



## BS 5837:2012 Arboricultural Survey

Pitt Street, Wombwell  
for:

**Hartwood Estates Limited**

CRM.1122.003.Ar.R.001



## Contact Details:

Enzygo Ltd.  
1<sup>st</sup> Floor, Samuel House,  
5 Fox Valley Way,  
Stocksbridge,  
Sheffield,  
S36 2AA

tel: +44 [0]114 321 5151  
email: verena.meyer@enzygo.com  
web: www.enzygo.com

## BS 5837:2012 Arboricultural Survey

|           |                                                              |
|-----------|--------------------------------------------------------------|
| Project:  | Pitt Street, Wombwell                                        |
| For:      | Hartwood Estates Limited                                     |
| Status:   | Final                                                        |
| Date:     | October 2019                                                 |
| Author:   | Verena Meyer Dipl.Ing. CMLI MArborA – Senior Arboriculturist |
| Reviewer: | Graham Bailey BSC, DIP,CMLI – Associate Director Landscape   |

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Enzygo Limited Registered in England No. 6525159

Registered Office Stag House Chipping Wotton-Under-Edge Gloucestershire GL12 7AD

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## 1.0 Non-Technical Summary

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### 1.1 Arboricultural Survey

- 1.1.1 The site is an approximately 33800m<sup>2</sup> (3.38ha) area of grassland to the North off Pitt Street in Wombwell.
- 1.1.2 A tree survey in accordance with BS 5837:2012 was carried out by Enzygo Ltd. in October 2019. Four trees, five groups and one hedgerow were surveyed within the site and within 15m of the site boundary. The semi-mature to mature trees are concentrated along the north-western and south-eastern boundaries, with few young trees scattered across the site. They are predominantly native, in good to fair condition and of low to moderate arboricultural and landscape value.
- 1.1.3 None of the trees are protected by Tree Preservation Order and the site does not lie within a Conservation Area.

### 1.2 Design recommendations

- 1.2.1 The site layout design should take into account the constraints posed by the trees on site and should seek to retain as many trees on site as possible to minimise the effect of the development on the amenity of the site and the local landscape as well as on the ecological value of the site. The retention of trees described in this report as being of moderate value as well as trees located on third party land should be prioritised.
- 1.2.2 *BS 5837:2012 Trees in relation to design, demolition and construction* chapters 5.2 and 5.3 describe the constraints posed by existing trees and outline the potential conflict between proposed structures and retained trees and how these can be avoided or minimised.
- 1.2.3 New structures, hard landscape, services and construction access should be designed outside the canopy spreads and Root Protection Areas (RPA) of retained trees as far as reasonably practicable. Lowering of ground levels within the RPA of retained trees is not acceptable. Specialist solutions to manage the conflict between the proposals and retained trees are available but may have an impact on costs of the construction phase. These include access facilitation pruning, no-dig construction, temporary ground protection, specialist engineering for buildings and trenchless solutions for services.

## 2.0 Overview

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### 2.1 Introduction

- 2.1.1 Enzygo Limited [Enzygo] have been commissioned by Hartwood Estates Limited to prepare an Arboricultural Survey Report in accordance with BS 5837:2012 for the site off Pitt Street in Wombwell, Barnsley.
- 2.1.2 This report should assist the preparation of the site layout, allowing the designer to consider the arboricultural constraints on site, including the retention of desirable trees (high and moderate value and/or trees which are found to be legally protected) and the protection of above and below ground parts of retained trees.

### 2.2 Structure of the Report

- 2.2.1 **Chapter 2.0** provides a brief description of the site and its location.
- 2.2.2 **Chapter 3.0** summarises the planning background, including national and local planning policies.
- 2.2.3 **Chapter 4.0** summarises the findings of the Arboricultural Survey, describing the overall species mix, age, condition and value of the trees recorded on site.
- 2.2.4 **Chapter 5.0** provides both general and site-specific design recommendations to assist with the development of any future site layouts which are sympathetic to the existing trees.

