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## **1. SUMMARY**

- 1.1.** Planning approval is sought for erection of twelve dwellings, a new access and associated landscaping at Cae Gors, in Tregarth.
- 1.2.** Trees on and adjacent to the site have been assessed and the arboricultural impacts of the development proposal evaluated in accordance with current best practice.
- 1.3.** Implementing the development will require the removal of some moderate and low quality trees, the loss of which can be mitigated by new landscaping.
- 1.4.** Most of the retained trees can be retained in a sustainable manner and protected during construction in accordance with current best practice.
- 1.5.** Minor pruning of some retained trees accords with current best practice and should be acceptable in planning terms.

## **2. TERMS OF REFERENCE**

### **2.1. Instruction**

**2.1.1.** Cheshire Woodlands is instructed by Caulmert Limited to:

- Survey and prepare a schedule of trees to comply with the general requirements of BS5837<sup>1</sup>
- Annotate a topographical survey drawing and produce a tree survey plan
- Appraise a development proposal in relation to trees and produce an arboricultural statement and tree protection plan

### **2.2. Limitations**

**2.2.1.** This statement and associated documents are the copyright of Cheshire Woodlands Limited and there should be no transfer of rights to any third party without express written consent.

**2.2.2.** The purpose of the assessment is to collect data to inform the design of a development proposal in relation to trees.

**2.2.3.** Trees have been assessed in sufficient detail to inform the current project and appraisal of their structural condition is of a preliminary nature.

**2.2.4.** Trees were assessed from ground level without invasive investigation and were viewed from within the site or from areas with public access. Therefore the disclosure of hidden defects cannot be expected.

**2.2.5.** Whilst the Tree Survey Schedule at Appendix 1 (the Schedule) is not a tree safety inspection record, I have recorded obvious defects when they are observed and considered to be potentially significant to safety.

**2.2.6.** Data in the Schedule are time limited to one year, after which they should be reviewed.

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<sup>1</sup> British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*

**2.2.7.** The potential effects of trees on load-bearing soils beneath existing and proposed structures have not been considered and no soil samples have been taken.

### **3. INTRODUCTION**

**3.1.** I am Tom Baron, arboricultural surveyor with Cheshire Woodlands Limited and my area of expertise is arboriculture.

**3.2.** This assessment evaluates the effects of a development proposal on trees.

**3.3.** The development comprises erection of twelve dwellings, with an access and associated landscaping, as shown on the Tree Protection Plan at Appendix 2 (the Drawing).

**3.4.** The following documents have been considered in my evaluation:

- Topographical survey drawing - 21068-290421
- Proposed site plan - 1893 A-01-03
- Tree Survey Plan – CW/10388-P-TS
- Preliminary Tree Survey Schedule – CW/10388-SS

**3.5.** The comparative values of trees are considered broadly in line with the guidance of BS5837, and their removal, retention, protection and management are informed by this evaluation.

**3.6.** Technical terms used in this Statement are included in the Glossary of Terms.

**3.7.** This Statement provides sufficient supporting information to enable the local planning authority (LPA) to determine the planning application insofar as it relates to trees.

### **4. THE APPLICATION SITE**

**4.1.** The site is a rectangular 0.45 hectare paddock to the north of Tregarth in Gwynedd. There is natural colonisation of trees and shrubs to the west of the site and along the northern boundary there is a brook at the northwest side. Ground levels are variable, mostly sloping

southwest. The site is bounded by housing to the north, a country lane to the east, and broadleaved woodland to the south and west.

- 4.2.** The British Geological Survey - *Geology of Britain Viewer*<sup>2</sup> identifies 'no data' for the site. The surrounding soils comprise a mixture of clay, sands and gravels.

## **5. STATUTORY PROTECTION**

- 5.1.** An email enquiry to Gwynedd Council confirmed that there are no tree preservation orders on the site and the site is not in a conservation area.
- 5.2.** Trees on the site are subject to the provisions of The Forestry Act<sup>3</sup>.
- 5.3.** See Appendix 4 for further guidance on the statutory protection of trees, hedgerows and wildlife.

## **6. SURVEY METHODOLOGY**

- 6.1.** I surveyed the trees on 7 May 2021 and my data are set out in the Tree Survey Schedule at Appendix 1 (the Schedule) and on the Drawing.
- 6.2.** I measured stem diameters and canopy spreads using a tape and tree heights using a tape and clinometer. Where dimensions are estimated this is identified in the Schedule.
- 6.3.** I assessed the trees for 'visual prominence' and broadly categorised them in accordance with Table 1 of BS5837. See Appendix 3 for further guidance.
- 6.4.** During the survey, I carried out a brief assessment for obvious signs of wildlife habitat in trees and hedges on the site. Any wildlife habitats of potential significance identified during

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<sup>2</sup> Geology of Britain viewer

<sup>3</sup> *The Forestry Act 1967* (as amended)

the survey will be described in the 'comments' column of the Schedule. See Appendix 4 for further guidance.

- 6.5.** The topographical survey overlaid with the proposed site plan is the base for the Drawing.
- 6.6.** Below-ground arboricultural constraints are represented on the Drawing as Root Protection Areas (RPA), calculated in accordance with section 4.6 and Table D.1 of BS5837.

## **7. THE TREES**

- 7.1.** I have assessed five individual trees (T1 to T5), four groups of trees (G1 to G4), and one hedge (H1).
- 7.2.** G4, and parts of G1 and H1 are off site, the remainder of the assessed trees and part of H1 are located on-site or on the boundaries.
- 7.3.** T5 is a 'high quality' A category tree; T1, T3, G1 and G3 are 'moderate quality' B category trees, and T2, T4, G2 and G4 are 'low quality' C category trees.

## 8. ARBORICULTURAL IMPLICATIONS

8.1. BS5837 recommends that trees be evaluated and categorised as set out in Table 1, which also provides a summary of the impact of the development proposal on trees.

### 8.2. Table 1

	To be retained and protected	To be removed for development	To be removed for other reasons
<b>Category A</b> High quality with life expectancy of at least 40 years	Tree T5	None	None
<b>Category B</b> Moderate quality with life expectancy of at least 20 years	Tree T3 and the northwest part of group G1	Tree T1, group G3 and the southeast part of G1	None
<b>Category C</b> Low quality with life expectancy of at least 10 years, or small young trees	Group G4	Tree T2 and group G2	Tree T4
<b>Category U</b> Cannot be retained in the context of the current land-use for longer than 10 years	None	None	None
<b>Hedges and Shrubs</b>	Hedge H1	None	None

### 8.3. Trees to be removed

8.3.1. T4 (C category) is proposed for removal for arboricultural reasons, irrespective of the development. The tree is heavily suppressed and its removal will improve the development of the adjacent, higher quality trees T3 and T5.

