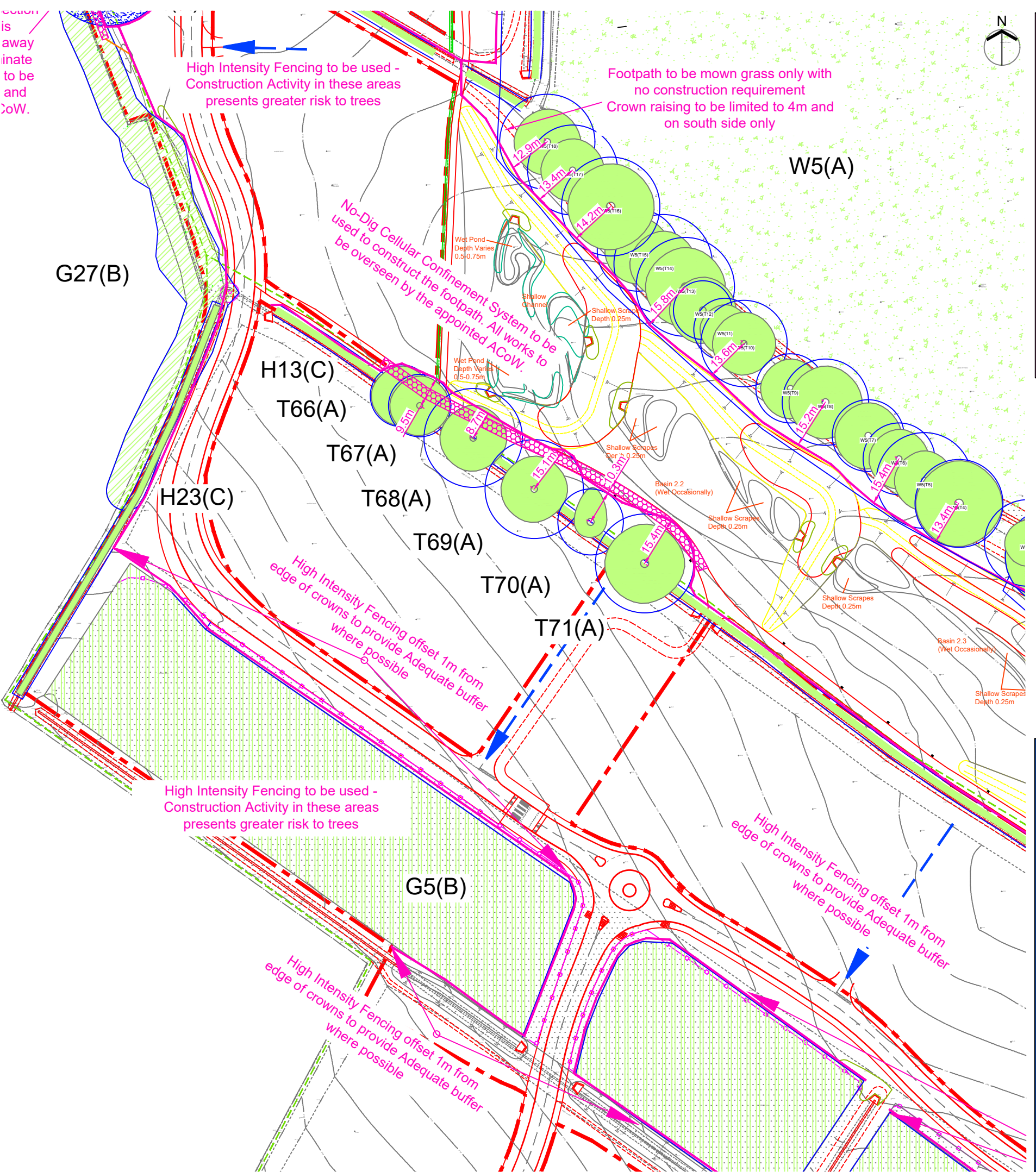
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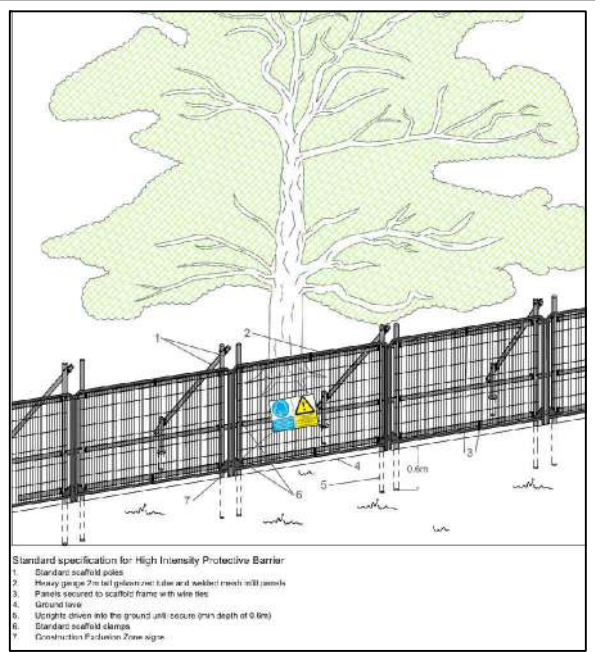
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




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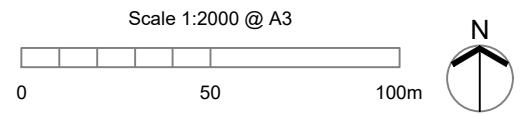
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-  Individual / Group Number and BS Category



NOTES

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 Lockington
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**TREE PROTECTION PLAN
INFRASTRUCTURE RM APPLICATION**

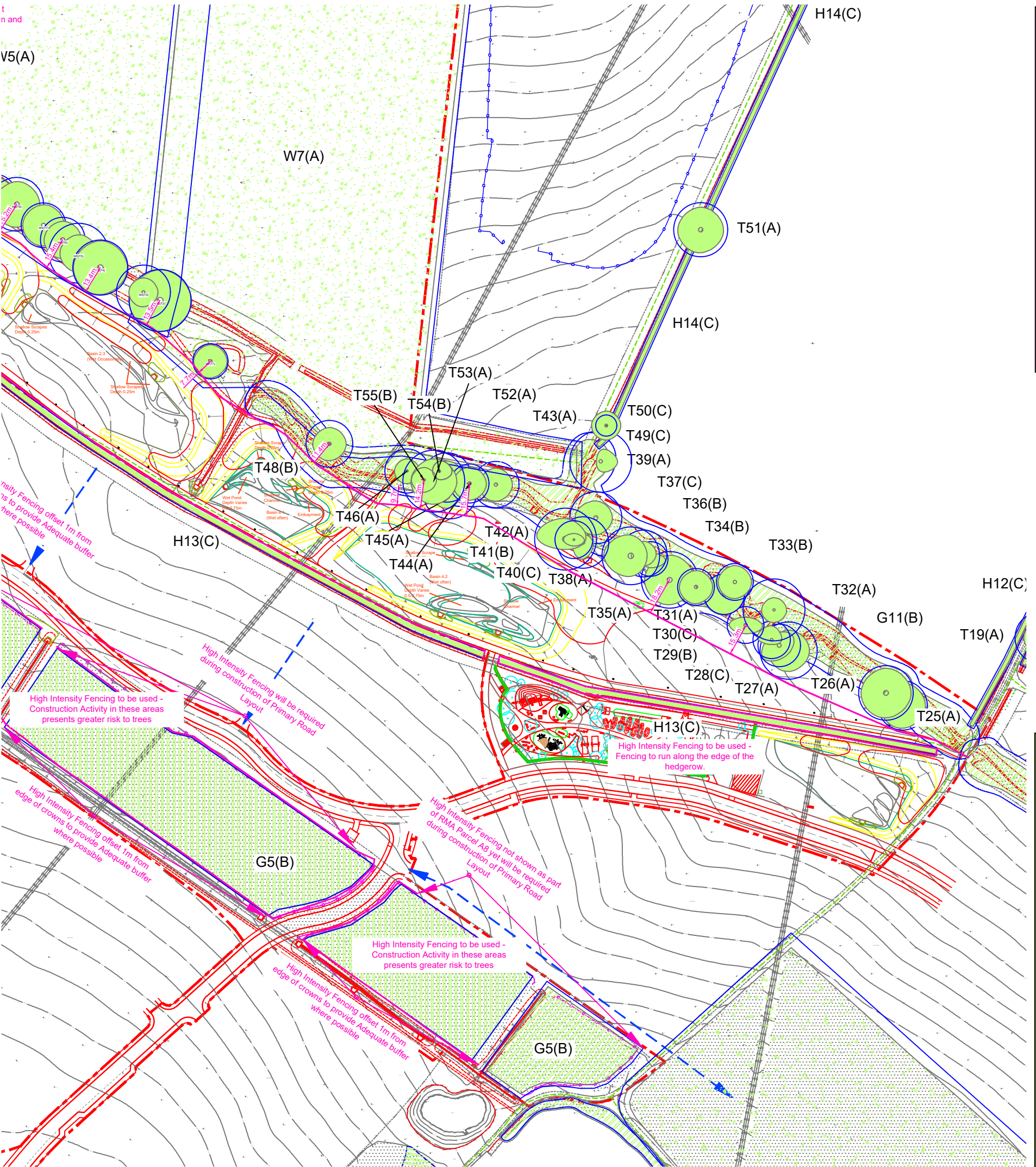
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drawing number
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HIGH INTENSITY TREE PROTECTIVE FENCING - WORKING METHODOLOGY

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INSTALLATION GUIDE

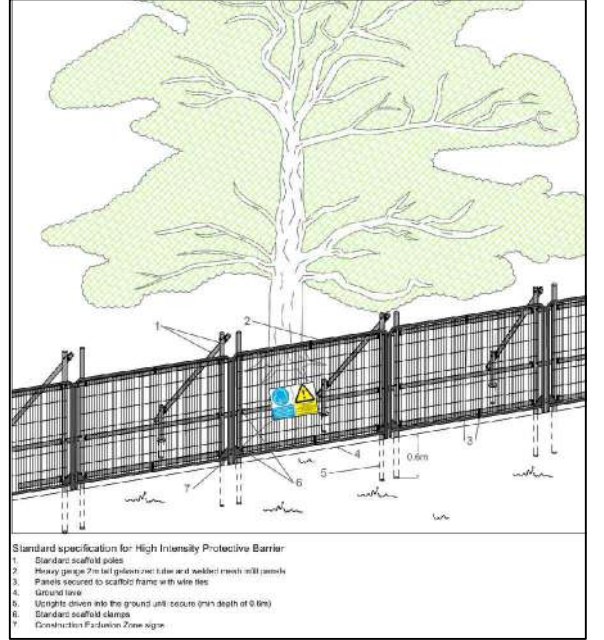
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TREE SURGERY CONTRACTORS - TREE WORK METHODOLOGY

The trees to be removed to facilitate the development (as shown) will be marked up by the Arboricultural Clerk of Works during a pre-commencement site meeting and, where required, with the tree surgeon present. Highly visible fluorescent paint will be used to assist in identification. A pre-commencement tool box talk will be given and the works will only be carried out once the project ecologist is satisfied that there are no ecological constraints.

The trees to be removed are shown on as red hatched circles. A key has been provided on the plan to assist with identification.

GENERAL TREE PRUNING RECOMMENDATIONS

All works shall be in accordance with BS 3998:2010 'Tree work Recommendations'. Any competent arboriculturalist will be aware of this publication and will be able to carry out work to the required standard. Therefore, the use of a competent tree surgery contractor is necessary to comply with this.

Prior to any pruning operations occurring, the tree and its surroundings should be assessed for the presence of any protected species and the timing of works should best avoid the potential for any adverse impact on wildlife. Consideration should be made for the seasonal cycles of species of fauna and flora e.g. nesting birds.

Minor pruning can be carried out at any time of the year however, it is recommended that pruning is avoided when deciduous trees, particularly maples, lime and birch are coming into leaf (Spring). Equally, pruning should be avoided in the autumn months when the trees ability to seal wounds is reduced and thus vulnerability to pathogenic decay fungi is much higher. Pruning in the Autumn depletes valuable energy reserves. This is particularly important if it is necessary to carry out heavy pruning or work on older trees. Pruning should also be avoided during or soon after drought.

TREE WORKS SPECIFICATION

Crown lifting / Raising

A number of trees may require crown lifting in order to facilitate the correct positioning and erection of the perimeter palisade fencing as specified on this plan.

