

# Trees and Construction

## BS5837 Tree Survey, Arboricultural Impact Assessment & Method Statement

**Site:** Old Sports Hall off Land at The Orchard Huyton  
L36 5SU

**Ref:** 19115/A2\_AIA AMS rev A

**Client:** KDP Architects



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|                                                |
|------------------------------------------------|
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**- Feb 2022 -**

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| Revision | Description                                               | Date     |
|----------|-----------------------------------------------------------|----------|
|          | First Report                                              | 22/03/19 |
| A        | Revised for scheme 1301_The Orchard Apartments 2022_Rev D | 23/02/22 |

## 1. INTRODUCTION

- 1.1 **Instruction:** This advice has been prepared for KDP Architects (hereafter; client) and is in respect of the tree related planning considerations at Old Sports Hall off Land at The Orchard Huyton (hereafter; site).

As the proposal relates to development works at site, the advice herein is produced in accordance with the British Standard 5837 : 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter; BS5837).

- 1.2 **BS5837:** The scope of BS5837 is to provide guidance on how trees and other vegetation can be integrated into construction and development design schemes. The overall aim is to ensure the protection of amenity by trees which are appropriate for retention.
- 1.3 **Scope of this advice:** This advice has been produced in accordance with BS5837 and is secondary to previous arboricultural guidance. Outline planning permission was granted by Knowsley Council on 17 October 2014 App No 14/00719/OUT.
- 1.4 Following instruction the consultant surveyed the site on the 18th Feb 2022 where a site walkover and BS5837 tree survey were carried out; all trees on site and around the application boundary were surveyed from ground level and plotted as either an individual or a tree group.
- 1.5 This advice is subject to caveat at Appendix I, outlines relevant terms and definitions at Appendix II and constitutes the findings of the preliminary site assessment and associated arboricultural recommendations.
- 1.6 The survey data and site observations use an OS map to illustrate the surveyed trees in plan format as a 'Tree Constraints Plan' (hereafter; TCP). The TCP was supplied with the initial tree survey advice, this informed this assessment and is used as a base layer for the appended 'Tree Protection Plan' (hereafter; TPP); the TCP, TPP and tree survey data table are at Appendix III.

## 2. SITE INFORMATION & TREE ASSESSMENT

- 2.1 The site was used as a school sports facility but any buildings have been demolished and has been disused for many years. The site is mainly bordered by residential properties some dating to Victorian era in a mature setting including trees.
- 2.2 **Proposal:** It is understood that a proposed scheme involves the construction of an apartment building as per plans (ref: 1301\_The Orchard Apartments 2022\_Rev D).
- 2.3 The site requires consideration from an arboricultural perspective due to the presence of trees on and around the site; these trees are deemed to be within impacting distance of the potential construction area.
- 2.4 The trees -
- 2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'A -Good', 'B - moderate' 'C – Low and 'U- Unclassified' being attributed to trees/tree groups.
- 2.4.2 The BS5837 tree survey is a means of objective assessment and reflects the trees' condition, quality contribution, remaining life expectancy and spatial considerations (stem, crown and roots). On this basis and in order to consider the trees' accurate constraints, the survey data has the crown extents for north, south, east west, the stem diameter measurement, and the calculated root protection areas (hereafter; RPAs). Hereafter, the trees are therefore reviewed and considered on their own merits and in line with the guidance of BS5837.

### 3. FINDINGS & RECOMMENDATIONS

3.1 The following information, as with the prior contents of this report, should be read with the appended tree data table and tree constraints plan (19115/TCP/01). This information was provided as an 'Tree Survey Assessment' and is included herein for context.

#### 3.2 General Considerations for Tree Retention / Removal

3.2.1 'A' the category trees are those which are most 'notable', on site trees and the scheme should be designed to take into account their retention. i.e. crown clearance RPA avoidance and Layout to avail future growth debris and light pressure.

3.2.3 'B' Class trees are also considered of value both individually and in the landscape and should be retained by design. Proposed encroachment or removal would need to be justifiable and mitigated although Council resistance would be anticipated.

3.2.4 The smaller scale, declining or limited contribution trees are categorised as low quality 'C' category trees. These may be suitable for retention for the most part, but should not present a significant constraint to the scheme as mitigation planting can replicate and enhance their contribution.

3.2.5 Based on the boundary line location/neighbour's site location of T29, T31, T32, T33, G3, G4, G5 and G6 their retention and protection is to be assumed as part of the scheme. This best achieved by avoidance where their crowns and RPAs are accommodated in the design and layout of the scheme.