8.3.2. T1, G3, part of G1 (B category), T2 and G2 (C category) will be removed to accommodate the development. Impacts associated with their removal can be mitigated by new landscaping.

#### **8.4. Trees to be retained**

**8.4.1.** T5 (A category), T3, the northwest part of G1 (B category), G4 (C category) and H1 can be retained.

**8.4.2.** A retaining wall is proposed on the outer edge of the RPAs of T3 and T5. Any impacts on tree roots are likely to be very minor, however the area of incursion will be compensated for by the extension of the tree protection area to the northwest and southeast, also providing protection for an area designated for new boundary tree planting.

**8.4.3.** Excavations will be required to form the proposed stream embankment within group G1. There are likely to be some impacts on the retained edge trees during the construction works, which mostly comprise low quality goat willow and hazel. These impacts could be accounted for in the landscaping scheme.

#### **8.5. Pruning**

**8.5.1.** Trees T3, T5 and G4 will be pruned as detailed in the 'management' column of the Schedule to accommodate working space and increase clearances over the road. The pruning accords with BS3998<sup>4</sup> and will not harm the health or appearance of the trees.

#### **8.6. Post development pressure**

**8.6.1.** The proposed spatial relationship of the retained trees with the development presents no particular conflicts and there are no post-development pressures expected to emerge that could not be dealt with as routine maintenance.

#### **8.7. Mitigation**

**8.7.1.** The planting of new native trees, shrubs and hedges is proposed to mitigate impacts associated with tree removals. The residual landscaping details can be agreed by the LPA.

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<sup>4</sup> British Standard BS3998:2010 *Tree work - Recommendations*

## 9. CONCLUSIONS

- 9.1.** The development proposal requires the removal moderate and low quality trees. Any impacts associated with the removal of these trees can be mitigated by a scheme of new landscaping, to be agreed by the LPA.
- 9.2.** Most of the retained trees can be protected in accordance with current best practice, as set in BS5837. Details for their protection during construction are set out in the appended Drawing. Some low quality trees within G1 are likely to impacted by the construction of the new watercourse. These can most likely be retained, but any damaged trees should be accounted for the landscaping scheme.
- 9.3.** Minor pruning of some retained trees is proposed, which complies with current best practice and should not harm their health or appearance.

## 10. RECOMMENDATIONS

- 10.1.** All tree pruning and removal work should be implemented in accordance with the management recommendations in the Schedule and in compliance with BS3998.
- 10.2.** Statutory protection of wildlife should be considered in the planning and implementation of tree and hedge pruning and removal.
- 10.3.** All retained trees, shrubs and hedges should be protected during construction in accordance with the Tree Protection Plan and Arboricultural Method Statement at Appendix 2 and in accordance with BS5837.
- 10.4.** New underground services should be installed in accordance with a scheme of work to be agreed with the LPA and in accordance with BS5837 and NJUG Volume 4<sup>5</sup>.

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<sup>5</sup> NJUG Volume 4. 2007. *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees*. National Joint Utilities Group

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- 10.5.** Landscaping should be implemented in accordance with a scheme of work to be agreed with the LPA and in accordance with the Arboricultural Method Statement on the Drawing.
- 10.6.** Foundation design should take into consideration the juxtaposition of existing and proposed trees and the nature of the potentially load-bearing soil.

## **APPENDIX 1**

## TREE SURVEY SCHEDULE

**PROJECT:** CAE GORS, TREGARTH, GWYNEDD, LL57 4ND  
**CLIENT:** CAULMERT LIMITED  
**REF:** CW/10388-SS-1

**SURVEYED BY:** T. BARON  
**DATE:** 7 MAY 2021  
**PAGE:** 1

### REVISIONS:

No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
T1	Oak	SM	9	12	400	N	<ul style="list-style-type: none"> <li>Located on northern site boundary adjacent to road</li> <li>Slightly suppressed and if retained, would benefit from 'haloing' to remove adjacent young trees limiting crown growth</li> </ul>	<ul style="list-style-type: none"> <li>Fell for development</li> <li>Grub out or grind stump to a depth of 0.2m</li> </ul>	2	B	U	N/A
T2	Hazel	SM	3	3	200 (MS)	N	<ul style="list-style-type: none"> <li>Self-seeded tree growing within boundary hedge line</li> <li>Limited arboricultural value</li> </ul>	<ul style="list-style-type: none"> <li>Fell for development</li> <li>Grub out or grind stump to a depth of 0.2m</li> </ul>	1	C	U	N/A

The sole purpose of the survey was to collect data to inform the design of the current project in relation to trees. Whilst this is not a tree safety inspection record, the surveyor may record obvious defects when they are observed and considered to be significant to safety. Unless otherwise agreed, data in this schedule are time limited to one year, after which they should be reviewed.

### HEADINGS & ABBREVIATIONS

<b>Age Range</b>	Y = young SM = semi-mature EM = early-mature M = mature PM = post-mature V = veteran
<b>Stem Dia</b>	Stem diameter (measured in accordance with Figure C.1 of BS5837: 2012) (MS = multi-stemmed EST = estimated)
<b>Crown Spread</b>	Maximum crown spread (EST = estimated)
<b>Vitality</b>	A measure of physiological condition. N = normal range for the species and age R = reduced, P = poor, MD = moribund, D = dead
<b>Visual (Visual Prominence)</b>	Broad indication of prominence in the landscape (1 = low up to 4 = very high) (G = contributes to a wider group)
<b>Retention Category Existing</b>	Broadly in accordance with Table 1 of BS5837: 2012 (considers the merits of the tree or group in the context of the existing land-use)
<b>Retention Category Proposed</b>	Broadly in accordance with Table 1 of BS5837: 2012 (considers the merits of the tree or group in the context of a development proposal)
<b>BS5837 RPA Radius</b>	Calculated in accordance with Table D.1 of BS5837: 2012
<b>Common Plant names</b>	Only common names are used in this schedule. For scientific names refer to Mitchell, A. 2001. <i>Collins Field Guide – Trees of Britain &amp; Northern Europe</i> . Harper Collins, London. pp. 420.