### 2.3 Site Description

- 2.3.1 The site is located approximately 6km south-west of Barnsley in a sub-urban location. Pitt Street lies to the South of the site, allotments to the East, residential properties to the North and paddocks to the West.
- 2.3.2 The site falls within the Barnsley Metropolitan District.
- 2.3.3 The application boundary for the site is approximately 29,000m<sup>2</sup> [2.9 hectares]. It is a flat area of grassland enclosed by fences and low stone walls to all sides but with an informal path crossing the site from the South-West to the North-East.

## 3.0 Planning background

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### 3.1 National Planning Policy Framework

- 3.1.1 The National Planning Policy Framework (NPPF) published by the government in February 2019 sets out the framework objectives for development in England. These are used by Local Planning Authorities (LPA) both during the preparation of their local planning policies as well as to guide them in making individual decisions for Planning Applications.
- 3.1.2 The NPPF sets out several objectives concerning the natural environment, including trees, woodland and hedgerows. In addition to broad objectives addressing biodiversity and the challenges posed by climate change (e.g. flood resilience, species selection) it encourages the enhancement of the natural and local environment by *“recognising [...] the wider benefits from natural capital and ecosystem services including [...] of trees and woodland”*.
- 3.1.3 In paragraph 175C the NPPF requests that *“development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exist”*.

### 3.2 Local Planning Policy

- 3.2.1 Policy HS77 of the Barnsley Local Plan allocated the site for housing. The policy requests that the priorities for site investigations should be focussed around the archaeological background of the site. Trees are not mentioned in this policy.
- 3.2.2 The Council’s Supplementary Planning Guidance on Hedgerows and Trees sets out clearly the requirement for tree surveys to BS 5837:2012 for planning applications and for adequate protection of retained trees during and after development.

## 4.0 Arboricultural Survey

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### 4.1 Overview

- 4.1.1 The arboricultural survey in accordance with BS 5837:2012 was carried out by Verena Meyer, MArborA, in October 2019. At the time of the survey the trees were fully in leaf.
- 4.1.2 Five groups and four individual trees as well as one hedgerow were recorded during the walk-over survey. They are concentrated along the north-western and south-eastern site boundaries. A full schedule of all trees and tree groups recorded can be found in Appendix 1 – Arboricultural Survey Schedule. A selection of photographs showing both the site and notable individual trees and tree groups is included in Appendix 3 – Site photographs.

### 4.2 Tree species

- 4.2.1 With the exception of five non-native Lombardy poplar (*Populus nigra 'Italica'*, G8 and G9), all trees on site are native species and include hawthorn (*Crataegus monogyna*), field maple (*Acer campestre*), apple (*Malus sp.*) and pedunculate oak (*Quercus robur*).

### 4.3 Tree age, condition, quality, value and significance on site and local landscape

- 4.3.1 The trees along the south-eastern and north-western boundary are semi-mature to mature whilst the small trees scattered across the site (G5) are young. They are in fair to good condition. The best tree on site is T4, an attractive mature field maple in the north-western corner of the site. This tree, as well as the mature hedgerow H6 and the boundary poplars G8 and G9 have been assessed as being of moderate value (BS category B), with all other trees being of low value (category C).

### 4.4 Root Protection Areas (RPA)

- 4.4.1 The Root Protection Areas for each Category A to C tree and tree group has been calculated based on measured stem diameters. Both the radius and the area of each RPA are listed in Appendix 1 – Arboricultural Survey Schedule and shown on the plan included in Appendix 2 – Tree Survey and Constraints Plan.

### 4.5 Tree Preservation Orders (TPO) and Conservation Areas

- 4.5.1 The online tool provided on the Barnsley Metropolitan Borough Council website has confirmed that none of the trees included in this survey are protected by Tree Preservation Order. The site is not located within a Conservation Area.