3.2.6 There are identified defects to some of the surveyed trees, this has resulted in the recommendation for tree removal, i.e. the category 'U' trees. Thereafter, general site inspections and tree works will be required for H&S tree risk management. 'U' Class trees also to be removed T27 and T28

3.2.5 The removal of the above trees or vegetation may have an impact on the green cover in the first instance, however, the scheme presents a significant enhancement opportunity. Said removals would have no impact on the long term amenity of the site and will allow for the selection of native species to enhance amenity and biodiversity.

#### 4. SCHEME / IMPLICATIONS ASSESSMENT

- 4.1 For the purpose of this assessment, the proposed site plan is used as a basis for consideration. This takes account of anticipated tree removals, tree protection options and potential alterations to account for arboricultural features; as per s.1.6 and s.2.2 herein, the TCP shows the '*proposed site plan*' as an overlay for review.
- 4.2 *Considerations for T1, T2 and T8*- The apartment footprint is within the RPA of these trees however the incursions are only a very small proportion of the total RPA or each tree and far less than the 20% allowed for (as per BS5837 s.7.4). However it is intended to install the foundations within the RPA of these trees using a piled type foundation to be installed using sensitive installation techniques. The affected areas are shown hashed on the TPP attached
- 4.3 It is anticipated that the working distance required (Scaffolding, access etc) for construction of the proposal will incur into the RPA's of T1, T2, and T8. Ground protection will be required in these areas as denoted (in brown) in the plan 19115/TPP/01 rev A. It is intended to use ground protection and scaffolding compliant with BS5837 in these areas
- 4.5 Following the above considerations for trees and noted tree works, the trees are clear of the active construction area. However, the installation of temporary tree protection will be required to ensure no impact on trees from access, vehicles, material storage etc.
- 4.6 Further to the above, the following tree works are required prior to site works.

#### TREE WORK SUMMARY

| NUMBER                                                | TREE REMOVALS / PRUNING WORKS |                                                                                                                                                                                                                                |
|-------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T19, T20, T21, T22 to T26, T30 G1 and G2, T27 and T28 | Remove                        | Remove in order to facilitate the scheme:<br>- to be replaced with new tree planting as part of site landscaping and new tree planting proposals.                                                                              |
| T1 and G4                                             | Prune                         | G4 to be pruned by lateral branch reduction back towards the boundary to provide 2m crown clearance to the proposed car parking. T1 to be crown lifted by 3m on the western side to leave space and clearance for the proposal |
| Retained trees                                        |                               | Protection by placement of fixed Heras panels around the crown/RPA extents. As shown in 19115/TPP/01 rev A                                                                                                                     |

- 4.9 Further to the above review and in consideration for the tree removals and need to protect retained trees, the following section contains said details as an Arboricultural Method Statement 'Considerations'.

## 5. METHOD STATEMENT 'CONSIDERATIONS'

### 5.1 Arboricultural Construction Restrictions

5.1.1 The following restrictions are considered relevant for tree protection purposes:

- a) Tree works are to be completed prior to any and all site works; no tree works not specified within the associated arboricultural method statement (or leaning against or attaching of objects to a tree) are permitted unless agreed in writing by the council.
- b) A secure section of Protective Barrier Fencing (hereafter; PBF) is to be installed around the retained trees immediately after the tree works and prior to the site works commencing.
- c) Following the installation of PBF the fenced off section is to act as a Construction Exclusion Zone (hereafter; CEZ). Ground protection is to be installed as per the TPP to provide the necessary working clearance between the PBF and the proposal
- d) No chemicals/materials are to be transported/stored/used/mixed within retained trees' RPA.
- e) No fires are to be lit and no machinery, plant or vehicles are to be washed down within 10m of the tree's canopy or in a RPA.
- f) During construction processes the RPA may not be breached, i.e. no surfacing works, without the prior advice of the consultant and the consent of the council.
- g) After construction completion, PBF access may be allowed for pedestrians to install sensitive hard surfaces in RPAs/CEZs; no mechanical digging or scraping is permitted within a RPA.
- h) Only following construction completion can the protective barrier fencing be removed and any remaining soft landscape works (ground levels to be retained within RPAs and works undertaken manually with non-mechanical hand tools) be undertaken.