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TREE SURVEY SCHEDULE



**PROJECT:** CAE GORS, TREGARTH, GWYNEDD, LL57 4ND  
**CLIENT:** CAULMERT LIMITED  
**REF:** CW/10388-SS-1

**SURVEYED BY:** T. BARON  
**DATE:** 7 MAY 2021  
**PAGE:** 2

No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
T3	Oak	EM	11	12	600	N	<ul style="list-style-type: none"> <li>• Located within roadside boundary</li> <li>• Raised levels on roadside which then decrease to the southwest over the field</li> <li>• Clear stem to 3.5m</li> <li>• Split primary branch on west side which has partially failed and is in contact with the ground</li> <li>• Ground clearance over road and field is up to 3m, which could be raised to 4-5m by removal of low lateral and sub-lateral branches</li> </ul>	<ul style="list-style-type: none"> <li>• Retain and protect during development</li> <li>• Prune to provide an overall 4-5m ground clearance by removal of low lateral and sub-lateral branches</li> </ul>	2	B	B	7.2
T4	Sycamore	SM	9	6	275	R	<ul style="list-style-type: none"> <li>• Ivy to stem</li> <li>• Subordinate stem arising at ground level</li> <li>• Heavily suppressed by adjacent trees</li> <li>• Most likely unsuitable for long-term retention</li> <li>• Dead branches in crown</li> </ul>	<ul style="list-style-type: none"> <li>• Fell for arboricultural reasons</li> <li>• Grind stump to a depth of 0.2m</li> </ul>	1	C	U	N/A
T5	Oak	EM	13	16	850	N	<ul style="list-style-type: none"> <li>• Located on roadside boundary</li> <li>• Raised levels on roadside which then decrease to the southwest over the field</li> <li>• Abrading primary branches in crown, with some small diameter dead branches. However, the overall crown condition is good</li> <li>• Minor dead branches in crown</li> <li>• Ground clearance up to 2-3m which could be raised to 4m by removal of subordinate stems and low lateral branches</li> </ul>	<ul style="list-style-type: none"> <li>• Retain and protect during development</li> <li>• Prune to provide an overall 4-5m ground clearance by removal of low lateral and sub-lateral branches</li> </ul>	2	A	A	10.2

# TREE SURVEY SCHEDULE



**PROJECT:** CAE GORS, TREGARTH, GWYNEDD, LL57 4ND  
**CLIENT:** CAULMERT LIMITED  
**REF:** CW/10388-SS-1

**SURVEYED BY:** T. BARON  
**DATE:** 7 MAY 2021  
**PAGE:** 3

No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
G1	Goat willow Ash Cherry Sycamore Holly Hawthorn Hazel	Y-M	≤12	≤14	≤2 X 650 (MAX)  200 (AVG)	N-R	<ul style="list-style-type: none"> <li>Mixed broadleaved species of predominantly early-mature goat willow, most likely seeded from one mature specimen</li> <li>The western and southern extents of the group are off-site or on land within the landowner's ownership</li> <li>Understorey of mostly multi-stemmed hazel</li> <li>Brook running throughout south eastern part, with localised level changes either side</li> <li>Signs of recent management such as selective thinning, pruning and habitat piling</li> <li>Storm damage such as windthrown/partially failed stems and primary branches</li> <li>Ivy to stems of some trees, along with potential habitat features</li> <li>Residential interface on western side, bounded by car park fencing</li> </ul>	<ul style="list-style-type: none"> <li>Remove southeast part for development</li> <li>Retain and protect remainder during development</li> </ul>	2	B	B/U	≤11.0
G2	Hazel	SM	≤3	≤3	≤200	N	<ul style="list-style-type: none"> <li>Low quality self-seeded trees growing within boundary hedge line</li> </ul>	<ul style="list-style-type: none"> <li>Remove for development</li> <li>Grub out or grind stumps to a depth of 0.2m</li> </ul>	1	C	U	N/A
G3	Oak Ash Sycamore	EM	≤11	≤10	≤450	N	<ul style="list-style-type: none"> <li>Self-seeded trees growing on the roadside boundary</li> <li>Raised levels on roadside which then decrease to the southwest over the field</li> <li><b>G3/1 Sycamore</b> – multi-stemmed at ground level with two stems leaning over the road. If retained, there would be some merit in removing subordinate stems to retain one or two leading stems</li> </ul>	<ul style="list-style-type: none"> <li>Remove for development</li> <li>Grub out or grind stumps to a depth of 0.2m</li> </ul>	2	B	U	N/A
G4	Goat willow Ash Sycamore Hawthorn	Y-SM	≤11	≤10	≤250	N-P	<ul style="list-style-type: none"> <li>Off-site self-seeded group of mixed broadleaves, which forms the northern edge of a larger woodland</li> <li>Closely spaced and unmanaged</li> <li>Some suppressed trees in poor condition</li> </ul>	<ul style="list-style-type: none"> <li>Prune to reduce lateral spread by up to 2m on north side over site</li> </ul>	1	C	C	≤3.0
H1	Hawthorn Ash Cherry	Y-SM	≤7	≤5	≤100	N	<ul style="list-style-type: none"> <li>Unmanaged boundary hedge</li> </ul>	<ul style="list-style-type: none"> <li>Retain and protect during development</li> <li>Clip to form where located within site boundary</li> </ul>	1	-	-	-

## **APPENDIX 2**

**ARBORICULTURAL METHOD STATEMENT**

From commencement of the development, the following methodology shall be implemented in the manner and sequence described below