Crown lifting is the removal of the lowest branches and/or preparing of lower branches for future removal. Good practice dictates crown lifting should not normally include the removal of large branches growing directly from the main stem of the tree as this can cause large wounds which can become extensively decayed leading to further long-term problems or more short-term biomechanical instability. Crown lifting should be restricted to less than 15% of the live crown height and leave the crown at least two thirds of the total height of the tree.

As a general rule branches should be removed at their point of attachment or shortened to a lateral which is at least 1/3 of the diameter of the removed portion of the branch, and all cuts should be kept as small as possible.

KEY



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project
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Haverhill**

drawing title
**TREE PROTECTION PLAN
INFRASTRUCTURE RM REFERENCE PLAN**

scale
1:5000 @ A3

drawn
TCB

date
Dec 2019

drawing number
8755-TPP-07 A

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Appendix A - Tree Schedule

Measurements	Age Class	Overall Condition	Root Protection Area (RPA)
Height - Measured using a digital laser clinometer (m)	YNG: Young trees up to ten years of age	G - Good: Trees with only a few minor defects and in good overall health needing little, if any attention	<ul style="list-style-type: none"> The RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m). The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required for a tree to be successfully retained. Tree roots extend beyond the calculated RPA in many cases and where possible a greater distance should be protected. Where veteran trees have been identified the RPA has been calculated in accordance with Natural England guidance i.e. 15x the stem diameter, uncapped.
Stem Dia. - Diameter measured (mm) in accordance with Annex C of the BS5837	SM: Semi-mature trees less than 1/3 life expectancy	F - Fair: Trees with minor rectifiable defects or in the early stages of stress from which it may recover	
Crown Radius - Measured using a digital laser clinometer radially from the main stem (m)	EM: Early mature trees 1/3 – 2/3 life expectancy	P - Poor: Trees with major structural and/or physiological defects such that it is unlikely the tree will recover in the long term	
Abbreviations est - Estimated stem diameter avg - Average stem diameter for multiple stems upto - Maximum stem diameter of a group	M: Mature trees over 2/3 life expectancy	D - Dead: This could also apply to trees in an advanced state of decline and unlikely to recover	
	OM: Over mature declining or moribund trees of low vigour	The BS category particular consideration has been given to the following <ul style="list-style-type: none"> The health, vigour and condition of each tree The presence of any structural defects in each tree/group and its future life expectancy The size and form of each tree/group and its suitability within the context of a proposed development The location of each tree relative to existing site features e.g. its screening value or landscape features Age class and life expectancy 	
	V: Veteran tree possessing certain attributes relating to veteran trees		

Structural Condition
The following is an example of considerations when inspecting structural condition: <ul style="list-style-type: none"> The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay Soil cracks and any heaving of the soil around the base Any abrupt bends in branches and limbs resulting from past pruning Tight or weak 'V' shaped forks and co-dominant stems Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994) Cavities as a result of limb losses or past pruning Broken branches or storm damage Damage to roots Basal, stem or branch / limb cavities Crown die-back or abnormal foliage size and colour

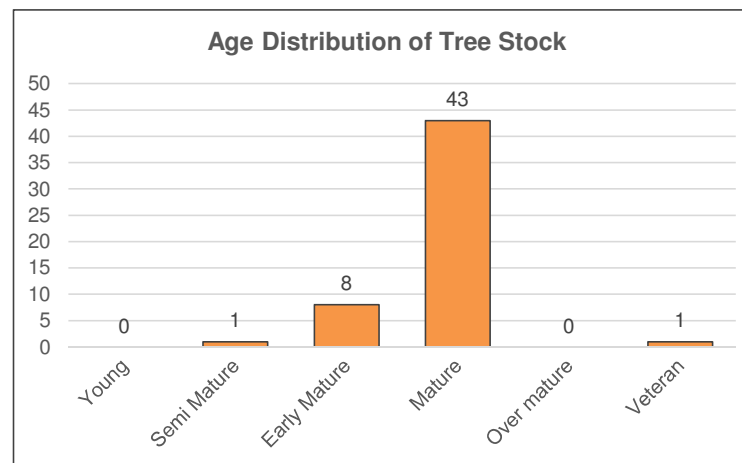
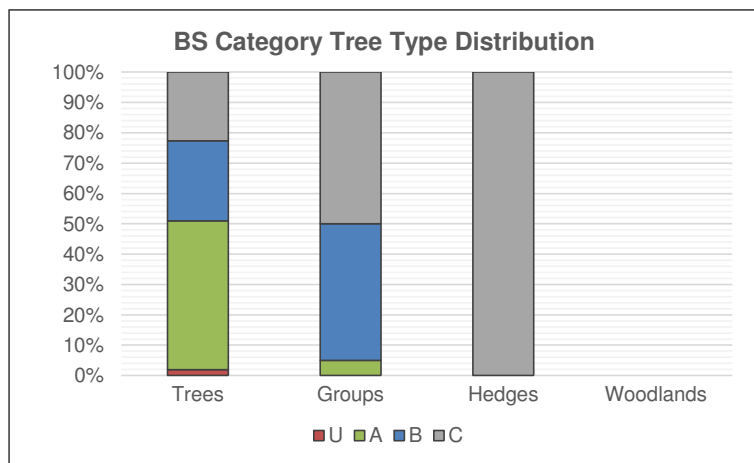
Quality Assessment of BS Category
Category U - Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.
Category A - Trees of high quality with an estimated remaining life expectancy of at least 40 years.
Category B - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
Category C - Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.
Sub-categories: (i) - Mainly arboricultural value (ii) - Mainly landscape value (iii) - Mainly cultural or conservation value

Appendix Summary

	Individual Trees	Totals	Tree Groups and Hedgerows	Totals
Category U	T56	1		0
Category A	T8, T16, T17, T19, T25, T27, T31, T32, T35, T38, T39, T42, T43, T44, T45, T46, T51, T52, T53, T59, T64, T66, T67, T69, T70, T71	26	G18, W3, W5, W7	4
Category B	T9, T29, T33, T34, T36, T41, T48, T54, T55, T57, T60, T61, T62, T68	14	G5, G11, G22, G23, G25, G26, G27, G28, G29, W6	10
Category C	T1, T2, T10, T18, T28, T30, T37, T40, T49, T50, T58, T63	12	G1, G2, G3, G4, G17, G19, G20, G21, G24, G30, H5, H6, H10, H11, H12, H13, H14, H15, H16, H17, H18, H19, H20, H21, H22, H23, H24	27
	Total	53	Total	41

BS Category Tree Type Distribution displays the proportion of trees assessed in each type to enable a better understanding of the category distribution.

Age Distribution of Tree Stock shows the number of trees in each age category across the tree stock allowing assessment of their longevity to be made.



Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
INDIVIDUAL TREES										
T1	Horse Chestnut Aesculus hippocastanum	13	700	6	M	F	Bark wounds noted Branch socket cavities observed Branch stubs and broken branches evident Included bark unions Minor dead wood evident in the crown Multi leaded form Pruning wounds noted Typical crown form "Cameraria ohridella Horse chestnut leaf miner" present	222	8.4	C (i)
T2	Horse Chestnut Aesculus hippocastanum	10	7x 210	6	M	F	Bark wounds noted Branch socket cavities observed Branch stubs and broken branches evident Coppiced form with Multiple stems from base Epicormic growth evident within the crown Included bark unions Minor dead wood evident in the crown "Cameraria ohridella Horse chestnut leaf miner" present	140	6.7	C (i)
T3-T7	Trees situated outside of Phase 1 area									
T8	English Oak Quercus robur	13	est 620	6	M	G	Broken branches evident Epicormic growth evident within the crown Even crown form Heartwood exposed Minor dead wood evident in the crown Storm damage present	174	7.4	A (i)
T9	English Oak Quercus robur	10	est 560	5	EM	F	Broken branches evident Dieback of the crown observed Epicormic growth evident within the crown Even crown form Heartwood exposed Minor dead wood evident in the crown Storm damage present	142	6.7	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T10	English Oak Quercus robur	4	est 250	N - 4 S - 0.5 E - 2 W - 2	SM	F	Bark wounds noted Broken branches evident Dieback of the crown observed Epicormic growth evident within the crown Heartwood exposed Minor dead wood evident in the crown Storm damage present Loss of crown to south	28	3.0	C (i)
T11-T15	Trees situated outside of Phase 1 area									
T16	English Oak Quercus robur	14.5	950	12	M	F	Branch stubs evident Heartwood exposed Minor and major dead wood evident in the crown No major defects were noted Storm damage present Woodpecker holes observed Exposed position Column of decay to branch on west at 3m	408	11.4	A (i)
T17	English Oak Quercus robur	14.5	est 820	N - 8 S - 10 E - 8 W - 10	M	F	Base obscured Branch stubs evident Dense ivy cover on main stem Epicormic growth evident within the crown Heartwood exposed Minor and major dead wood evident in the crown No major defects were noted Storm damage present Woodpecker holes observed Exposed position	304	9.8	A (i)
T18	Sycamore Acer pseudoplatanus	9	est 250	3	EM	F	Basal suckers present Base obscured Crossing and rubbing branches Dense ivy cover on main stem Dense undergrowth at the base	28	3.0	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T19	English Oak Quercus robur	14	est 1030	8	M	F	Base obscured Branch stubs and broken branches evident Dieback of the crown observed Epicormic growth evident within the crown minor and major dead wood evident in the crown Tractor mounted flail damage evident	480	12.4	A (i)
T20-T24	Trees situated outside of Phase 1 area									
T25	English Oak Quercus robur	20	1000	11	M	G	Branch socket cavities observed Branch stubs and broken branches evident Epicormic growth evident within the crown Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown No major defects were noted Typical crown form	452	12.0	A (i)
T27	English Oak Quercus robur	19	1160	10	M	G	Branch socket cavities observed Branch stubs and broken branches evident Epicormic growth evident within the crown Heartwood exposed Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown No major defects were noted Typical crown form Woodpecker holes observed	609	13.9	A (i)
T28	English Oak Quercus robur	19	870	N - 6 S - 6 E - 8 W - 10	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Dieback of the crown observed Epicormic growth evident within the crown Heartwood exposed Low crown form Minor and major dead wood evident in the crown Fungal brackets to base east and west "Daedalea quercina Maze gill"	342	10.4	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T29	English Oak Quercus robur	9	760	N - 7 S - 2 E - 5 W - 7	M	F	Branch socket cavities observed Branch stubs and broken branches evident Crossing and rubbing branches Dense ivy cover on main stem Dieback of the crown observed Epicormic growth evident within the crown Heartwood exposed Low crown form Minor dead wood evident in the crown Lost top at 5m Stream under cutting base to east	261	9.1	B (i)
T30	English Oak Quercus robur	14	750	N - 4 S - 4 E - 8 W - 8	M	P	Branch stubs and broken branches evident Epicormic growth evident within the crown Heartwood exposed Low crown form Minor and major dead wood evident in the crown Loss of main leader to north at 2m Column of decay on remaining leaders	254	9.0	C (i)
T31	English Oak Quercus robur	18	820	10	M	F	Branch stubs and broken branches evident Epicormic growth evident within the crown Heartwood exposed Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown No major defects were noted Stream cutting away bank to east	304	9.8	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T32	English Oak Quercus robur	20	1250	6	M	F	Branch stubs and broken branches evident Dieback of the crown observed Epicormic growth evident within the crown Heartwood exposed Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown No major defects were noted Storm damage present Woodpecker holes observed Twin stemmed from 3m with swelling around area of lost of leader	707	15.0	A (i)
T33	Ash Fraxinus excelsior	14	est 750	8	M	F	Base obscured Branch stubs and broken branches evident Dense ivy cover on main stem Heartwood exposed Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown No major defects were noted Inonotus hispidus, Shaggy bracket on floor Twin stemmed from 2m Exposed buttress roots	254	9.0	B (i)
T34	English Oak Quercus robur	17	750	8	M	F	Branch stubs and broken branches evident Heartwood exposed Light ivy cover on main stem Minor and major dead wood evident in the crown Storm damage present	254	9.0	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T35	English Oak Quercus robur	22	1150	12	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Epicormic growth evident within the crown Heartwood exposed Minor and major dead wood evident in the crown Storm damage present Typical crown form	598	13.8	A (i)
T36	English Oak Quercus robur	12	700	N - 3 S - 4 E - 7 W - 7	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Dieback of the crown observed Epicormic growth evident within the crown Heartwood exposed Minor and major dead wood evident in the crown Storm damage present Typical crown form Twin stemmed from 3m	222	8.4	B (i)
T37	English Oak Quercus robur	16	950	6	M	F	Basal cavity observed Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Heartwood exposed Minor and major dead wood evident in the crown Storm damage present Significant exposed heartwood to west from ground level to 4m from loss of leader Loss of structural roots to west	408	11.4	C (i)
T38	English Oak Quercus robur	20	1170	N - 10 S - 10 E - 8 W - 13	M	G	Branch socket cavities observed Branch stubs evident Low crown form Minor and major dead wood evident in the crown No major defects were noted Storm damage present Typical crown form	619	14.0	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T39	English Oak Quercus robur	25	1050	N - 8 S - 8 E - 8 W - 10	M	G	Branch socket cavities observed Branch stubs evident Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown No major defects were noted Storm damage present Typical crown form	499	12.6	A (i)
T40	English Oak Quercus robur	25	1040	N - 4 S - 8 E - 5 W - 5	M	P	Branch socket cavities observed Branch stubs evident Dieback of the crown observed Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown Storm damage present Woodpecker holes observed Large pruning wounds to the west at 6 and 10m Large failed limb from adjacent tree to west	489	12.5	C (i)
T41	English Oak Quercus robur	22	770	N - 3 S - 3 E - 5 W - 5	M	F	Branch socket cavities observed Branch stubs evident Dieback of the crown observed Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown Storm damage present Suppressed crown form Woodpecker holes observed Loss of leader at 10m	268	9.2	B (i)
T42	English Oak Quercus robur	25	1370	N - 10 S - 5 E - 10 W - 14	M	F	Branch socket cavities observed Branch stubs evident Dieback of the crown observed Lateral lever arm observed Light ivy cover on main stem Low crown form Minor and major dead wood evident in the crown Storm damage present Suppressed crown form Woodpecker holes observed Two lateral limbs to west	707	Capped at 15m	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T43	English Oak Quercus robur	18	930	8	M	F	Branch socket cavities observed Branch stubs evident Dense ivy cover on main stem Lateral lever arm observed Low crown form Minor and major dead wood evident in the crown Storm damage present Suppressed crown form Woodpecker holes observed Loss of limb at 10m to west	391	11.2	A (i)
T44	English Oak Quercus robur	22	1100	N - 8 S - 8 E - 5 W - 10	M	F	Branch socket cavities observed Branch stubs evident Epicormic growth evident within the crown Minor and major dead wood evident in the crown Storm damage present	547	13.2	A (i)
T45	English Oak Quercus robur	22	1000	8	M	F	Branch stubs evident Epicormic growth evident within the crown Minor and major dead wood evident in the crown Storm damage present Twin stemmed at 5m	452	12.0	A (i)
T46	English Oak Quercus robur	22	890	6	M	F	Branch socket cavities observed Branch stubs evident Epicormic growth evident within the crown Minor and major dead wood evident in the crown Storm damage present	358	10.7	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T47							Tree no longer present			
T48	English Oak Quercus robur	20	est 950	8	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dieback of the crown observed Epicormic growth evident within the crown Minor and major dead wood evident in the crown Pruning wounds noted Storm damage present	408	11.4	B (i)
T49	Crack Willow Salix fragilis	15	est 1330	N - 6 S - 5 E - 8 W - 2	M	F	Broken branches evident Crossing and rubbing branches Dense undergrowth at the base Included bark unions Light ivy cover on main stem Low crown form Minor dead wood evident in the crown Multi leaedered form Major failed limb to east Hanging dead wood	707	Capped at 15m	C (i)
T50	Ash Fraxinus excelsior	11	est 330 170 210	7	EM	F	Branch stubs and broken branches evident Coppiced form with Multiple stems from base Crossing and rubbing branches Low crown form Minor dead wood evident in the crown <i>Pseudomonas syringae fraxini</i> Bacterial Ash Canker present	82	5.1	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T51	English Oak Quercus robur	21	est 1100	11	M	F	Branch stubs and broken branches evident Dense ivy cover on main stem Minor dead wood evident in the crown Multi leadered form No major defects were noted Typical crown form	547	13.2	A (i)
T52	English Oak Quercus robur	22	780	8	M	F	Branch socket cavities observed Branch stubs and broken branches evident Epicormic growth evident within the crown Minor and major dead wood evident in the crown Storm damage present Twin stemmed from base Woodpecker holes observed Twin leaders at 8m	275	9.4	A (i)
T53	English Oak Quercus robur	23	1340	11	M	F	Branch socket cavities observed Branch stubs and broken branches evident Prolific epicormic growth evident within the crown Minor and major dead wood evident in the crown Storm damage present Woodpecker holes observed Loss of leader at 2m to the west	707	Capped at 15m	A (i)
T54	English Oak Quercus robur	12	830	N - 5 S - 4 E - 6 W - 3	M	F	Branch socket cavities observed Branch stubs and broken branches evident Prolific epicormic growth evident within the crown Minor and major dead wood evident in the crown Storm damage present Suppressed crown form Woodpecker holes observed	312	10.0	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T55	English Oak Quercus robur	18	930	6	M	F	Branch socket cavities observed Branch stubs and broken branches evident Epicormic growth evident within the crown Minor and major dead wood evident in the crown Storm damage present Woodpecker holes observed Loss of leader at 3m with exposed heartwood	391	11.2	B (i)
T56	Ash Fraxinus excelsior	12	est 700	5	M	P	Dense ivy cover on main stem Dense undergrowth at the base Dieback of the crown observed Limited future potential Minor and major dead wood evident in the crown Specimen in extensive decline	N/A	N/A	U
T57	English Oak Quercus robur	12	est 590	8	EM	F	Dieback of the crown observed Minor dead wood evident in the crown	157	7.1	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T58	Goat Willow Salix caprea	7	est 6x 150	4	EM	F	Crossing and rubbing branches Multi stemmed from base Tractor mounted flail damage evident	61	4.4	C (i)
T59	English Oak Quercus robur	14	est 760	8	EM	F	Minor and major dead wood evident in the crown Pruning wounds noted Tractor mounted flail damage evident	261	9.1	A (i)
T60	Ash Fraxinus excelsior	11	est 400	5	EM	F	Bark wounds noted Minor dead wood evident in the crown No major defects were noted Tractor mounted flail damage evident	72	4.8	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T61	Ash Fraxinus excelsior	15	est 630	7	M	F	Bark wounds noted Branch socket cavities observed Branch stubs and broken branches evident Minor and major dead wood evident in the crown Tractor mounted flail damage evident Open wound at 8m Pseudomonas syringae fraxini Bacterial Ash Canker present	180	7.6	B (i)
T62	English Oak Quercus robur	15	750	N - 8 S - 6 E - 6 W - 6	M	F	Bark wounds noted Branch socket cavities observed Branch stubs and broken branches evident Minor and major dead wood evident in the crown No major defects were noted Tractor mounted flail damage evident	254	9.0	B (i)
T63	Hawthorn Crataegus monogyna	6	est 250	2	EM	F	Bark wounds noted Minor dead wood evident in the crown No major defects were noted Tractor mounted flail damage evident	28	3.0	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T64	English Oak Quercus robur	6	1285	N - 1 S - 5 E - 2 W - 4	V	P	Basal cavity observed Delaminating bark on main stem Prolific epicormic growth evident within the crown Heartwood exposed Limited future potential Minor dead wood evident in the crown Specimen in extensive decline Vandalism present and fire damaged Extensive internal hollowing Supported by fallen timber	1167	19.3	A (iii)
T65	Tree no longer present									
T66	English Oak Quercus robur	19	est 780	9	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Minor and major dead wood evident in the crown Typical crown form	275	9.4	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T67	English Oak Quercus robur	16	est 790	9	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Epicormic growth evident within the crown Minor and Major dead wood evident in the crown Typical crown form	282	9.5	A (i)
T68	English Oak Quercus robur	19	est 1260	10	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Epicormic growth evident within the crown Heartwood exposed Minor and major dead wood evident in the crown Pruning wounds noted Typical crown form Woodpecker holes observed Fire damage to west with hollowing to base	707	Capped at 15m	B (i)
T69	English Oak Quercus robur	20	1430	10	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Epicormic growth evident within the crown Heartwood exposed Minor and major dead wood evident in the crown Pruning wounds noted Typical crown form Woodpecker holes observed Lost lateral at 2m to south	707	Capped at 15m	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T70	English Oak Quercus robur	20	830	N - 11 S - 4 E - 5 W - 5	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Epicormic growth evident within the crown Heartwood exposed Minor and major dead wood evident in the crown Pruning wounds noted Typical crown form Woodpecker holes observed Loss of limb to east at 10m Large limbs removed	312	10.0	A (i)
T71	English Oak Quercus robur	23	1540	12	M	F	Branch socket cavities observed Branch stubs and broken branches evident Dense ivy cover on main stem Epicormic growth evident within the crown Heartwood exposed Minor and major dead wood evident in the crown Pruning wounds noted Storm damage present Typical crown form Woodpecker holes observed Large limbs removed Open form Wooden debris within crown	707	Capped at 15m	A (i)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
GROUPS OF TREES										
G1	Ash Fraxinus excelsior Blackthorn Prunus spinosa Field Maple Acer campestre Goat Willow Salix caprea Hawthorn Crataegus monogyna Goat Willow Salix caprea	8	upto 200	2.5	SM,M	F	Branch stubs and broken branches evident Crossing and rubbing branches Dense ivy cover on main stems and dense undergrowth Low interlocking crowns Sporadic self-seeded group of trees	18	2.4	C (ii)
G2	Hawthorn Crataegus monogyna English Elm Ulmus procera	10	upto 180	2.5	SM,EM	F	Branch stubs and broken branches evident Crossing and rubbing branches Dead elms noted Dense ivy cover on main stems and Dense undergrowth Low interlocking crowns Sporadic self-seeded group of trees Mostly Elm	15	2.2	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G3	<p>Austrian Pine Pinus nigra ssp. Nigra Scots Pine Pinus sylvestris Ash Fraxinus excelsior Blackthorn Prunus spinosa Common Lime Tilia x europaea English Oak Quercus robur Field Maple Acer campestre Goat Willow Salix caprea Hawthorn Crataegus monogyna Horse Chestnut Aesculus hippocastanum Wild Cherry Prunus avium Alder Alnus glutinosa Goat Willow Salix caprea Hazel Corylus avellana Hornbeam Carpinus betulus</p>	4	upto 80	1	Yng,SM	F	<p>Multi stemmed from base No major defects were noted Single stem forms New buffer planting as conservation area "Hymenoscyphus fraxinus Chalara Ash dieback" present</p>	3	1.0	C (ii)
G4	<p>Blackthorn Prunus spinosa English Oak Quercus robur Hawthorn Crataegus monogyna</p>	10	upto 190	2.5	SM,M	P,F	<p>Bark wounds noted Branch stubs and broken branches evident Crossing and rubbing branches Low crown forms Minor dead wood evident in the crowns Vandalism in centre Lack of understory</p>	16	2.3	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G5	Austrian Pine Pinus nigra ssp. Nigra Scots Pine Pinus sylvestris Ash Fraxinus excelsior English Oak Quercus robur Field Maple Acer campestre Goat Willow Salix caprea Hawthorn Crataegus monogyna Silver Birch Betula pendula Wild Cherry Prunus avium Alder Alnus glutinosa Apple Malus domestica Goat Willow Salix caprea Holly Ilex aquifolium Hornbeam Carpinus betulus Sweet Chestnut Castanea sativa Dogwood Cornus sanguinea	7	upto 150	4	Yng,SM	G	No major defects were noted Multi and single stem forms Well established buffer planting as conservation area "Hymenoscyphus fraxinus Chalara Ash dieback" present	10	1.8	B (ii)
G6-10	Trees situated outside of Phase 1 area									