## 5.0 Design recommendations

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### 5.1 General recommendations

- 5.1.1 Design decisions should be based on the recommendations in chapters 5.2 and 5.3 of *BS 5837:2012 Trees in relation to design, demolition and construction* which describe the constraints posed by existing trees and outline the potential conflict between proposed structures and retained trees and how these can be avoided or minimised.

### 5.2 Maximise tree retention

- 5.2.1 It is recommended that the site layout design considers the safe retention of any trees which have been assigned the retention categories A, B and C as far as practicable to retain the ecological value of the site and the mature character of the boundaries and to minimise the potential visual impact the development may have on the surrounding landscape.

### 5.3 Minimise residual effect of trees on development

- 5.3.1 In addition to the desired retention of existing trees as described in 5.2 above, it is advised to consider the impacts any retained trees would have on the development, including excessive shading of sensitive building elevations and open spaces and the increased requirement for routine tree management near built structures (i.e. regular crown reduction near buildings).

### 5.4 Minimise residual effect of development on retained trees

#### ***Proposed buildings, structures and hard surfacing***

- 5.4.1 The site layout design should allow generous distances between vertical structures and tree canopies and allow for the expected future expansion of crowns.
- 5.4.2 The location of new structures and hard surfacing within the canopy spread of existing trees and tree groups should be considered carefully. Excessive management of these trees to facilitate any such elements may cause an imbalance of stem/crown ratio, unbalanced crowns or unnatural shape of specific tree species. The future requirement for continuous tree management to limit any conflicts should remain minimal.
- 5.4.3 Where built structures and hard landscape elements are proposed within the Root Protection Areas of existing trees, specialist methodologies may have to be adopted to manage the conflict. These solutions may have an impact on costs of the construction phase and it may be desirable to keep this to a minimum by developing a layout which is sensitive to the existing

trees. Any vertical elements such as fences should be proposed at such a distance from tree stems as to allow for the future increase of the stem diameter and root buttresses.

### ***Earthworks***

- 5.4.4 Underground services and any proposed design elements requiring foundations (e.g. boundary treatments, street furniture, hard surfaces) should be placed outside of Root Protection Areas where possible.
- 5.4.5 Excavations for underground services may have an impact where they are proposed within the RPA of retained trees. Proposed above ground services may further conflict with parts of tree canopies.
- 5.4.6 The reduction of ground levels within the Root Protection Areas of retained trees are not acceptable. Where this can't be avoided, the removal of the tree may have to be considered.

### ***Construction operations***

- 5.4.7 Construction operations near retained trees are likely to cause accidental damage of tree trunks and low hanging branches. Where possible, the design should allow for reasonable distances between new structures and above ground parts of retained trees, including sufficient clear working areas around those structures.
- 5.4.8 Vehicle and plant movement during construction may further cause ground compaction which could lead to irreversible damage of tree roots and the rooting environment within the RPA of retained trees. The construction phase plans should ensure that site access routes, site compounds and internal routes are proposed outside the Root Protection Areas (RPA) of retained trees.

## 6.0 Appendix 1 – Arboricultural Survey Schedule

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### 6.1 Information recorded and symbols used