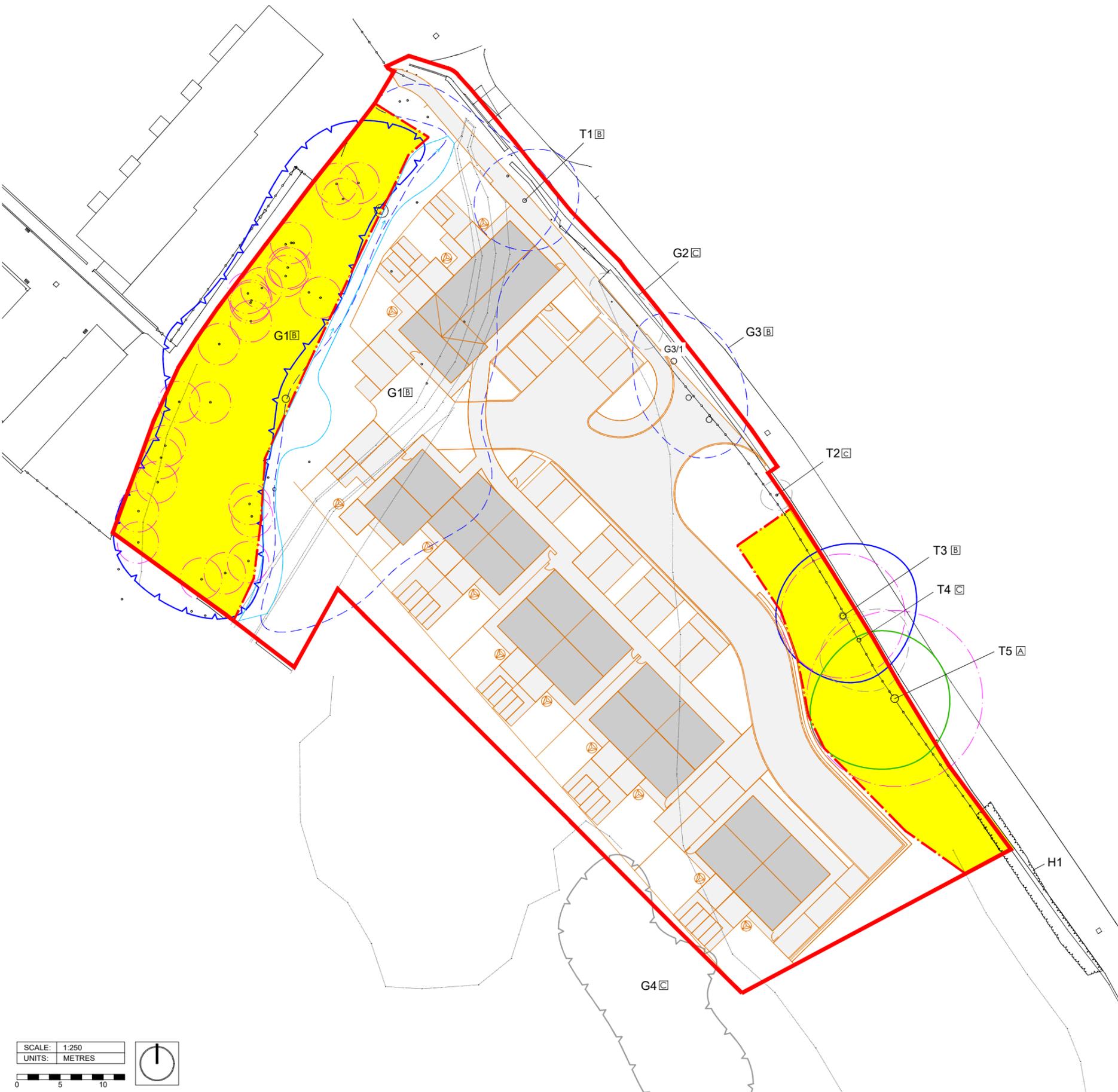
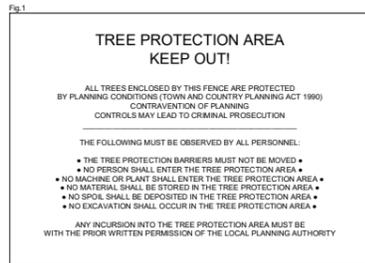
**SEQUENCE OF WORKS**

1. Tree and hedge removal and pruning
  2. Erection of 'tree protection barriers'
  3. Main construction phase
  4. Removal of 'tree protection barriers'
  5. Landscaping works
1. **TREE AND HEDGE REMOVAL AND PRUNING**
    - a. All trees and hedge removal and pruning work shall be implemented in accordance with Tree Survey Schedule CW/10388-SS-1 and this drawing
    - b. All reasonable care shall be taken to avoid damage to retained trees and hedges
    - c. All tree stumps within any area designated as a 'tree protection area' or otherwise protected on this drawing shall be removed by mechanical stump grinder and shall not be excavated in their entirety by mechanical excavator
    - d. All tree and hedge removal and pruning works shall be carried out in compliance with British Standard 3998: 2010 Tree work - Recommendations
  2. **ERECTION OF TREE PROTECTION BARRIERS**
    - a. The main contractor shall erect 'tree protection barriers' as detailed on this drawing
    - b. The 'project arboriculturist' shall inspect installation of the 'tree protection barriers' prior to commencement of any construction works, site preparation, excavation or delivery of plant and materials
  3. **MAIN CONSTRUCTION PHASE**
    - a. There shall be no storage of construction equipment, plant or materials within any area designated as a 'tree protection area' or otherwise protected on this drawing
    - b. No fires shall be lit within 20m of any retained tree or hedge
    - c. The site agent shall supervise all deliveries by self-loading crane, with vehicles positioned in such a manner that retained trees and hedges are not at undue risk of damage
    - d. There shall be no excavation within 300mm of a 'tree protection barrier'
    - e. There shall be no new excavation for the installation, renewal or repair of underground services within any area designated as a 'tree protection area' or otherwise protected on this drawing
    - f. The integrity of the 'tree protection barriers' shall be maintained for the duration of the main construction phase
    - g. Any damage occurring to 'tree protection barriers' during the main construction phase shall be reported to the project arboriculturist and immediately made good by the main contractor
    - h. Site drainage and washings from concrete and mortar mixings shall be directed away from all 'tree protection areas'
  4. **REMOVAL OF TREE PROTECTION BARRIERS**

'Tree protection barriers' shall be removed only on completion of construction works and in compliance with all relevant planning conditions
  5. **LANDSCAPING WORKS**
    - a. Landscaping works shall be implemented in accordance with a scheme approved by the Local Planning Authority
    - b. There shall be no rotovation of ground within any area designated as a 'tree protection area' or otherwise protected on this drawing
    - c. Sandy topsoil may be spread within the 'tree protection areas' to a depth of not more than 150mm to facilitate the establishment of new vegetation. No other addition of soil or other material shall be carried out within any area designated as a 'tree protection area' or otherwise protected on this drawing without prior consultation with the Local Planning Authority
    - d. No hard landscaping works or excavation for cables or any other service shall be carried out within the 'tree protection area' without the prior written consent of the LPA. All such excavations shall be carried out in accordance with the guidance set out in National Joint Utilities Group Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Volume 4 2007)
    - e. The alignment of the sections of boundary wall and fence that extend into the 'root protection area' of any retained tree shall be marked out on the ground by the 'project arboriculturist'. New boundary walls and fences shall be located so as to avoid unnecessary removal of trees and minimize pruning of trees and excavation of ground within 'root protection areas'
    - f. Any pruning needed to accommodate new walls and fences shall be the minimum required to install the new walls and fences and shall be carried out in accordance with British Standard 3998:2010 Tree work - Recommendations
    - g. In the installation of the new walls and fences there shall be no raising or lowering of existing ground other than to accommodate post-holes and foundations
    - h. Post-holes and foundations shall be excavated by hand, using hand tools. All roots greater than 25mm diameter shall be retained with post-holes or foundations re-located if roots greater than 25mm diameter are encountered. Clumps of smaller roots (including fibrous roots) shall also be retained and worked around
    - i. No fixing shall be made to any retained tree