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G11	Blackthorn Prunus spinosa Crack Willow Salix fragilis Elder Sambucus nigra English Oak Quercus robur Field Maple Acer campestre Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus Alder Alnus glutinosa English Elm Ulmus procera Dogwood Cornus sanguinea	14	upto 680	5	EM,M	F,G	Bark wounds noted Branch socket cavities observed Branch stubs and broken branches evident Crossing and rubbing branches Dead elms noted Dense undergrowth at the base Minor dead wood evident in the crown Tractor mounted flail damage evident Tree group adjacent to watercourse	209	8.2	B (ii)
G12-16	Trees situated outside of Phase 1 area									
G17	Blackthorn Prunus spinosa English Elm Ulmus procera	7	upto 150	2	EM	F	Crossing and rubbing branches Dead elms noted Dense ivy cover on main stems and dense undergrowth Tractor mounted flail damage evident	10	1.8	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G18	English Oak Quercus robur Crab Apple Malus sylvestris	14	upto 820	7	EM,M	F,G	Branch stubs and broken branches evident Dense ivy cover on main stems and dense undergrowth Interlocking crowns Minor and major dead wood evident in the crown Typical crown form Collective crown form	304	9.8	A (i)
G19	Blackthorn Prunus spinosa Field Maple Acer campestre English Elm Ulmus procera	8	upto 120	2	SM,EM	F	Crossing and rubbing branches Dense undergrowth at the base Interlocking crowns Tractor mounted flail damage evident	7	1.4	C (ii)
G20	Blackthorn Prunus spinosa English Oak Quercus robur Field Maple Acer campestre English Elm Ulmus procera	8	upto 150	2	SM,EM	F	Crossing and rubbing branches Dense undergrowth at the base Interlocking crowns Tractor mounted flail damage evident Outgrown hedgerow	10	1.8	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G21	Blackthorn Prunus spinosa Elder Sambucus nigra Hawthorn Crataegus monogyna English Elm Ulmus procera	8	upto 180	3	EM	F	Crossing and rubbing branches Dense ivy cover on main stems with dense undergrowth Low interlocking crowns Un-maintained hedgerow	15	2.2	C (ii)
G22	Common Lime Tilia x europaea	8	upto 630	3	EM	F	Basal suckers present Branch socket cavities observed Branch stubs and broken branches evident Crossing and rubbing branches Crowns had been pollarded Epicormic growth evident within the crown Minor dead wood evident in the crown Pruning wounds noted 5 in group	180	7.6	B (i)
G23	English Oak Quercus robur	12	upto 720	7	EM	F	Bark wounds noted Branch socket cavities observed Branch stubs and broken branches evident Crossing and rubbing branches Dense ivy cover on main stems Epicormic growth evident within the crowns Minor dead wood evident in the crowns Overhead cables, Pruning wounds noted Tractor mounted flail damage evident 3 in group	235	8.6	B (i)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G24	Ash Fraxinus excelsior Elder Sambucus nigra English Oak Quercus robur Field Maple Acer campestre Hawthorn Crataegus monogyna	8	upto 300	4	EM	F	Branch stubs and broken branches evident Crossing and rubbing branches Dense undergrowth at the base Interlocking crowns Minor dead wood evident in the crowns Understory group	41	3.6	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G25	Common Larch Larix decidua Yew Taxus baccata Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra Field Maple Acer campestre Goat Willow Salix caprea Horse Chestnut Aesculus hippocastanum Silver Birch Betula pendula English Elm Ulmus procera Goat Willow Salix caprea Hazel Corylus avellana Lombardy Poplar Populus nigra 'Italica Dogwood Cornus sanguinea	20	upto 350	4	EM,M	G	Branch stubs and broken branches evident Crossing and rubbing branches Dead elms noted Dense ivy cover on main stems and dense undergrowth Dieback of the crowns observed Etiolated forms Low interlocking crowns Minor and major dead wood evident in the crown Suppressed crown forms Boundary group	55	4.2	B (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G26	Ash Fraxinus excelsior English Oak Quercus robur Goat Willow Salix caprea Horse Chestnut Aesculus hippocastanum Silver Birch Betula pendula Goat Willow Salix caprea Hornbeam Carpinus betulus	15	upto 550	5	EM,M	G	Crossing and rubbing branches Dieback of the crowns observed Etiolated forms Included bark unions Low interlocking crowns Minor dead wood evident in the crowns Situated offsite Suppressed crown forms Boundary group 5 m off-site " <i>Cameraria ohridella</i> Horse chestnut leaf miner" present	137	6.6	B (ii)
G27	Ash Fraxinus excelsior Common Lime Tilia x europaea English Oak Quercus robur Field Maple Acer campestre Horse Chestnut Aesculus hippocastanum Wild Cherry Prunus avium White Poplar Populus alba	9	upto 500	6	EM	G	Crossing and rubbing branches Dieback of the crowns observed Included bark unions Low interlocking crowns Minor dead wood evident in the crowns Situated offsite Boundary group situated within school " <i>Cameraria ohridella</i> Horse chestnut leaf miner" present	113	6.0	B (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G28	Blackthorn Prunus spinosa Field Maple Acer campestre Horse Chestnut Aesculus hippocastanum	15	upto 750	7	EM,M	G	Bark wounds noted Branch stubs and broken branches evident Crossing and rubbing branches Included bark unions Low interlocking crowns Minor and major dead wood evident in the crowns Understory group with large horse chestnuts vandalism present " <i>Cameraria ohridella</i> Horse chestnut leaf miner"	254	9.0	B (ii)
G29	English Elm Ulmus procera Raywood Ash Fraxinus angustifolia	11	upto 300	5	EM	G	Bark wounds noted Crossing and rubbing branches Low crown forms Minor dead wood evident in the crowns Situated offsite Roadside tree group with smaller newly planted trees	41	3.6	B (ii)
G30	Apple Malus domestica Blackthorn Prunus spinosa Ash Fraxinus excelsior Hawthorn Crataegus monogyna	8	upto 200	4	EM	F	Crossing and rubbing branches Low crown forms Out grown boundary group	18	2.4	C (ii)

Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
HEDGEROWS										
H1-4	Trees situated outside of Phase 1 area									
H5	English Elm Ulmus procera Blackthorn Prunus spinosa Field Maple Acer campestre Hawthorn Crataegus monogyna Dogwood Cornus sanguinea	1.5	est 6x 60	1	M	F	Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)
H6	English Oak Quercus robur Field Maple Acer campestre Hawthorn Crataegus monogyna English Elm Ulmus procera	1.5	est 6x 60	0.5	Yng	F	Maintained hedgerow Tractor mounted flail damage evident Newly planted	10	1.8	C (ii)
H7-9	Trees situated outside of Phase 1 area									

Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
H10	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra Field Maple Acer campestre Crab Apple Malus sylvestris Hazel Corylus avellana Dogwood Cornus sanguinea	1.5	est 170	1	EM	F	Maintained hedgerow Tractor mounted flail damage evident Standard trees in hedge	13	2.0	C (ii)
H11	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra Field Maple Acer campestre Hazel Corylus avellana Dogwood Cornus sanguinea	1.5	est 6x 60	1	EM	F	Maintained hedgerow Tractor mounted flail damage evident Patchy in places	10	1.8	C (ii)
H12	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra Field Maple Acer campestre Hazel Corylus avellana Dogwood Cornus sanguinea	1.5	est 170	1	EM	F	Maintained hedgerow Tractor mounted flail damage evident Patchy in places	13	2.0	C (ii)

Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
H13	Blackthorn Prunus spinosa Elder Sambucus nigra Field Maple Acer campestre Hazel Corylus avellana Dogwood Cornus sanguinea	1.5	est 6x 60	1	EM	F	Maintained hedgerow Tractor mounted flail damage evident Patchy in places	10	1.8	C (ii)
H14	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra English Oak Quercus robur Field Maple Acer campestre Hazel Corylus avellana Dogwood Cornus sanguinea	2	est 6x 60	1	EM	F	Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)
H15	Ash Fraxinus excelsior Blackthorn Prunus spinosa Elder Sambucus nigra English Oak Quercus robur Field Maple Acer campestre Hazel Corylus avellana Dogwood Cornus sanguinea	2	est 6x 60	1	EM	F	Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)

Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
H16	Ash Fraxinus excelsior Elder Sambucus nigra Hawthorn Crataegus monogyna English Elm Ulmus procera	1	est 6x 60	1	EM	F	Gaps present in hedgerow Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)
H17	Ash Fraxinus excelsior Elder Sambucus nigra Hawthorn Crataegus monogyna English Elm Ulmus procera Dogwood Cornus sanguinea	1	est 6x 60	1	SM	F	Gaps present in hedgerow Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)
H18	Ash Fraxinus excelsior Elder Sambucus nigra Hawthorn Crataegus monogyna English Elm Ulmus procera Dogwood Cornus sanguinea	1	est 6x 60	1	EM	F	Gaps present in hedgerow Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)
H19	Hawthorn Crataegus monogyna Field Maple Acer campestre	1	est 6x 60	1	EM	F	Gaps present in hedgerow Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)

Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
H20	Ash Fraxinus excelsior Field Maple Acer campestre Hawthorn Crataegus monogyna Hazel Corylus avellana Dogwood Cornus sanguinea	2.5	est 6x 40	1	Yng,SM	F	Gaps present in hedgerow Maintained hedgerow Newly planted Guards still attached Standard trees within hedgerow	4	1.2	C (ii)
H21	Blackthorn Prunus spinosa Dogwood Cornus sanguinea	3	est 6x 60	1.5	EM	F	Gaps present in hedgerow Un-maintained hedgerow	10	1.8	C (ii)
H22	Blackthorn Prunus spinosa Field Maple Acer campestre Hawthorn Crataegus monogyna Dogwood Cornus sanguinea	1.5	est 6x 60	1	EM	F	Gaps present in hedgerow Maintained hedgerow	10	1.8	C (ii)
H23	Blackthorn Prunus spinosa Field Maple Acer campestre Hawthorn Crataegus monogyna English Elm Ulmus procera Dogwood Cornus sanguinea	2.5	est 6x 60	1	EM	F	Gaps present in hedgerow Un-maintained hedgerow	10	1.8	C (ii)

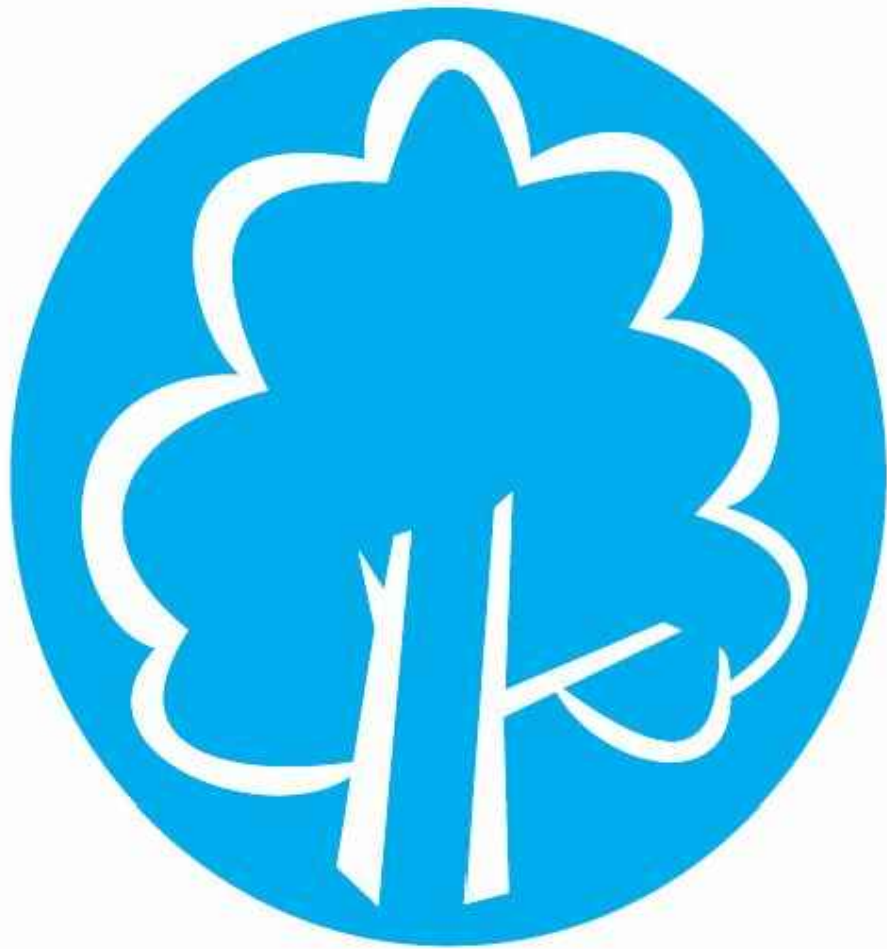
Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
H24	English Elm Ulmus procera Blackthorn Prunus spinosa Field Maple Acer campestre Hawthorn Crataegus monogyna Dogwood Cornus sanguinea	1.5	est 6x 60	1	EM	F	Gaps present in hedgerow Maintained hedgerow Tractor mounted flail damage evident	10	1.8	C (ii)