|               |                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ref           | - Sequential tree reference as per Tree Survey Plan                                                                                                                                                                                                                                                                                                                                           |
| Species       | - Common name ( <i>Scientific name</i> )                                                                                                                                                                                                                                                                                                                                                      |
| Ht (m)        | - Estimated tree height in metres                                                                                                                                                                                                                                                                                                                                                             |
| Stem dia (cm) | - Stem diameter measured in accordance with BS5837:2012 Annex C                                                                                                                                                                                                                                                                                                                               |
| Canopy Spread | - Estimated branch spread (in metres) at four cardinal points                                                                                                                                                                                                                                                                                                                                 |
| Clear crown   | - Height of the lowest branch(es) including cardinal point(s) where applicable                                                                                                                                                                                                                                                                                                                |
| Life stage    | - <ul style="list-style-type: none"> <li>YNG - Young</li> <li>SM - Semi-mature</li> <li>EM - Early mature</li> <li>M - Mature</li> <li>OM - Over-mature (including veteran trees)</li> </ul>                                                                                                                                                                                                  |
| RULE          | - Remaining useful life expectancy estimated in years                                                                                                                                                                                                                                                                                                                                         |
| Cond.         | - Overall condition - <ul style="list-style-type: none"> <li>G - Good</li> <li>F - Fair</li> <li>P - Poor</li> </ul>                                                                                                                                                                                                                                                                          |
| Notes         | - Including observations and notes on: <p>Defects and other structural and physiological abnormalities, nesting birds, bat roost potential, notes on surrounding land incl. soil compaction, Tree Preservation Orders and Conservation Area, notes on limited access/inspection, off site location and preliminary management recommendations (in <i>italics</i>)</p>                         |
| BS Cat.       | - retention category and sub-category in accordance with BS5837:2012 <ul style="list-style-type: none"> <li>A - High Quality</li> <li>B - Moderate Quality</li> <li>C - Low Quality</li> <li>U - Unsuitable for retention</li> </ul> <ul style="list-style-type: none"> <li>1 - Mainly arboricultural value</li> <li>2 - Mainly landscape value</li> <li>3 - Mainly cultural value</li> </ul> |

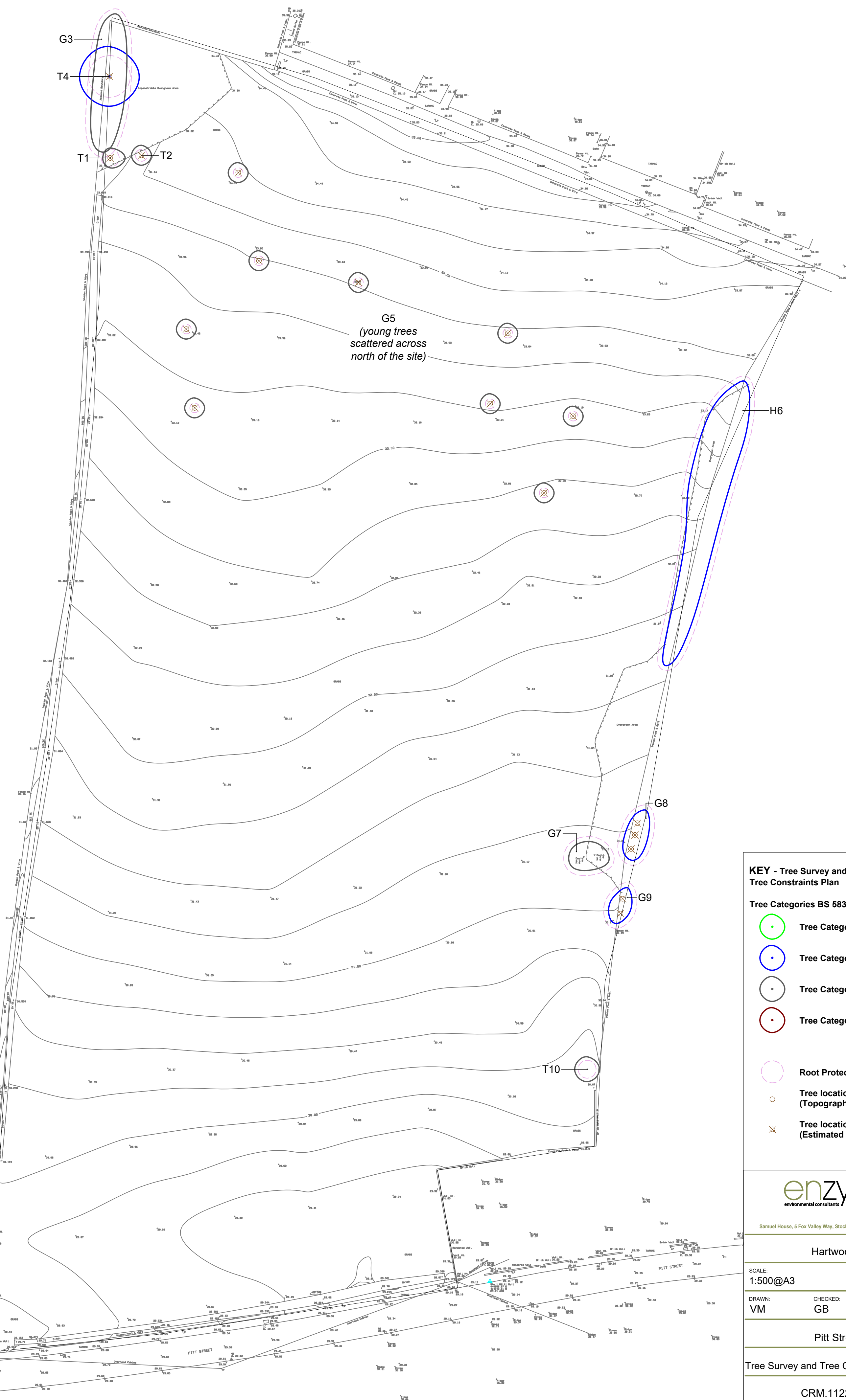
|                       |                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RPA (m)               | <ul style="list-style-type: none"><li>- Radius of Root Protection Area calculated in metres<br/>(Radius of RPA= 12x stem diameter)</li><li>- This will usually be capped at 15m for trees with a stem diameter larger than 1.25m.</li></ul>                                                                                           |
| RPA (m <sup>2</sup> ) | <ul style="list-style-type: none"><li>- Area of Root Protection Area (relevant if RPA is not circular due to pre-existing site conditions, incl. water courses, retaining structures and building foundations).</li><li>- This will usually be capped at 707m<sup>2</sup> for trees with a stem diameter larger than 1.25m.</li></ul> |
| ~                     | <ul style="list-style-type: none"><li>- estimated, used to indicate measurements which cannot be taken due to access restrictions (in particular stem diameters)</li></ul>                                                                                                                                                            |