**TREE PROTECTION SPECIFICATION**

- Tree Protection Areas shall:**
1. Be secured prior to commencement of any construction works, delivery of site accommodation or materials and shall remain intact for the duration of the construction works
  2. Preclude all construction activity with the exception of specified arboricultural works and such works as have been agreed by all parties and to be carried out under supervision
  3. Be protected by 'tree protection barriers' and other measures as specified on this drawing
  4. Preclude the storage or tipping of all materials and substances. Toxic substances such as fuels, oils, additives and cement shall not be stored within 5m of any area designated as a 'tree protection area' or otherwise protected on this drawing
  5. Any incursion into 'tree protection areas' must be by prior arrangement, following consultation with the Local Planning Authority
- Tree Protection Barriers**
1. The 'tree protection barriers' shall comprise 2m high weldmesh 'Heras' type fencing
  2. The fencing panels shall butt together and be securely fixed to 2.7m x 100mm x 100mm timber posts, set or concreted into 600mm deep, 150mm diameter augured holes at 3.5m centres
  3. No fixing shall be made to any tree and all reasonable care shall be taken to avoid damage to tree roots when locating posts
  4. An A3 warning sign reading as per figure 1 shall be fixed to every 10m of 'tree protection barrier'
  5. The 'project arboriculturist' shall direct erection of the 'tree protection barriers'



TREE PROTECTION PLAN																															
9 LOWE STREET      T. +44(0)1625 669668 MACCLESFIELD      E. admin@cheshire-woodlands.co.uk CHESHIRE              W. www.cheshire-woodlands.co.uk SK11 7NJ																															
CLIENT	CAULMERT LIMITED																														
PROJECT	CAE GORS TREGARTH GWYNEDD, LL57 4ND																														
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<table border="0"> <tr> <td></td> <td>DEVELOPMENT BOUNDARY</td> </tr> <tr> <td></td> <td>PROPOSED DWELLINGS, ACCESS AND ASSOCIATED LANDSCAPING (Drawing 1893 A-01-03)</td> </tr> <tr> <td></td> <td>PROPOSED WATER FEATURE</td> </tr> <tr> <td></td> <td>INDIVIDUAL TREE TO BE RETAINED</td> </tr> <tr> <td></td> <td>GROUP OF TREES TO BE RETAINED</td> </tr> <tr> <td></td> <td>HEDGE TO BE RETAINED</td> </tr> <tr> <td></td> <td>TREE OR GROUP TO BE REMOVED</td> </tr> <tr> <td></td> <td>STEM POSITION APPROXIMATED</td> </tr> <tr> <td></td> <td>BS 5837 RETENTION VALUE</td> </tr> <tr> <td></td> <td>BS5837 ROOT PROTECTION AREA RADIUS</td> </tr> <tr> <td></td> <td>BS5837 CATEGORY 'A' TREES</td> </tr> <tr> <td></td> <td>BS5837 CATEGORY 'B' TREES</td> </tr> <tr> <td></td> <td>BS5837 CATEGORY 'C' TREES</td> </tr> <tr> <td></td> <td>TREE PROTECTION AREA</td> </tr> <tr> <td></td> <td>TREE PROTECTION BARRIER (BS5837)</td> </tr> </table>			DEVELOPMENT BOUNDARY		PROPOSED DWELLINGS, ACCESS AND ASSOCIATED LANDSCAPING (Drawing 1893 A-01-03)		PROPOSED WATER FEATURE		INDIVIDUAL TREE TO BE RETAINED		GROUP OF TREES TO BE RETAINED		HEDGE TO BE RETAINED		TREE OR GROUP TO BE REMOVED		STEM POSITION APPROXIMATED		BS 5837 RETENTION VALUE		BS5837 ROOT PROTECTION AREA RADIUS		BS5837 CATEGORY 'A' TREES		BS5837 CATEGORY 'B' TREES		BS5837 CATEGORY 'C' TREES		TREE PROTECTION AREA		TREE PROTECTION BARRIER (BS5837)
	DEVELOPMENT BOUNDARY																														
	PROPOSED DWELLINGS, ACCESS AND ASSOCIATED LANDSCAPING (Drawing 1893 A-01-03)																														
	PROPOSED WATER FEATURE																														
	INDIVIDUAL TREE TO BE RETAINED																														
	GROUP OF TREES TO BE RETAINED																														
	HEDGE TO BE RETAINED																														
	TREE OR GROUP TO BE REMOVED																														
	STEM POSITION APPROXIMATED																														
	BS 5837 RETENTION VALUE																														
	BS5837 ROOT PROTECTION AREA RADIUS																														
	BS5837 CATEGORY 'A' TREES																														
	BS5837 CATEGORY 'B' TREES																														
	BS5837 CATEGORY 'C' TREES																														
	TREE PROTECTION AREA																														
	TREE PROTECTION BARRIER (BS5837)																														

## **APPENDIX 3**

## **Guidance Note - Visual Prominence and Tree Categorisation**

### **Visual Prominence**

A broad indication of visual contribution to the landscape. The evaluation considers:

- location
- public views
- landscape function
- tree size
- growth potential
- useful life expectancy

Visual prominence values are classified as follows:

- (1)** Low - visual contribution restricted to the site
- (2)** Moderate - visual contribution to the site and immediate surroundings
- (3)** High - visual contribution to the site, immediate surroundings and neighbourhood, estate or locale
- (4)** Very high - visual contribution to a conurbation, or trees of exceptional landscape value

Groups of trees are assessed as a single unit.

## **Tree Categorisation**

Broadly in accordance with section 4.5 and Table 1 of British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

Trees or groups of trees are evaluated twice. Firstly, they are assessed and categorised in the pre-development context to provide a broad valuation of all of their attributes and their contribution to the amenity of the area. Secondly, they are similarly assessed and categorised in the context of a development proposal. The evaluations consider:

- useful life expectancy
- visual prominence (see above)
- landscape function
- numbers of other trees and their maturity (continuity for landscape, amenity, habitat)
- wildlife habitats (including continuity)
- safety
- conflicts with the built environment or other land-use
- cultural, historical or other value

Groups of trees are assessed and categorised as a single unit.

## **Pre-Development assessment**

The tree or group of trees is assessed and placed into one of the following categories (A, B, C or U)

The valuation considers the benefits and disbenefits of retaining the tree or group of trees in the pre-development context

Any specific issues are noted in the tree survey schedule

**(A)** High quality - Trees the retention of which is most desirable and that have an estimated useful life expectancy of at least 40 years

Wholly appropriate and without significant conflict

**(B)** Moderate quality - Trees the retention of which is desirable and that have an estimated useful life expectancy of at least 20 years

Appropriate but not of highest value

**(C)** Low quality - Trees that could be retained and have an estimated useful life expectancy of at least 10 years

Ill-suited but could be retained with moderate conflicts

Trees of no particular merit

**(U)** Trees unsuitable for retention

Could not reasonably be retained for longer than 10 years

## **Post-Development assessment**

The tree or group of trees is assessed and placed in one of the following categories (A, B, C or U)

The valuation considers the benefits and disbenefits of retaining the tree or group of trees in the context of a development proposal

Any specific issues are noted in the tree survey schedule.