Wood No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
WOODLANDS										
W1-2	Trees situated outside of Phase 1 area									
W3	Austrian Pine Pinus nigra ssp. Nigra Scots Pine Pinus sylvestris Ash Fraxinus excelsior Blackthorn Prunus spinosa English Oak Quercus robur Hawthorn Crataegus monogyna English Elm Ulmus procera Dogwood Cornus sanguinea	14	upto 700	7	EM,M	G	Branch stubs and broken branches evident Crossing and rubbing branches Dead elms noted Dense ivy cover on main stems with dense undergrowth Etiolated forms Low interlocking crowns Minor and major dead wood evident in the crowns Typical woodland form Woodpecker holes observed	222	8.4	A (ii)
W4	Trees situated outside of Phase 1 area									

Wood No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
W5	<p>Austrian Pine Pinus nigra ssp. Nigra Common Larch Larix decidua Grand Fir Abies grandis Norway Spruce Picea abies Scots Pine Pinus sylvestris Beech Fagus sylvatica Elder Sambucus nigra Sycamore Acer pseudoplatanus English Elm Ulmus procera Hazel Corylus avellana Holly Ilex aquifolium Hornbeam Carpinus betulus</p>	25	upto 1480	12	EM,M	G	<p>Branch stubs and broken branches evident Crossing and rubbing branches Dense ivy cover on main stems with dense undergrowth Dieback of the crown observed Etiolated forms Low interlocking crowns Minor and major dead wood evident in the crowns Storm damage present Typical woodlans forms Woodpecker holes observed Large oaks on woodland edge Fungi present</p>	707	Capped at 15m	A (i), A(ii), A(iii)

Wood No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
W6	Ash Fraxinus excelsior Blackthorn Prunus spinosa Field Maple Acer campestre Goat Willow Salix caprea English Elm Ulmus procera Goat Willow Salix caprea Hazel Corylus avellana Dogwood Cornus sanguinea	23	upto 650	6	EM,M	G	Branch stubs and broken branches evident Crossing and rubbing branches Dead elms noted Dense ivy cover on main stems with dense undergrowth Dieback of the crowns observed Etiolated forms Low interlocking crowns Minor and major dead wood evident in the crowns Storm damage present Typical woodland forms Woodpecker holes observed	191	7.8	B (ii)

Wood No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
W7	<p>Austrian Pine Pinus nigra ssp. Nigra Common Larch Larix decidua Grand Fir Abies grandis Norway Spruce Picea abies Scots Pine Pinus sylvestris Beech Fagus sylvatica Elder Sambucus nigra Sycamore Acer pseudoplatanus English Elm Ulmus procera Hazel Corylus avellana Holly Ilex aquifolium Hornbeam Carpinus betulus</p>	22	upto 700	6	EM,M	G	<p>Branch stubs and broken branches evident Crossing and rubbing branches Dense ivy cover on main stems with dense undergrowth Dieback of the crown observed Etiolated forms Low interlocking crowns Minor and major dead wood evident in the crowns Storm damage present Typical woodlans forms Woodpecker holes observed</p>	222	8.4	A (ii)



PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.



**TREE PROTECTION AREA
KEEP OUT !**
(TOWN & COUNTRY PLANNING ACT 1990)
**TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION**
ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

The following points are to be considered at all times:

1. Protective fencing has been installed at the extent of the calculated root protection area (RPA) - **DO NOT USE OR ACCESS** the ground within the fenced area. This is particularly the case for placement of site offices, stockpiles of soil or fuel and material storage, storing machinery or parking vehicles, debris or building materials or fires.
2. **AVOID** excavations, changes in ground levels or tracking machinery within the fenced area at ALL TIMES. These activities can seriously compromise the long term survival of trees due to the impact on a trees roots.
3. **REPORT** any instances where the fencing has been removed, repositioned, damaged or is not fit for purpose to the Site Manager. This shall help the Site Manager to ensure that the fencing is maintained throughout the construction process. It will also reduce the risk of any staff and contractors accidentally and inadvertently causing damage to trees as a result.

Retained trees are protected by planning law and reckless damage or non consented tree removal could result in the serving of a stop notice or prosecution by the LPA



For more information on Tree Protection please visit the website link <https://goo.gl/hpBkTv> or scan the QR code on a Smartphone or Tablet.

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FPCR Environment and Design Ltd
Lockington Hall
Lockington
Derby DE74 2RH

t: 01509 672772
f: 01509 674565
e: mail@fpcr.co.uk
w: www.fpcr.co.uk

fpcr

Appendix C1: Tree Surgery Contractors – Tree Work Methodology

Table 1: Related Reference Material

Plan Name	Drawing Number
Tree Protection Plans	8755-TTP-04 to 8755-T-07
Appendices	Appendix Title
Appendix E	Tree Schedule Woodland Oaks

The Site Manager and tree surgery contractor must ensure that any necessary consent has been received from the local authority and that no protected species are harmed whilst carrying out site clearance or tree surgery works.

The trees to be removed to facilitate the development will be marked up by the Arboricultural Clerk of Works during the pre-commencement site meeting and, where required, with the tree surgeon present. Highly visible fluorescent paint will be used to assist in identification. A pre-commencement tool box talk will be given and the works will only be carried out once the project ecologist is satisfied that there are no ecological constraints.

The trees to be removed are shown on the Tree Retention Plans (referenced above) as red circles hatched with red criss-crossing lines. A key has been provided on each of the plans to assist with identification.

Works on all trees cannot commence until all pre-commencement conditions have been discharged.

GENERAL TREE PRUNING RECOMMENDATIONS

All works shall be in accordance with BS 3998:2010 '*Tree work. Recommendations*'. Any competent arboriculturist will be aware of this publication and will be able to carry out work to the required standard. Therefore, the use of a competent tree surgery contractor is necessary to comply with this.

Prior to any pruning operations occurring, the tree and its surroundings should be assessed for the presence of any protected species and the timing of works should best avoid the potential for any adverse impact on wildlife. Consideration should be made for the seasonal cycles of species of fauna and flora e.g. nesting birds.

Minor pruning can be carried out at any time of the year however, it is recommended that pruning is avoided when deciduous trees, particularly maples, lime and birch are coming into leaf (Spring). Equally, pruning should be avoided in the autumn months when the trees ability to seal wounds is reduced and thus vulnerability to pathogenic decay fungi is much higher. Pruning in the Autumn depletes valuable energy reserves. This is particularly important if it is necessary to carry out heavy pruning or work on older trees. Pruning should also be avoided during or soon after drought.

Before any tree work operations commence, the method of disposal, utilization or retention of arisings should be prior agreed. Disposal of arising should not involve burning unless other options of disposal are impracticable or, as in the case of Ash Dieback, the material is affected by a diseases or pest for which industry guidance on sanitation dictates.

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TREE WORKS SPECIFICATION

Crown lifting / Raising

The below trees shall require crown lifting in order to facilitate the correct positioning and erection of the Tree Protective Fencing as specified.

Crown lifting is the removal of the lowest branches and/or preparing of lower branches for future removal. Good practice dictates crown lifting should not normally include the removal of large branches growing directly from the main stem of the tree as this can cause large wounds which can become extensively decayed leading to further long-term problems or more short-term biomechanical instability. Crown lifting on older, mature trees should be avoided or restricted to secondary branches or shortening of primary branches rather than the whole removal wherever possible. Crown lifting should be restricted to less than 15% of the live crown height and leave the crown at least two thirds of the total height of the tree.

As a general rule branches should be removed at their point of attachment or shortened to a lateral which is at least 1/3 of the diameter of the removed portion of the branch, and all cuts should be kept as small as possible.

- **W7(T1)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T2)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T4)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T8)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T9)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T10)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T11)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T13)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T15)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T17)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.
- **W5(T18)** - Remove the lowest branches of the southern aspect of crown to provide 4m of clearance above ground level.

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Crown Reduction

A crown reduction is the reduction in height and/or lateral spread of the crown (crown being the foliage bearing portions of a tree). The final result should retain the main framework of the crown and a proportion of the leaf bearing structure to leave a similar, although smaller crown outline. Crown reduction cuts should be as small as possible and in general not exceed 100mm diameter unless there is an overriding need to do so. All cuts should be made at an appropriate branch union / growth point. A crown reduction should not be confused with 'topping'.

- **W5(T2)** – Reduce lowest lateral limb by 8m.
- **W5(T4)** – Reduce extending lateral limb by 4m.
- **W5(T5)** – Reduce lateral limb to SW by 6m.
- **W5(T6)** – Reduce upper lateral limb by 5m.
- **W5(T10)** – Reduce end weight on broken/twisted branch to west.
- **W5(T13)** – Reduce lateral limb to by 4m.
- **W5(T14)** – Reduce upper lateral limb by 3m.
- **W5(T16)** – Reduce lateral limb by 3-4m and reduce dead branches to 1m.

All final cuts over 200mm in diameter to be either shatter pruned or coronet cut.

Stump Grinding

Within root protection areas (RPA), stumps, shrubs and other vegetation must be removed by hand or using stump grinding machinery to minimize root damage to retained trees. Where poisoning of stumps is specified, this must be carried out by competent operatives. Only chemicals approved for this purpose and used in accordance with the manufacturer's instructions will be used.

No stumps are to be excavated due to the potential to damage existing rooting material of retained trees.

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Appendix C2: Fencing Contractors – Working Methodology

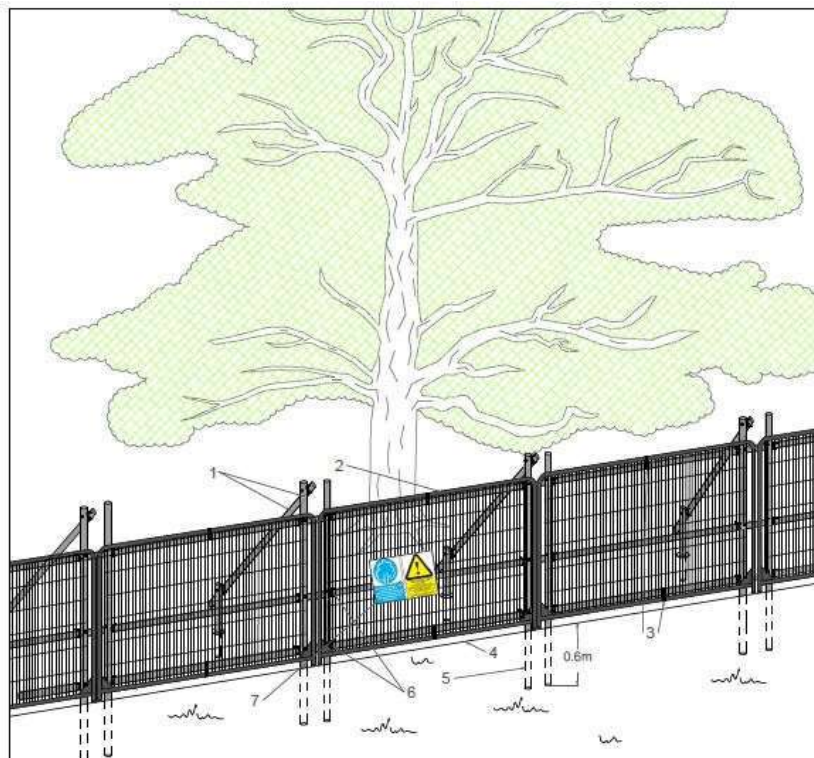
Table 1: Related Reference Material

Plan Name	Drawing Number
Tree Protection Plans	8755-TPP-04 to 8755-T-07
Appendices	Appendix Title
Appendix A	Tree Schedule
Appendix B	Protective Fencing Signage

Tree Protection Fencing will be installed as detailed in Tree Protection Plans (referenced above) at, where possible, the extent of the root protection areas of retained trees using the dimensions indicated on the relevant plans. The positioning of the Tree Protective Fencing shall be measured out with assistance from the Arboricultural Clerk of Works and, where deemed necessary, with the Site Manager present. Highly visible fluorescent paint and / or marker pegs / stakes will be used to assist in identification.