| Ref | Species                                            | Ht (m) | Stem dia (cm) | Canopy spread (m) |   |   |     | Clear crown | Life stage | RULE | Cond. | Notes<br>(Including preliminary management recommendations)                                                                       | BS Cat. | RPA (m) | RPA (m <sup>2</sup> ) |
|-----|----------------------------------------------------|--------|---------------|-------------------|---|---|-----|-------------|------------|------|-------|-----------------------------------------------------------------------------------------------------------------------------------|---------|---------|-----------------------|
|     |                                                    |        |               | N                 | E | S | W   |             |            |      |       |                                                                                                                                   |         |         |                       |
| T1  | Wild cherry ( <i>Prunus avium</i> )                | 6      | 15            | 2                 | 3 | 2 | 1.5 | 1.8         | SM         | 20+  | Fair  | Unbalanced crown due to overgrown hawthorn group to the West                                                                      | C1      | 1.80    | 10.18                 |
| T2  | Pedunculate oak ( <i>Quercus robur</i> )           | 4      | 10            | 2                 | 2 | 2 | 2   | 0.5         | YNG        | 40+  | Good  | -                                                                                                                                 | C1      | 1.20    | 4.52                  |
| G3  | Hawthorn ( <i>Crataegus monogyna</i> )             | 5      | 10            | See plan          |   |   |     | 0           | M          | 40+  | Fair  | Overgrown hedge                                                                                                                   | C1      | 1.20    | 4.52                  |
| T4  | Field maple ( <i>Acer campestre</i> )              | 18     | #25           | 6                 | 6 | 6 | 6   | 0           | M          | 40+  | Good  | Attractive tree in corner of site, no access due to dense undergrowth, exact location to be confirmed                             | B2      | 4.20    | 55.42                 |
| G5  | Mixed group                                        | 3      | 8             | 2                 | 2 | 2 | 2   | 0           | YNG        | 20+  | Fair  | Young trees scattered across northern part of the site, including goat willow, rowan, hawthorn, apple, dogrose and field maple    | C1      | 0.96    | 2.90                  |
| H6  | Hawthorn hedgerow ( <i>Crataegus monogyna</i> )    | 4      | 15            | See plan          |   |   |     | 0           | M          | 40+  | Good  | Unmanaged, mature hedgerow with some scattered elder                                                                              | B2      | 1.80    | 10.18                 |
| G7  | Apple ( <i>Malus domestica</i> )                   | 4      | 15            | 2                 | 4 | 2 | 4   | 0           | M          | 20+  | Good  | -                                                                                                                                 | C1      | 1.80    | 10.18                 |
| G8  | Lombardy poplar ( <i>Populus nigra 'Italica'</i> ) | 12     | #22           | See plan          |   |   |     | 1.5         | SM         | 20+  | Good  | Three trees on site boundary, multi-stemmed, collapsed timber and wire fences leaning on stems<br>- <b>Remove or repair fence</b> | B2      | 2.64    | 21.90                 |