**(A)** High quality - Trees the retention of which is most desirable and that have an estimated useful life expectancy of at least 40 years

Wholly appropriate and without significant conflict

**(B)** Moderate quality - Trees the retention of which is desirable and that have an estimated useful life expectancy of at least 20 years

Appropriate but not of highest value and/or having only minor conflicts

**(C)** Low quality - Trees which could be retained and have an estimated useful life expectancy of at least 10 years

Ill-suited but could be retained with moderate conflicts

Trees of no particular merit

**(U)** Trees for removal

Would need to be removed to accommodate the development proposal, or could not reasonably be retained for longer than 10 years

## **APPENDIX 4**

## **Guidance note - Statutory Controls**

### **Trees and Hedges**

Subject to specified exceptions, an application must be made to the local planning authority [LPA] to carry out work on or remove trees that are protected by a tree preservation order [TPO]<sup>1</sup>

Six weeks' notice must be given to the LPA of intention to carry out work on or remove trees within a conservation area and not protected by a TPO<sup>1</sup>

LPA consent may be required to carry out work on or remove trees, shrubs and hedges that are affected by planning conditions

LPA consent may be required for the removal of hedgerows<sup>2</sup>

**Your Council's planning department will advise whether or not any of the above controls apply to your trees, shrubs and hedges**

Subject to specified exemptions, a licence may be required for the felling of growing trees<sup>3</sup>

**Your nearest Forestry Commission or Natural Resources Wales office will advise whether you require a felling licence**

### **Wildlife**

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<sup>1</sup> <https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas>

<sup>2</sup> <https://www.gov.uk/guidance/countryside-hedgerows-regulation-and-management>

<sup>3</sup> <https://www.gov.uk/guidance/tree-felling-licence-when-you-need-to-apply>

Nesting birds and all species of bat are afforded statutory protection.<sup>4</sup> It is an offence to:

- disturb a nesting bird
- disturb a roosting bat or damage, destroy or block access to a bat roost
- intentionally kill, injure or take a bat
- sell, hire, barter or exchange a bat, dead or alive
- be in possession or control of a bat or anything derived from a bat

**Your local Wildlife Trust or your Council's Ecologist will provide guidance on statutory controls relating to wildlife.**

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<sup>4</sup> <https://www.gov.uk/topic/planning-development/protected-sites-species>

## **APPENDIX 5**

# GLOSSARY OF ARBORICULTURAL TERMS

**Abscission.** The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way

**Abiotic.** Pertaining to non-living agents; e.g. environmental factors

**Absorptive roots.** Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients

**Access facilitation pruning.** One off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site

**Adaptive growth.** In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress

**Adaptive roots.** The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading

**Adventitious shoots.** Shoots that develop other than from apical, axillary or dormant buds; see also 'epicormic'

**Anchorage.** The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree

**Ancient tree.** A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species. An ancient tree is one that has all or most of the following characteristics: a) biological, aesthetic or cultural interest, because of its great age; b) a growth stage that is described as ancient or post-mature; c) a chronological age that is old relative to others of the same species

**Arboricultural Method Statement.** Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained

**Arboriculturist.** Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction

**Architecture.** In a tree, a term describing the pattern of branching of the crown or root system

**Axial.** Aligned along the axis of the stem, branch or root

**Axil.** The place where a bud is borne between a leaf and its parent shoot

**Bacteria.** Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms

**Bark.** A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm; occasionally applied only to the periderm or the phellem

**Bark expansion crack.** The pattern of axial strips of bark on smooth-barked trees that have grown faster than the adjacent bark. A growth response to stretching of the bark by expansion of the underlying xylem

**Basidiomycotina (Basidiomycetes).** One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like structures (basidia), which in many types are in turn borne on or within conspicuous fruit bodies, such as brackets or toadstools. Most of the principal decay fungi in standing trees are basidiomycetes

**Bolling.** A term sometimes used to describe pollard heads

**Bottle-butt.** A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay involving selective delignification

**Bracing.** The use of rods or cables to restrain the movement between parts of a tree

## Branch:

- **Primary.** A **first order branch** arising from a stem
- **Lateral.** A **second order branch**, subordinate to a primary branch or stem and bearing sub-lateral branches
- **Sub-lateral.** A **third order branch**, subordinate to a lateral or primary branch, or stem and usually bearing only twigs

**Branch bark ridge.** The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem

**Branch-collar.** A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base

**Brown-rot.** A type of wood decay in which cellulose is degraded, while lignin is only modified

**Buckling.** An irreversible deformation of a structure subjected to a bending load

**Buttress zone.** The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions

**Canker.** A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria

**Canopy species.** Tree species that mature to form a closed woodland canopy

**Cellulose.** A carbohydrate consisting of glucose molecules joined end-to-end, so as to form long filaments; a principal constituent of plant cell walls

**Chlorosis.** The loss of green pigment from plant tissues, caused by mineral deficiency. Chlorotic (adj.)

**Compartmentalisation.** The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and/or active defences operating at the boundaries of the affected region

**Competent person.** A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the task being approached.

**Compression fork.** An acute angled fork that is mechanically optimised for the growth pressure that two or more adjacent stems exert on each other

**Compression strength.** The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees with special drilling devices

**Compressive loading.** Mechanical loading which exerts a positive pressure; the opposite to tensile loading

**Condition.** An indication of the physiological condition of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree

**Construction.** Site based operations with the potential to affect existing trees

**Construction exclusion zone.** Area based on the Root Protection Area from which access is prohibited for the duration of the project

**Crown/Canopy.** The main foliage bearing section of the tree

**Crown lifting.** The removal of limbs and small branches to a specified height above ground level

**Crown thinning.** The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure

**Crown reduction/shaping.** A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape

**Crown reduction/thinning.** Reduction of the canopy volume by thinning to remove dominant branches whilst preserving, as far as possible the natural tree shape

**Deadwood.** Dead branch wood

**Decurrent.** In trees, a system of branching in which the crown is borne on a number of major widely-spreading limbs of similar size (cf. excurrent). In fungi with toadstools as fruit bodies, the description of gills which run some distance down the stem, rather than terminating abruptly