STANDARD FENCING SPECIFICATION

Unless stated below, Protective Fencing will comprise a Heras HSG151 panel framework supported by scaffold poles driven into the ground. An example of this has been illustrated below.



Standard specification for High Intensity Protective Barrier

1. Standard scaffold poles
2. Heavy gauge 2m tall galvanized tube and welded mesh infill panels
3. Panels secured to scaffold frame with wire ties
4. Ground level
5. Uprights driven into the ground until secure (min depth of 0.6m)
6. Standard scaffold clamps
7. Construction Exclusion Zone signs

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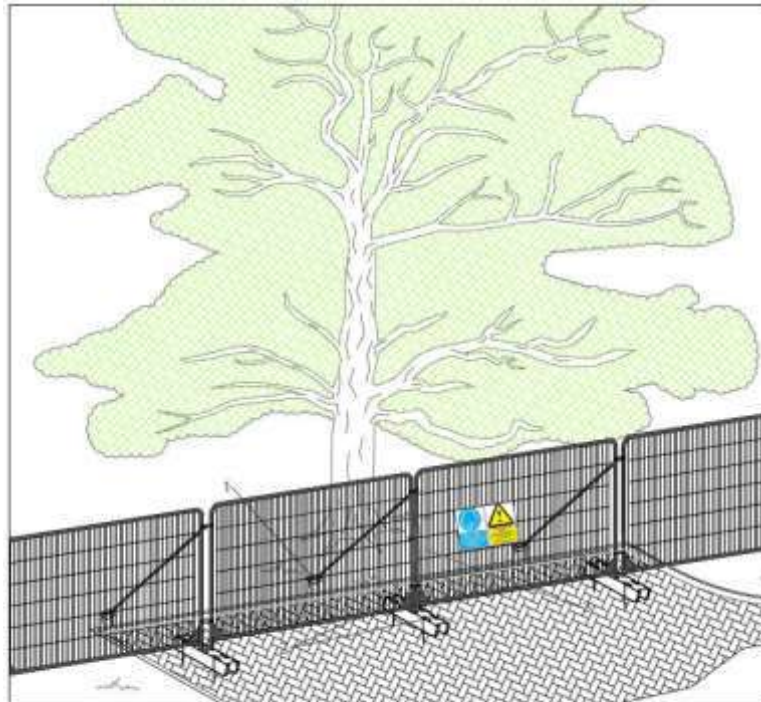


Installation Guide

- The scaffold framework shall comprise of upright poles of at least 3.0 metres in length driven no less than 0.6 metres into the ground at maximum 3.0 metre centres with horizontal and diagonal poles fixed to the uprights.
- The two horizontal rail poles shall be attached to the uprights at heights of 0.6 and 1.8 metres with clamps to each joint.
- The diagonal scaffold pole struts shall be clamped to the top rail of the scaffold framework at a 45° angle and extend back into the root protection area and clamped to a 0.7 metre length of scaffold tube that shall be driven no less than 0.5m into the ground.
- No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.

TEMPORARY FENCING SPECIFICATION

This fencing specification shall only be used where specified on the relevant Tree Protection Plans as is not to be used as an alternative to the standard specification unless determined by the Arboricultural Clerk of Works.



Standard Specification for Above Ground Stabilizing Systems

1. Stabiliser post with base plate secured with ground pins
2. Feet blocks secured with ground pins
3. Construction Exclusion Zone sign

Heras Fence Panel to be supported by rubberised stabiliser blocks with a base plate which is secured to the ground using ground pins (as shown above).

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GENERAL TREE PROTECTIVE FENCING METHODOLOGY

The fencing will be strong and suitable for the location, type and proximity of construction activity and prevent access of machinery, plant or operative beyond the area required to construct the development.

Tree Protection Fencing and work exclusion zones will be clearly marked using appropriate signage, an example of which has been included as **Appendix B**. These signs shall be laminated to ensure they last the duration of the construction works and shall be fixed to the fencing panels every 10 metres along its length.

All Tree Protective Fencing will remain rigid and in place for the duration of the development and should be inspected at weekly intervals by the Site Manager alongside regular inspections to be carried out by the Arboricultural Clerk of Works.

Following the completion of construction works and in agreement with the Arboricultural Clerk of Works, the Tree Protection Fencing will be removed carefully as to avoid causing root disturbance or leaving in situ any lengths of scaffold framework. This operation can be carried out prior to soft landscaping works such as new planting, mulching grass sowing etc.

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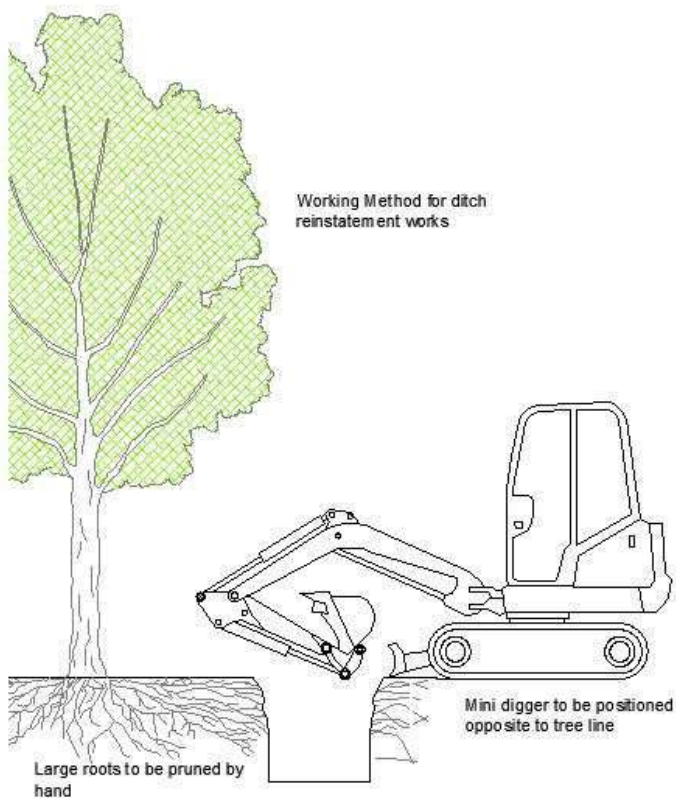


Appendix C3: Excavation Under Supervision – Working Methodology

The purpose of the Method Statement is to ensure that damage to the rooting area of all retained trees is protected from unnecessary damage. Due to the requirement for excavation within the root protection areas of a number of trees, including T64(A) to allow for the construction of the primary road layout, it is not possible to use “no-dig” construction for all proposed works.

The cutting of roots shall not entirely be avoidable during the removal of existing ground material to construct the certain parts of access road and residential plots. As such the excavation of this material is to be carried out under the supervision of the project Arboriculturalist. Any roots located / identified during these works shall be pruned back to the face of the trench as they became exposed. Roots shall be wrapped with hessian material, which is to be kept damp, until the area can be back filled.

Tree Protection Fencing positioned as shown on the Tree Protection Plans is not to be removed or moved back. No heavy machinery is to be positioned within the RPA of the tree and excavation is to be carried out with bucket of the excavator moving away from the tree.



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Appendix C4: Installation of No-dig Cellular Confinement – Working Methodology

Table 1: Related Reference Material

Plan Name	Drawing Number
Tree Protection Plans	8755-TPP-04 to 8755-T-07
Appendices	Appendix Title
Appendix E	Cellweb TRP Installation Guide

The purpose of the Method Statement is to ensure that the rooting area of all retained trees is protected from unnecessary damage. Therefore, the digging down, compacting the soil and creating an impermeable surface will be minimised.

A method to spread and support the load of the hard surface and anticipated usage without causing compaction of the soil structure beneath will be used. The use of “no-dig” industry led specialist engineering solutions i.e. three dimensional load bearing cellular confinement systems shall be used to construct the footpath within the RPA of trees T64, T66, T67, T68, T69, T70 & T71.

Figures 1 and 2 demonstrate the specification for No-dig Footpath Construction and No-dig Permanent Road Construction (further details and product specifications are available upon request).

Figure 3 and Appendix E provides information from a reputable supplier (Geosynthetics Ltd).

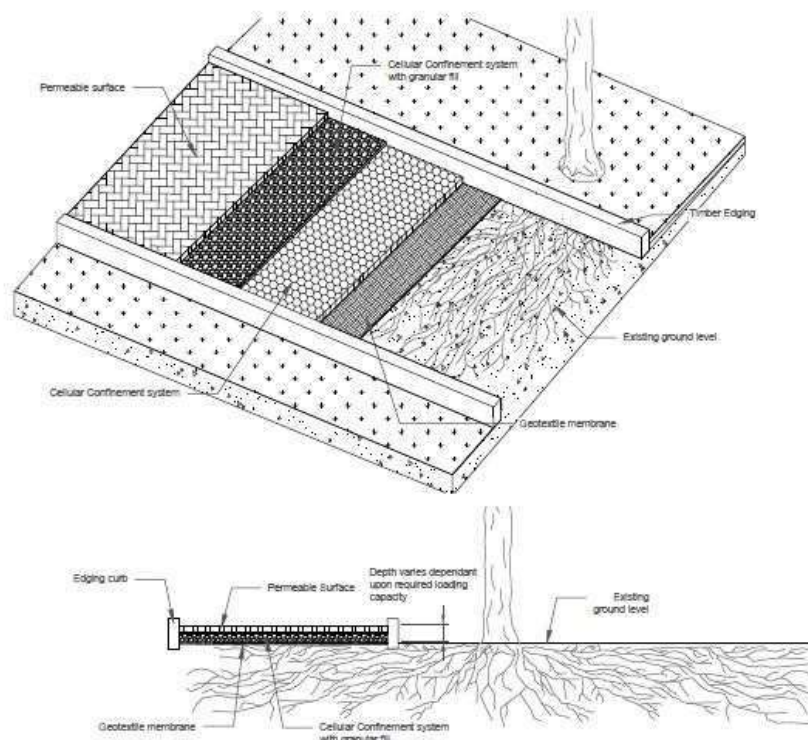


Figure 1: No-dig Footpath Construction

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Studio 2 Dunley Hill Court, Dunley Hill Farm, Ranmore, Dorking, Surrey RH5 6SX Tel: 01483 282523
and The National Agri-Food Innovation Campus, Sand Hutton, York YO41 1LZ Tel: 01904 406112



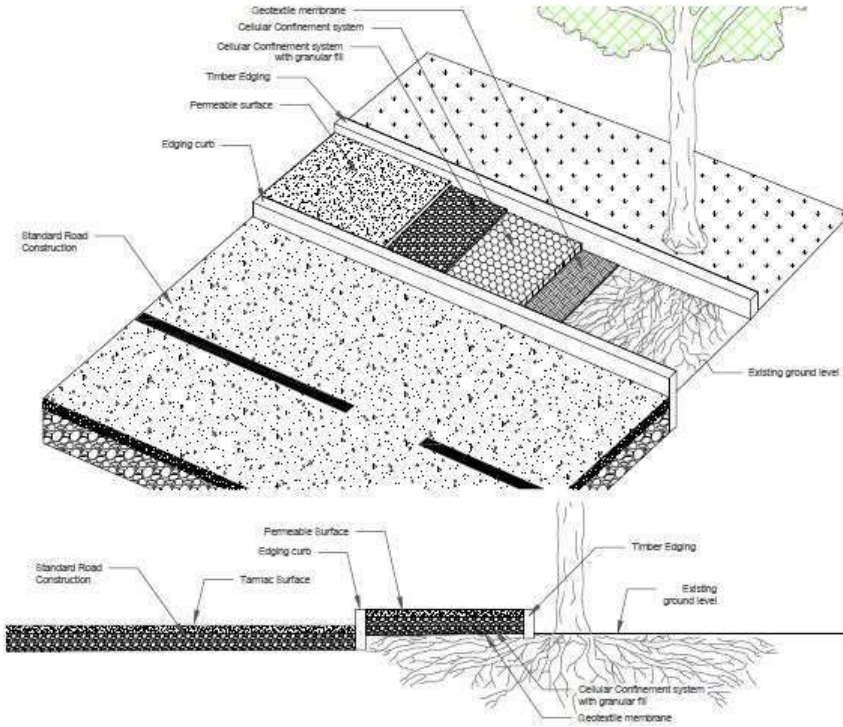
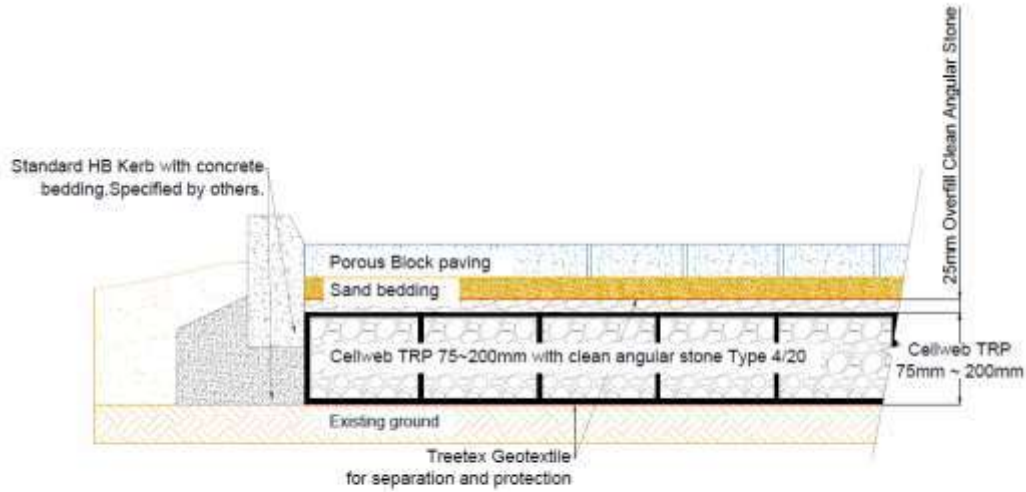


Figure 2: No-dig Permanent Road Construction



Note: Subbase could be required depending on the existing ground CBR % and the type of traffic on the surface.