| Ref | Species                                               | Ht<br>(m) | Stem<br>dia (cm) | Canopy spread (m) |     |     |     | Clear<br>crown | Life<br>stage | RULE | Cond. | Notes<br><i>(Including preliminary<br/>management recommendations)</i>                                                                | BS<br>Cat. | RPA<br>(m) | RPA<br>(m <sup>2</sup> ) |
|-----|-------------------------------------------------------|-----------|------------------|-------------------|-----|-----|-----|----------------|---------------|------|-------|---------------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------------------|
|     |                                                       |           |                  | N                 | E   | S   | W   |                |               |      |       |                                                                                                                                       |            |            |                          |
| G9  | Lombardy poplar<br>( <i>Populus nigra 'Italica'</i> ) | 10        | #22              | See plan          |     |     |     | 1.5            | SM            | 20+  | Good  | Two trees on site boundary,<br>multi-stemmed, collapsed timber<br>and wire fences leaning on stems<br>- <b>Remove or repair fence</b> | B2         | 2.64       | 21.90                    |
| T10 | Hawthorn ( <i>Crataegus<br/>monogyna</i> )            | 6         | 15               | 2.5               | 2.5 | 2.5 | 2.5 | 0              | M             | 20+  | Good  | -                                                                                                                                     | C1         | 1.80       | 10.18                    |

## 7.0 Appendix 2 – Tree Survey and Constraints Plan

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## Tree Categories BS 5837 (2012)

-  **Root Protection Area (RPA)**
-  **Tree location  
(Topographic survey)**
-  **Tree location  
(Estimated by Enzygo Ltd.)**



Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT:  
Hartwood Estates Ltd.

SCALE:  
1:500@A3

PROJECT REF:  
CRM.1122.003

DRAWN:  
VM

CHECKED: GB DATE: Oct 2019

PROJECT:  
Pitt Street, Wombwell

TITLE:  
Tree Survey and Tree Constraints Plan

FIGURE NO:  
CRM.1122.003.Ar.D.001

## 8.0 Appendix 3 – Site photographs

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**Plate 1: Cherry T1 and field maple T4**



**Plate 2: Poplars G9 and apple G7**



**Plate 3: Hedgerow H6**



**Plate 4: Scattered young trees G5**



**Plate 5: Collapsed fence against stems of G8**

## 9.0 Appendix 4 – Methodology

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### 9.1 Introduction

- 9.1.1 This report and the methodology adopted to carry out the Arboricultural Survey is based on recommendations outlined in *British Standard (BS) 5837:2012 Trees in relation to design, demolition and construction- Recommendations*. This was published by BSI Standards Limited and came into effect on 30<sup>th</sup> April 2012. It supersedes BS 5837:2005 which is withdrawn.