**Decay.** (of organic tissue) decomposition by fungi or bacteria

**Defect.** In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment

**Delamination.** The separation of wood layers along their length, visible as longitudinal splitting

**Desire-line footpath.** A footpath that has been created by regular use rather than by design and construction

**Dieback.** The death of parts of a woody plant, starting at shoot-tips or root-tips

**Disease.** A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms

**Distal.** In the direction away from the main body of a tree or subject organism (cf. proximal)

**Dominance.** In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours

**Dormant bud.** An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so

**Dysfunction.** In woody tissues, the loss of physiological function, especially water conduction, in sapwood

**DBH** (Diameter at Breast Height). Stem diameter measured at a height of 1.5 metres (UK) or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified

**Deadwood.** Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard

**Early-wood.** The wood laid down around the time of the main flush of shoot growth in the early part of the growing season

**Endophytes.** Micro-organisms that live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed, for example by lack of moisture

**Engineer-designed hard surfacing.** Hard surfacing constructed within the 'Root protection area' of a tree, which will be designed by a structural or geotechnical; engineer in collaboration with an arboriculturist as set out in clause 7.4 of British Standard BS5837:2012. The purpose being to minimise the effects of the construction on the health of the tree.

**Epicormic shoot.** A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot

**Excrecence.** Any abnormal outgrowth on the surface of tree or other organism

**Excurrent.** In trees, a system of branching in which there is a well-defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (cf. decurrent)

**Fastigate.** Having upright, often clustered branches

**Felling licence.** In the UK, a permit to fell trees in excess of a stipulated number of stems or volume of timber

**Fibre-buckling.** The kinking of wood fibres and failure of other xylem elements when exposed to compressive loading

**Field layer.** Herbs, ferns, grasses and sedges

**First-order branch.** A high order branch, usually arising from a stem

**Flush-cut.** A pruning cut which removes part of the branch bark ridge and or branch-collar

**Girdling root.** A root which circles and constricts the stem or roots possibly causing death of phloem and/or cambial tissue

**Ground layer.** Mosses, ivy, lichens and fungi

**Guying.** A form of artificial support with cables for trees with a temporarily inadequate anchorage

**Habit.** The overall growth characteristics, shape of the tree and branch structure

**Haloing.** Removing or pruning trees from around the crown of another (usually mature or post-mature) tree to prevent it becoming suppressed

**Hazard beam.** An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting

**Heartwood/false-heartwood.** The dead central wood that has become dysfunctional as part of the aging processes and being distinct from the sapwood

**Heave.** A term mainly applicable to a shrinkable clay soil which expands due to re-wetting after the felling of a tree which was previously extracting moisture from the deeper layers; also the lifting of pavements and other structures by root diameter expansion; also the lifting of one side of a wind-rocked root-plate

**High canopy tree species.** Tree species having potential to contribute to the closed canopy of a mature woodland or forest

**Incipient failure.** In wood tissues, a mechanical failure which results only in deformation or cracking, and not in the fall or detachment of the affected part

**Included bark (ingrown bark).** Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact

**Increment borer.** A hollow auger, which can be used for the extraction of wood cores for counting or measuring wood increments or for inspecting the condition of the wood

**Infection.** The establishment of a parasitic micro-organism in the tissues of a tree or other organism

**Internode.** The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches

**Laser Rangefinder.** A device that uses a laser beam to measure distance, angle, and height.

**Lateral branch:** A side branch

**Late-wood.** The wood laid down after the time of the first main flush of shoot growth. Usually denser than the early-wood

**Lever arm.** A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch

**Lesion.** Death or abnormal change in tissues, usually associated with disease or trauma

**Lignin.** The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification

**Lions tailing.** A term applied to a branch of a tree that has few if any side-branches except at its end, and is thus liable to snap due to end-loading

**Loading.** A mechanical term describing the force acting on a structure from a particular source; e.g. the weight of the structure itself or wind pressure

**Loam.** A soil with roughly equal proportions of sand, silt, and clay

**Longitudinal.** Along the length (of a stem, root or branch)

**Lopping.** A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting

**Marginal browning of leaves.** Death of a tissues to the margin or edge of the leaf

**Mature Heights** (approximate):

- **Low maturing** – less than 8 metres high
- **Moderately high maturing** – 8 – 12 metres high
- **High maturing** – greater than 12 metres high

**Microdrill.** An electronic rotating steel probe, which when inserted into woody tissue provides a measure of tissue density

**Minor deadwood.** Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree

**Mulch.** Material laid down over the rooting area of a tree or other plant to help conserve moisture; a mulch may consist of organic matter or a sheet of plastic or other artificial material

**Mycelium.** The body of a fungus, consisting of branched filaments (hyphae)

**Obvious defects.** Defects that are so apparent that most people, whether specialist or not, would recognise them on taking a general, but not necessarily close view of the tree

**Occluding tissues.** A general term for the roll of wood, cambium and bark that forms around a wound on a woody plant (cf. woundwood)

**Occlusion.** The process whereby a wound is progressively closed by the formation of new wood and bark around it

**Pathogen.** A micro-organism which causes disease in another organism

**Phloem.** Vascular tissue that distributes the products of photosynthesis (sugars) around the plant

**Photosynthesis.** The process whereby plants use light energy to split hydrogen from water molecules and combine it with carbon dioxide to form carbohydrates that are basic building block for plant growth. Photosynthetic capacity is the plants ability to produce carbohydrates

**Phytotoxic.** Toxic to plants

**Pollarding.** The removal of the tree canopy, back to the stem or primary branches, usually to a point just outside that of the previous cutting. Pollarding may involve the removal of the entire canopy in one operation, or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species

**Primary branch.** A major branch, generally having a basal diameter greater than 0.25 x stem diameter

**Primary root zone.** The soil volume most likely to contain roots that are critical to the health and stability of the tree and normally defined by reference BS5837 (2012) Trees in Relation to design, demolition and construction

**Priority.** Works may be prioritised, 1. = high, 5. = low

**Probability.** A statistical measure of the likelihood that a particular event might occur

**Proximal.** In the direction towards from the main body of a tree or other living organism (cf. distal)

**Pruning.** The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs

**Radial.** In the plane or direction of the radius of a circular object such as a tree stem

**Rams-horn.** In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in cross-section

**Rays.** Strips of radially elongated parenchyma cells within wood and bark. The functions of rays include food storage, radial translocation and contributing to the strength of wood

**Reactive Growth/Reaction Wood.** Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth)

**Removal of deadwood.** Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branchwood and broken snags

**Removal of major deadwood.** The removal of, dead, dying and diseased branchwood above a specified size

**Respacing.** Selective removal of trees from a group or woodland to provide space and resources for the development of retained trees

**Residual wall.** The wall of non-decayed wood remaining following decay of internal stem, branch or root tissues

**Rhizomorph.** A root-like aggregation of fungal hyphae

**Rib.** A ridge of wood that has usually developed because of locally increased mechanical loading. Often associated with internal cracking in the wood of the stem, branch, or root.