## 5.2 Arboricultural Site Monitoring / Supervision

- 5.2.1 The council will typically request '*a scheme of supervision for the arboricultural protection measures*' to confirm tree protection and adherence to working methods around trees.
- 5.2.2 The appointed site contractor and project manager will be provided with an approved AMS and TPP and will need to be briefed as to prohibited works and tree protection.
- 5.2.3 A record of each site visit will be kept and a summary letter drafted for the client, the site manager and the local authority (to be sent to the client for distribution), thus -
- (1) ***Pre-commencement*** to confirm approved tree works, site hoarding / tree protection fence line and construction restrictions for ground works;
  - (2) ***Pile foundation Installation*** To supervise the installation of the piled foundations as indicated on the TPP;
  - (3) ***Half way*** through the program to confirm maintained tree protection, no tree damage and exclusion of RPA access;
  - (4) ***After-construction*** to confirm excavations of existing hard surfaces, and discuss tree protection requirements with the landscape team;
  - (5) ***During soft landscape works*** to confirm manual works, retained soil levels and planting with mulch layer; Installation of new
  - (6) ***Development completion*** after all hard landscape works and tree and shrub planting is complete to sign off the site as having adhere to the AMS.
- 5.3 Sensitive Ground Works (within RPAs)
- 5.3.1 Any excavations necessary within a RPA or designated CEZ (as illustrated on the TPP - each RPA and the areas enclosed by PBF) must:
- Only be undertaken when the construction works are completed; and
  - Retain the existing soil levels; and
  - Use sensitive excavation techniques to protect the tree roots and their existing growing conditions, i.e. sensitive manual excavations / air spade.
- 5.3.3 The RPA excavation area is to be marked out [as per the TPP] on the hard surface and undertaken by hand with the use of manually operated (hand held) tools.
- 5.3.4 The excavations are to be preventative and carefully avoid damage to tree roots; therefore, individual 50mm layers are to be excavated at a time within an RPA/CEZ. This is to ensure that excavations do not incur on the existing soil levels, i.e. no downward regrading of soil levels within RPAs.

- 5.3.5 Any exposed roots shall be packed with a clean damp sand (not builders' sand) and wrapped in hessian sacking to protect them from temperature changes and drying out.
- 5.3.6 Small roots (those less than 25mm in diameter) may be carefully pruned back with a clean sharp tree saw. However, pruning large roots (those greater than 25mm in diameter) will require the advice of the consultant and permission of the council; these may be necessary for a tree's health and stability.
- 5.3.7 Once the hard surface material (including compacted base) has been removed, any hessian wrapping will be removed and roots will be surrounded/packed with a sharp sand and any existing ruts, holes or dips are to be infilled with a mix of sharp sand and high-grade tree planting soil.
- 5.3.8 As the existing surface being removed is hard surfaced with either tarmac or concrete bound sections and the proposed surface finishes are either similar or more preferable, the surface treatment installations can be undertaken in a traditional manner.
- 5.3.9 Where the new surfaces can use more preferential treatments to encourage percolation of surface water and encourage aerated soils with nutrient availability, this will demonstrate an enhancement to the existing conditions for tree root growth and is encourages where possible (to be illustrated on the landscape scheme).
- 5.4 Engineered Foundation (under arboricultural supervision)
- 5.4.1 It is necessary for the client / architect to provide a specification, elevation and cross section of the proposed raised level slab and piled/engineered foundation which shows adequate consideration for tree root protection.
- 5.4.2 The *proposal foundation excavation and installations* (as illustrated on the TPP) will:
- Use use manually operated non-mechanical tools;
  - Use either piled/hand augured/hand excavated pad foundations;
  - Connect a framework or lintel with supporting wall for the raised slab;
- 5.4.3 In relation to above, the foundation is to use pads or piles with a frame/slab atop on which the structure is to be constructed. This will limit excavations to the ground preparations and piles/corner pads.
- 5.4.4 Following sensitive ground preparations (see; s5.5), the piles/pads are to be marked on the ground and manually excavated using hand held non-mechanical tools. This is to confirm that no roots are present greater than 25mm diameter or move the pile/pad.
- 5.4.5 The excavations are to be preventative and carefully avoid damage to tree roots where individual 50mm layers are to be excavated. Small roots (less than 25mm diameter) may be carefully pruned back with a clean sharp tree saw. However,

pruning large roots (greater than 25mm diameter) require consultant advice and council permission.

- 5.4.6 Once the extent of excavations is completed, the pile can be installed, or, the pad location can be lined and cement infilled. This concludes the manual foundation installation and then allows for the structure to be built atop which is clear of RPAs.

## 5.5 Underground utilities

- 5.5.1 The following restrictions are recommended for underground utilities within RPAs:

- Designed avoidance of RPAs where possible;
- Any necessary excavations to be undertaken sensitively using either a no-dig method (e.g. Air-Spade) and/or under arboricultural supervision;
- Any exposed roots shall be packed with a clean damp sand (not builders sand) and wrapped in hessian sacking to protect them;
- Small roots which are identified (those less than 25mm diameter) may be carefully pruned back with a clean sharp tree saw; and
- Larger roots which are identified (those greater than 25mm in diameter) are to be retained and protected as they may be necessary for a tree's health and stability.