### 9.2 Arboricultural Survey

- 9.2.1 A tree survey or arboricultural survey is a ground-based visual assessment of existing trees and tree groups on a site. It records the location of trees, the species, the estimated height and canopy spread, the stem diameter, and the tree's life stage, remaining useful life expectancy (RULE) and overall condition. Any distinctive features and abnormalities such as structural defects and physiological condition which may or may not have an adverse effect on the health or stability of the tree are also recorded, together with any signs of nesting birds and bat roost potential. Where ground conditions may influence the tree's growth, health and stability, such as water logging, ground compaction and severe level changes, this would also be recorded.
- 9.2.2 The site walkover includes an assessment of the overall value and quality of the trees on site by assigning a retention category to each tree and tree group. This assists stakeholders in deciding which trees should be removed or retained in the event of development occurring. There are four categories: A (high quality), B (moderate quality), C (low quality) and U (unsuitable for retention). For trees in categories A to C, these should qualify under one or more subcategories: 1 (mainly arboricultural qualities), 2 (mainly landscape qualities) and 3 (mainly cultural values).
- 9.2.3 The findings of the tree survey are recorded in an Arboricultural Survey Schedule supported by a Tree Survey and Tree Constraints Plan, both appended to the report.
- 9.2.4 The survey includes all trees which have a stem diameter of at least 75mm at 1.5m height or measured in accordance with BS 5837:2012 Annex C.
- 9.2.5 The tree survey usually records individual trees (labelled "T" on the Tree Survey and Tree Constraints Plan and in the Tree Survey Schedule), but may also group trees of similar age, species and condition into Groups (labelled "G"). Trees may also be grouped where they form a homogeneous unit (e.g. tree belts and woodland groups) which is unlikely to be directly

affected by the development (labelled “G” for small groups or “W” for Woodland Groups, as appropriate). Hedgerows are also recorded where present (labelled “H”).

- 9.2.6 To determine the location of trees, groups and hedgerows on site, Enzygo Ltd. use a Trimble TDC100, a handheld GPS tracking device with an accuracy of up to 1-2m. It enables the surveyor to plot trees onto a base plan, usually a digital copy of a topographic survey or an OS map tile, and to simultaneously record all tree survey information required for a full tree survey schedule to BS 5837:2012.
- 9.2.7 Following the completion of the site survey this is then uploaded into a Computer Aided Design (CAD) programme in order to produce the Tree Survey and Tree Constraints Plan, with the tree survey information converted into a corresponding Tree Survey Schedule.
- 9.2.8 The survey includes any trees outside the site boundary which may be affected by any development proposals by overhanging canopies or by Root Protection Areas which are likely to extend into the site. These trees are normally found within 15m from the site boundary.
- 9.2.9 In addition to a site walk-over survey, a desk-study is carried out which includes the calculation of Root Protection Areas (RPA) in accordance with BS 5837:2012 clause 4.6 as the minimum area of land around the stem of a tree which should be protected during construction.
- 9.2.10 In line with standing advice by the Forestry Commission and Natural England, the Root Protection Area will be a *“buffer zone around an ancient or veteran tree”* which *“should be at least 15 times larger than the diameter of the tree [and] 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s diameter”*.
- 9.2.11 The desk study includes liaison with the relevant local authority to establish whether any of the trees on site are protected by Tree Preservation Order (TPO) or whether Conservation Areas affect the legal status of any trees. Some local authorities provide online mapping tools on their website which identify any legal tree protection.



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**BRISTOL OFFICE**

The Byre,  
Woodend Lane,  
Cromhall,  
Gloucestershire GL12 8AA  
Tel: 01454 269 237

**SHEFFIELD OFFICE**

Samuel House,  
5 Fox Valley Way,  
Stocksbridge,  
Sheffield S36 2AA  
Tel: 0114 321 5151

**MANCHESTER OFFICE**

76 King Street,  
Manchester,  
M2 4NH  
Tel: 0161 413 6444

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