Figure 3: Geosynthetics Cellweb 75-200mm Block Paving Standard Detail

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The principal rules to apply when constructing such a system as described above are as follows:

- Roots must not be severed, cut or broken;
- Original ground levels must not be changed;
- Soils must not be compacted;
- Oxygen and water must be able to diffuse into the soil beneath the engineered surface.

The initial task will include the removal of the existing vegetative surface. It is of paramount importance that particular care is taken when removing the top surface layer. This operation will need to be supervised by the Arboricultural Clerk of Works.

The use of a geotextile membrane will help support the sub-base and form a partial filter (a last line of defence) for contaminants such as oil and road salt. The sub-base will be porous to enable gaseous exchange and water infiltration. A suitable material is washed angular stone with a diameter between 20 – 40mm with no fine aggregates. Aggregates or stones must have a near neutral PH.

The surface material will be permeable paving. The exact specification of the hard surface is a matter for the Structural Engineer.

The following methodology should be used as a guideline for the installation of cellular confinement systems:

1. Under **arboricultural supervision** remove the upper surface layer vegetation / turf. The depth of the excavation will be determined by the arboriculturist and shall commence until the shallowest root with a diameter greater than 25mm, or a mat of fine fibrous tree roots, is encountered. Holes shall be filled with clean angular stone and sharp sand. Do not level off high spots or compact the soil through rolling.
2. Immediately after an even soil surface layer has been prepared, a geo textile membrane will be laid. The geo-textile membrane sheets should overlap by a minimum of 300mm.
3. The sub-base will be laid to a depth and specification prescribed by the Structural Engineer.
4. Lay out the collapsed cellular confinement system on-top of the membrane. Use a J pin (usually supplied) into the centre cell at the end of the panel and secure into the ground.
5. Pull the cellular confinement sheet out to its full length and secure its length with another J pin. Measure its width to 2.56m and secure in each of the corners with the J pins. Use 10 pins per panel to create a panel measuring 8.1m x 2.56m. **Each cell must be fully extended and under tension.**
6. Staple adjacent panels together at each cell (200mm: 5 staples. 150mm: 4 staples. 100mm: 3 staples. 75mm: 3 staples).
7. If a curved path or shape is required, this should be cut when the cellular confinement panel is pinned out to 8.1 x 2.56m, ensuring complete cells remain. **Do not try to curve or bend the panels into place.**

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8. Infill the Clean Angular Stone. The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm. **Do not use M.O.T type 1 or crushed stone with fines for tree root protection.**
9. Infill the cells with the clean angular stone, working towards the tree and using the infilled panels as a platform – working from one end to the other. Minimum 25mm overfill of clean angular stone when used in conjunction with a hard surface. **No compaction is required of the infill. Do not use a whacker plate or other means of compaction.**
10. Encourage settlement of the stone with the use of a light roller or with 2-3 passes of the construction plant used for installation.
11. Where edging is required for footpath and light structures, the edge will comprise treated timber boards pegged every 500mm with a wooden peg on the outside. The top of the peg will be flush with the top of the board.
12. **All surfaces in Root Protection Areas must be porous.** Surfaces can include porous block paving, porous asphalt, loose gravel, grass and gravel retention systems (e.g Golpla), resin bound gravel, concrete and Astro turf.

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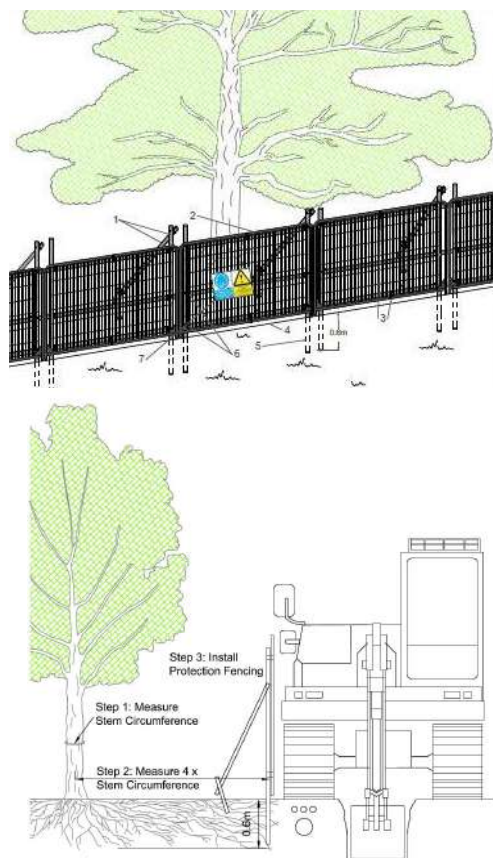
WHAT YOU NEED TO KNOW ABOUT WORKING NEAR TREES

This advice note provides a brief overview of the methods of protection for trees located across the site. Compliance with these guidelines will be a requirement of all contractors working near retained trees.

Any construction works which are to be carried out near to or within the fenced off areas should be carried out in accordance with the Arboricultural Method Statement and as explained by the Site Manager during the site induction. Failure to adhere to the correct sequence, manner and timing of operations detailed in the Arboricultural Method Statement may result in irremediable damage to trees or disturbance to retained tree cover.

Retained trees are protected by planning law and reckless damage or non consented tree removal could result in the serving of a stop notice or prosecution by the LPA.

Trees make a significant contribution to the landscape character of the development and they are to be treated as important assets. To protect these assets, tree protective fencing has been installed where required across the site.



The following points are to be considered at all times.

1. Protective fencing has been installed at the extent of the calculated root protection area (RPA) - **Do not use or access** the ground within the fenced area. This is particularly the case for placement of site offices, stockpiles of soil or fuel and material storage, storing machinery or parking of vehicles, debris or building materials or fires.
2. **Avoid** excavations, changes in ground levels or tracking of machinery within the fenced area at **all times**. These activities can seriously compromise the long term survival of trees due to the impact on a trees roots.
3. **Report** any instances where the fencing has been removed, repositioned, damaged or is not fit for purpose (see images below) to the Site Manager. This shall help the Site Manager to ensure that the fencing is maintained throughout the construction process. It will also reduce the risk of any staff and contractors accidentally and inadvertently causing damage to trees as a result.



Unacceptable example of tree protection due to a lack of adequate fencing and poor site management. Note mounds of soil have been placed within the Root Protection Area.

Tree Protection Fencing which has been erected prior to the commencement of any site works and the correct signage has been provided to clearly highlight that this is a protected zone.

Please acknowledge you have read and understand this document by visiting the website <http://bit.ly/2EprKu8> or scanning the QR Code on a Smartphone or Tablet.



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Appendix A - Tree Schedule

Measurements	Age Classes	Quality Assessment of BS Category	ULE (relates to BS Category)
Height - Measured using a digital laser clinometer (m)	YNG: Establishing, typically with good vigour and fast growth rates and strong apical dominance; c. less than 1/3 life expectancy	Category U - Trees 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.	<10 years
Stem Dia. - Diameter measured (mm) in accordance with Annex C of the BS5837	SM: Semi-mature trees less than 1/3 life expectancy	Category A - Trees of high quality with an estimated remaining life expectancy of at least 40 years.	40+ years
Crown Radius - Measured using a digital laser clinometer radially from the main stem (m)	EM: Established, typically vigorous and increasing in apical height and lateral spread; 1/3 - 2/3 life expectancy. Offers landscape significance	Category B - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	20-40 years
Abbreviations est - Estimated stem diameter avg - Average stem diameter for multiple stems upto - Maximum stem diameter of a group	M: Fully established over 2/3 life expectancy, generally good vigour and achieving full height potential with crown still spreading	Category C - Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.	10-20 years
	OM: Fully mature, at the extremes of expected life expectancy, vigour decreasing, declining or moribund	Sub-categories: (i) - Mainly arboricultural value (ii) - Mainly landscape value (iii) - Mainly cultural or conservation value	
	V: biological, cultural or aesthetic value comprising niche saproxylic habitat. Individuals of large proportions (stem girth) in comparison to trees of the same species/surviving beyond the typical age range for their species.	The BS category particular consideration has been given to the following: <ul style="list-style-type: none"> • The presence of any structural defects in each tree/group and its future life expectancy • The size and form of each tree/group and its suitability within the context of a proposed development • The location of each tree relative to existing site features e.g. its screening value or landscape features • Age class and life expectancy 	

Structural Condition	Physiological Condition
Good - No significant structural defects	Good - No significant health problems
Fair - Structural defects that can be remediated	Fair - Symptoms of ill-health that can be remediated
Poor - Significant defects beyond remediation, present a risk of failure in the foreseeable future	Poor - Significant ill-health. Unlikely the tree will recover in the long term
Dead - Dead tree with structural integrity of tree severely compromised	Advanced Decline / Dead - Advanced state of decline and unlikely to recover or Dead

Root Protection Area (RPA)
<ul style="list-style-type: none"> • The RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m). • The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required for a tree to be successfully retained. Tree roots extend beyond the calculated RPA in many cases and where possible a greater distance should be protected. • Where veteran trees have been identified the RPA has been calculated in accordance with Natural England guidance i.e. 15x the stem diameter, uncapped.