**Ring-barking (girdling).** The removal of a ring of bark and phloem around the circumference of a stem or branch, normally resulting in an inability to transport photosynthetic assimilates

below the area of damage. Almost inevitably results in the eventual death of the affected stem or branch above the damage

**Ripewood.** The older central wood of those tree species in which sapwood gradually ages without being converted to heartwood

**Root-buttresses.** A buttress-like formation at the transition between roots and stems

**Root-collar.** The transitional area between the stem/s and roots

**Root-collar examination.** Excavation of surfacing and soils around the root-collar to assess the structural integrity of roots and/or stem

**Root protection area (RPA).** Layout design tool indicating a national minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability and where the protection of the roots and soil structure is treated as a priority

**Root zone.** Area of soils containing absorptive roots of the tree/s described. The **Primary** root zone is that which we consider of primary importance to the physiological well-being of the tree

**Saprophytic fungi.** Fungi that live on dead or decomposing matter (in the tree) as opposed to functional, living tissues

**Sapwood.** Living xylem tissues

**Safety factor.** The ratio of the maximum stress that a structural part of a tree can withstand to the maximum stress experienced under normal conditions

**Screef.** To clear surface vegetation (commonly up to a depth of around 20mm)

**Secondary branch.** A branch, generally having a basal diameter of less than 0.25 x stem diameter

**Selective delignification.** A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose

**Senescence.** The condition or process of deterioration with age.

**Service.** Any above- or below-ground structure or apparatus required for utility provision e.g. drainage, gas supplies, ground source heat pumps, CCTV and satellite communications

**Shedding.** In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales

**Shoot.** The elongating region of a stem or branch

**Shrub species.** Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees

**Silviculture.** The practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values

**Silvicultural thinning.** Removal of selected trees to favour the development of retained specimens to achieve a management objective

**Single-up.** Removal of stems from a multi-stemmed tree with the aim of developing a tree with a single stem.

**Simultaneous white-rot.** A kind of wood decay in which lignin and cellulose are degraded at about the same rate

**Snag.** In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point

**Soft-rot.** A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole

**Soil auger.** A hand-held steel auger 60mm diameter auger used for extracting soil samples.

**Soil horizons.** A layer parallel to the soil surface, whose physical characteristics differ from the layers above and beneath:

- O)** Organic matter - Litter layer of plant residues
- A)** Surface soil - Layer of mineral soil with accumulation of organic matter
- B)** Subsoil - This layer accumulates mineral and organic compounds.
- C)** Parent rock - Layer of large unbroken rocks
- R)** Bedrock - Partially weathered bedrock at the base of the soil profile

**Soil sample.** A sample of soil extracted for the purpose of either field or laboratory testing to determine mineral, chemical or structural composition, and or moisture content and shrinkability.

**Sounding hammer.** A small plastic or nylon hammer used for assessing the audible signs of decay, cracks and other features in trees

**Spores.** Propagules of fungi and many other life-forms; most spores are microscopic and dispersed in air or water

**Sporophore.** The spore bearing structure of fungi

**Sprouts.** Adventitious shoot growth erupting from beneath the bark

**Squirrel damage.** Stripping of the bark from stems or branches by squirrels. This can result in the death of branches or even entire trees

**Stem/s.** Principle above-ground structural component(s) of a tree that supports its branches

**Stem taper.** The downward tapering of a tree stem out into the flare of the root buttresses

**Stress.** In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature

**Stress.** In mechanics, the application of a force to an object

**Strain.** In mechanics, the distortion of an object caused by a stress

**Stringy white-rot.** The kind of wood decay produced by selective delignification

**Storm.** A layer of tissue which supports the fruit bodies of some types of fungi, mainly ascomycetes

**Structural roots.** Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree

**Structure.** Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork

**Subsidence.** In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots

**Subsidence.** In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight

**Taper.** In stems and branches, the degree of change in girth along a given length

**Target canker.** A kind of perennial canker, containing concentric rings of dead occluding tissues

**Targets.** In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it

**Terminal xylem.** The last layers of xylem cells produced at the end of the growing season

**Topping.** In arboriculture, the removal of the crown of a tree, or of a major proportion of it

**Torsional stress.** Mechanical stress applied by a twisting force

**Translocation.** In plant physiology, the movement of water and dissolved materials through the body of the plant

**Transpiration.** The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells

**Tree Protection Plan.** Scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures

**Tree Risk Assessment.** An assessment and description of the risks and where appropriate the values associated with a tree or trees. The primary risk being considered is that from falling trees. Other risks, such as damage to infrastructure, interruption of service and building subsidence may also be considered

- Walkover – A general view of the tree population considered in the context of the adjacent land-use to identify trees that present significantly elevated risks
- Drive-by - A general view of the tree population from a moving vehicle and considered in the context of the adjacent land-use to identify trees that present significantly elevated risks
- Individual – the assessment of risks from a single tree considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

**Understorey.** This layer consists of younger individuals of the dominant trees, together with smaller trees and shrubs which are adapted to grow under lower light conditions

**Understorey tree species.** Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland

**Vascular cambium.** Sometimes described simply as 'cambium'. Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally

**Vascular dysfunction.** Dysfunction of water conducting cells

**Vascular wilt.** A type of plant disease in which water-conducting cells become dysfunctional

**Vessels.** Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees

**Veteran tree.** A tree that has the physical characteristics of an ancient tree but is not ancient in years, compared with others of the same species

**Vigour.** The expression of carbohydrate expenditure to growth (in trees)

**Vitality.** A measure of physiological condition. N = within normal range for species and age, R = reduced from the normal range for the species and age, P = poor

**Volunteer trees.** Trees arising from natural colonisation rather than having been planted

**Weeping lesion.** Exudations from a lesion in plant tissue

**Wet flush.** Where water from underground flows out onto the surface to create an area of saturated ground, rather than a well-defined channel

**White-rot.** A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded

**Wind exposure.** The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity

**Wind pressure.** The force exerted by a wind on a particular object

**Windthrow.** The blowing over of a tree at its roots

**Wound dressing.** A general term for sealants and other materials used to cover wounds in the hope of protecting them against desiccation and infection; only of proven value against fresh wound parasites

**Woundwood.** Wood with atypical anatomical features, formed in the vicinity of a wound

**Xylem.** Secondary xylem; the main structurally supporting and water-conducting element of trees (refined definition specific to this case)