Tree No	Species	Height	Stem Dia.	Crown Radius (S only)	Age Class	Overall Condition	Structural Condition & Work Recommendations	RPA	RPA Radius	BS5837 Cat
INDIVIDUAL TREES										
W7(T1)	English Oak Quercus robur	18-24	720	8	M	F	Typical crown form and condition for age and species Crown raise south and west side to 4m All final cuts over 200mm diameter to be either shatter pruned or coronet cut	235	8.6	A (i)
W5(T2)	English Oak Quercus robur	18-24	1320	15	M	F	Typical crown form and condition for age and species Crown raise south side to 4m Reduce lowest lateral limb by 8m All final cuts over 200mm diameter to be either shatter pruned or coronet cut	707	Capped at 15m	A (i)
W5(T3)	English Oak Quercus robur	18-24	1100	7	M	F	Typical crown form and condition for age and species Sever ivy	547	13.2	A (i)
W5(T4)	English Oak Quercus robur	18-24	1120	13	M	F	Typical crown form and condition for age and species Crown raise south side to 4m Reduce extending lateral limb by 4m Sever ivy All final cuts over 200mm diameter to be either shatter pruned or coronet cut	567	13.4	A (i)
W5(T5)	English Oak Quercus robur	18-24	1220	9	M	F	Crown has been reduced due to past branch failures Reduce lateral limb to SW by 6m Crown raise by removing low growth on main stem Sever ivy All final cuts over 200mm diameter to be either shatter pruned or coronet cut	673	14.6	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius (S only)	Age Class	Overall Condition	Structural Condition & Work Recommendations	RPA	RPA Radius	BS5837 Cat
W5(T6)	English Oak Quercus robur	18-24	910	9	M	F	Crown is sparse with past pruning to south Inonotus dryadeus present to base Reduce upper lateral limb by 5m Sever ivy All final cuts over 200mm diameter to be either shatter pruned or coronet cut	375	10.9	A (i)
W5(T7)	English Oak Quercus robur	18-24	910	10	M	F	Typical crown form and condition for age and species No works	375	10.9	A (i)
W5(T8)	English Oak Quercus robur	18-24	1090	11	M	F	Typical crown form and condition for age and species Crown raise south side to 4m Sever ivy All final cuts over 200mm diameter to be either shatter pruned or coronet cut	537	13.1	A (i)
W5(T9)	English Oak Quercus robur	18-24	875	9	M	F	Typical crown form and condition for age and species Crown raise south side to 4m Remove dead branches to south side All final cuts over 200mm diameter to be either shatter pruned or coronet cut	346	10.5	A (i)
W5(T10)	English Oak Quercus robur	18-24	1090	9.5	M	F	Typical crown form and condition for age and species Crown raise south side to 4m Reduce end weight of broken/twisted branch to west This limb houses features suitable for roosting bats and will need inspecting prior to works All final cuts over 200mm diameter to be either shatter pruned or coronet cut	537	13.1	A (i)
W5(T11)	English Oak Quercus robur	18-24	790	7.5	M	F	Typical crown form and condition for age and species Crown raise south side to 4m All final cuts over 200mm diameter to be either shatter pruned or coronet cut	282	9.5	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius (S only)	Age Class	Overall Condition	Structural Condition & Work Recommendations	RPA	RPA Radius	BS5837 Cat
W5(T12)	English Oak Quercus robur	18-24	740	10	M	F	Typical crown form and condition for age and species Remove lowest limb to south All final cuts over 200mm diameter to be either shatter pruned or coronet cut	248	8.9	A (i)
W5(T13)	English Oak Quercus robur	18-24	1250	12	M	F	Typical crown form and condition for age and species Crown raise south side to 4m Reduce lateral limb to S by 4m All final cuts over 200mm diameter to be either shatter pruned or coronet cut	707	15.0	A (i)
W5(T14)	English Oak Quercus robur	18-24	1285	12	M	F	Typical crown form and condition for age and species Reduce upper lateral limb to S by 3m All final cuts over 200mm diameter to be either shatter pruned or coronet cut	707	Capped at 15m	A (i)
W5(T15)	English Oak Quercus robur	18-24	1030	10	M	F	Typical crown form and condition for age and species Crown raise south side to 4m All final cuts over 200mm diameter to be either shatter pruned or coronet cut	480	12.4	A (i)
W5(T16)	English Oak Quercus robur	18-24	1510	13	M	F	Typical crown form and condition for age and species Reduce dead branches to south to leave 1m stubs Reduce lateral limb to S by 3-4m to reduce weight Sever ivy All final cuts over 200mm diameter to be either shatter pruned or coronet cut	707	Capped at 15m	A (i)

Tree No	Species	Height	Stem Dia.	Crown Radius (S only)	Age Class	Overall Condition	Structural Condition & Work Recommendations	RPA	RPA Radius	BS5837 Cat
W5(T17)	English Oak Quercus robur	18-24	1145	9.5	M	F	Typical crown form and condition for age and species Crown raise by reducing lower limbs by 1m (do not remove) Sever ivy All final cuts over 200mm diameter to be either shatter pruned or coronet cut	593	13.7	A (i)
W5(T18)	English Oak Quercus robur	18-24	1210	10	M	F	Typical crown form and condition for age and species Crown raise south side to 4m All final cuts over 200mm diameter to be either shatter pruned or coronet cut	662	14.5	A (i)

Cellweb® TRP Installation Guide



Step 1: Prepare Surface



Step 2: Lay out Treetex™



Step 3: Lay out Cellweb® TRP

- Cellweb® TRP is a NO DIG tree root protection measure and it is recommended that no excavation be performed without prior approval and guidance from the Local Authority Arboricultural Officer.
- Soil compaction from vehicles, machinery and materials is to be strictly prohibited during construction within Root Protection Areas (RPAs).
- Approval must be obtained from the Local Authority that the design and the method of construction is acceptable.
- Further information is available from the following two documents;
 - British Standard BS5837: 'Trees in Relation to Design, Demolition and Construction' (2012).
 - Arboricultural Advisory and Information Service: Practice note 12 – 'Through the Trees to Development' (APN12).

Installation Method

1. Prepare the Surface

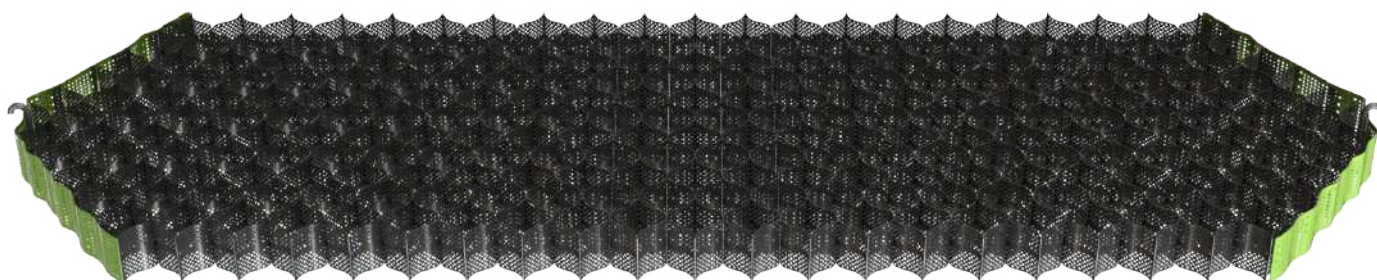
- Remove the surface vegetation using appropriate hand held tools or herbicide (see Note 1).
- Remove any surface rocks, debris and organic material.
- Create a level surface by filling any hollows with clean angular stone or sharp sand.
- Do not level off high spots or compact the soil through rolling.

2. Lay out the Treetex™ Non-Woven Geotextile

- Lay out the Treetex™ over the prepared area, overlaying the edges of the required area by 300mm.
- Overlap any joins by 300mm minimum or more, depending on soil structure (see Note 2).

3. Lay out the Cellweb® TRP Cellular Confinement System

- Lay out the collapsed Cellweb® TRP on-top of the Treetex™.
- Place one of the supplied J pins into the centre cell at the end of the panel and secure into the ground.



Cellweb® TRP - Installation Guide

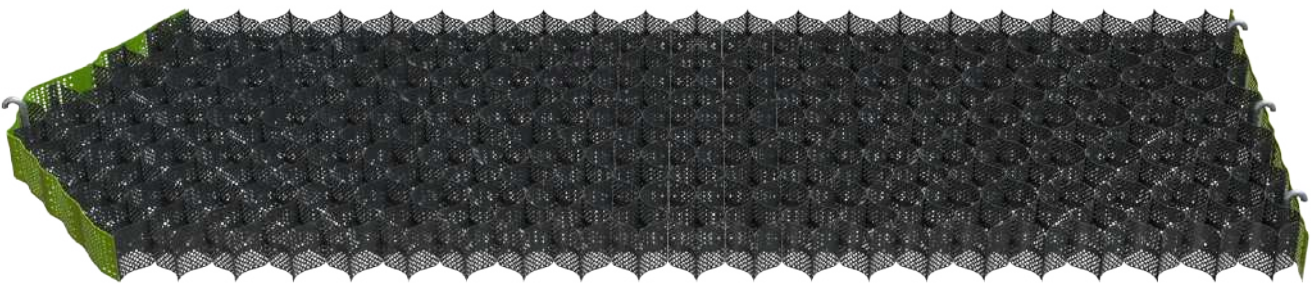


Step 3: Pinning Cellweb® TRP

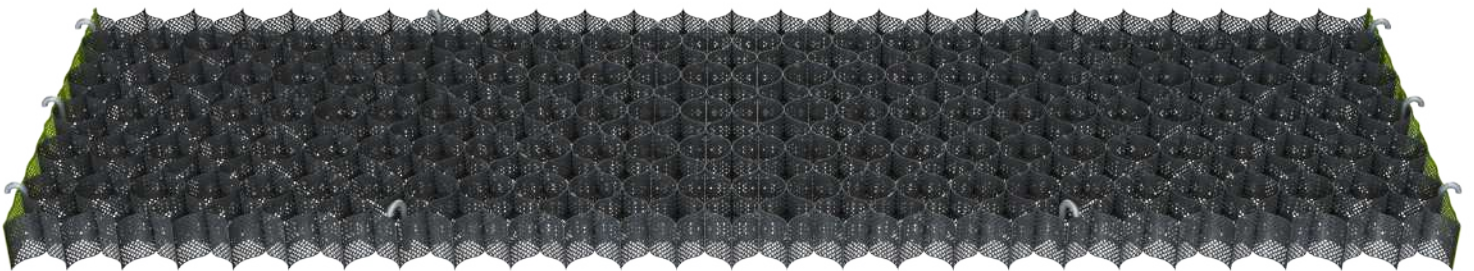


Step 3: Stapling Cellweb® TRP

- Pull out the Cellweb® TRP to its full 8.1m length and secure its length with another J pin.



- Now measure its width to 2.56m and secure in each of the corners with the J pins.
- Use 10 pins per panel to create a panel measuring 8.1m x 2.56m.



- This will produce a cell size of 259mm x 224mm which is the required cell aperture. Each cell must be fully extended and under tension.
- Staple adjacent panels together at each cell (see Note 3).
- If a curved path or shape is required, this should be cut when the Cellweb® TRP panel is pinned out to 8.1 x 2.56m, ensuring complete cells remain. Do not try to curve or bend the Cellweb® TRP panels into place.
- When cutting Cellweb® TRP, please bear in mind that you will lose two internal cells per cut. Across a 8.1m long panel, this equates to a loss of 0.224m x 2 along the length or 0.259m x 2 across the width.

Cellweb® TRP - Installation Guide



Step 4: Clean Angular Stone



Step 5: Edge Restraints



Step 6: Surface Options

4. Infill the Clean Angular Stone

- The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm (see Note 4).
- Do not use M.O.T type 1 or crushed stone with fines for tree root protection.
- Infill the Cellweb® TRP cells with the clean angular stone, working towards the tree and using the infilled panels as a platform.
- Minimum 25mm overfill of clean angular stone when used in conjunction with a hard surface.
- No compaction is required of the infill. Do not use a whacker plate or other means of compaction.
- Encourage settlement of the stone with the use of a light roller or with 2-3 passes of the construction plant used for installation.
- If the clean angular stone is being used as the final surface; regular maintenance will be required to ensure a minimum overfill of 50mm.

5. Edge restraints

- Excavations for kerbs and edgings should be avoided within the RPAs.
- Where edging is required for footpath and light structures, a peg and treated timber board edging is acceptable
- Other options include wooden sleepers, kerb edging constructed on-top of the Cellweb® TRP system, plastic and metal edging etc.

6. Surface options

- All surfaces in Root Protection Areas must be porous. Surfaces can include porous block paving, porous asphalt, loose gravel, grass and gravel retention systems (e.g Golpla), resin bound gravel, concrete and astro turf.

NOTES

- 1. Herbicide:** According to BS5837:2012 "The use of herbicides in the vicinity of existing trees should be appropriate for the type of vegetation to be killed, and all instructions, warnings and other relevant information from the manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained, species to be introduced, and existing sensitive habitats, particularly those associated with aquatic or drainage features."
- 2. Geotextile:** We recommend the installation of a Treetex™ under the Cellweb® TRP, or under the sub-base, if installed. The overlapping between adjacent rolls of Geotextile should be: CBR > 3%: 300mm minimum, CBR between 1% and 3%: 500mm minimum. CBR ≤ 1%: 750mm minimum.
- 3. Staples:** Number of staples per join: 200mm: 5 staples. 150mm: 4 staples. 100mm: 3 staples. 75mm: 3 staples.
- 4. Granular Fill:** Open graded sub-base, clean angular stone Type 4/20 or Type 20/40. Please refer to BS7533-13:2009 and to the Design Manual for Roads and Bridges (DMRB), Volume 4 Geotechnics and Drainage, Section 1 Earthworks, HA44/91, Volume 7 – IAN 73/06 Design Guidance for road pavement foundations and Manual of Contract Documents for Highway Works (MCHW), Volume 1 Specification for Highway Works for the construction and maintenance of the fill material.