## 5.6 Landscape Detail

- 5.6.1 The finer details of the tree planting proposals are to be illustrated on a tree planting landscape plan. This is to include the exact proposals for hard and soft landscape, retained soil levels for trees' RPAs, together with the details for new replacement tree planting locations, species and stock selection, installation and maintenance; this is to be undertaken by the appointed landscape architect who will have the full support of the arboricultural consultant where required.

## 5.7 Report Handling

- 5.7.1 This report is released to the client and architect to be distributed at their discretion and the consultant is available for queries relating to this report and/or trees.
- 5.7.2 The proposed scheme is reviewed in respect of the arboricultural constraints and is considered to be achievable in line with the BS5837 guidance. The tree protection methods herein may be approved by the council based on the approved information and other detail i.e. utility layout, final landscape plan, construction management plan (CMP) etc.
- 5.7.3 This AMS and the TPP may be approved by the council in support of the application, as a means of authorised tree protection measures; all site personnel will have access to a copy and the tree work and protection details are to be inspected as per s.5.2 for 'Arboricultural Monitoring / Supervision'.

**This concludes our advice.**

## **Caveat**

Any and all information supplied to Indigo Surveys Ltd by/on behalf of the client is assumed to be accurate unless otherwise informed. | This advice is limited to the observations made on the date of inspection as detailed herein and any deletion, editing or alteration will result in the advice being null and void in its entirety. | This advice in its entirety may be deemed null and void if remedial works are undertaken on any area of the site, on or after the date of the survey. | No liability is assumed by the author or by Indigo Surveys Ltd for any misuse, misinterpretation or misrepresentation of this advice. | This advice is not valid in adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events. | No responsibility is assumed either by the author of this advice or by Indigo Surveys Ltd for any legal matters that may arise as a consequence. | Neither the author nor Indigo Surveys Ltd will be required to attend court or give testimony as part of this agreement. | The responsibility for any works undertaken on the basis of the recommendations of this advice does not form part of this agreement.

## Appendix II

### Terms and Definitions

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

*“Competent Person”* - person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

*“Topographical survey”* - an accurately measured land survey undertaken to show all relevant existing site features. *A method of carrying out topographical surveys is given in RICS specification* Surveys of land buildings and utility services at scales of 1:500 and larger.

*“BS5837 Tree survey”* - should be undertaken by an arboriculturist to record information about the trees on or adjacent to a site. The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development.

*“Tree categorisation method”* - trees should be categorised in accordance with the BS5837 cascade chart by an arboriculturist. This is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

*“Root protection area (RPA)”* - layout design tool indicating the 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, shown as an arboricultural constraint in m<sup>2</sup>. The radius is calculated using the BS5837 calculation method. An arboriculturist may change the shape of an RPA but not reduce its area.

*“Arboricultural implications assessment”* - a study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

*“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.

*“Tree protection plan”* - a 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.

## Appendix III

|                                                         |                                              |
|---------------------------------------------------------|----------------------------------------------|
| <b>Data Table:</b>                                      | As appended (BS5837 Tree Survey Key & Table) |
| <b>Tree Constraints Plan:</b><br>(TCP / Scheme Overlay) | As appended (19115/TCP/01)                   |
| <b>Tree Protection Plan:</b>                            | As appended (19115/TPP/01 rev A)             |

# **TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'**

CLIENT: KDP Architects

PROJECT REF: 19115\_22

SITE: Old Sports Hall

CONTACT: /

SURVEY DATE: 18 February 2022

ARB CONSULTANT: Rod Benzie ND Arb BSc Forestry

| TREE REF. # | SPECIES                                                          | AGE | HEIGHT (in m) | CANOPY (in m)<br>N - S - E - W |   |   |    | STEM (in mm) | RPA (in m) | CLEARANCE (in m) | 1st BRANCH (in m) | VITALITY | LIFE EXPECT. | NOTES                                                                                                                                                                                                                                                                                                                                                                         | BS CAT. |   | MANAGEMENT |
|-------------|------------------------------------------------------------------|-----|---------------|--------------------------------|---|---|----|--------------|------------|------------------|-------------------|----------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---|------------|
| T1          | English Oak, <i>Quercus robur</i> , Fagaceae                     | LM  | 16            | 6                              | 8 | 8 | 10 | 910          | 10.9       | 2                | 2.5               | Fair     | 20-40        | Ivy present precluding VTA (Visual Tree Assessment). Large pieces of dead wood. Bowl shaped co-dominant Crown. Epicormic Growth mid Branch. Recent disturbance and vegetation clearance of soil around the base                                                                                                                                                               | A       | 2 |            |
| T2          | Horse Chestnut, <i>Aesculus hippocastanum</i> , Hippocastanaceae | LM  | 20            | 4                              | 8 | 7 | 7  | 870          | 10.4       | 1                | 2.5               | Fair     | 10_20        | Bark fluxing/signs of stress. Bleeding Canker. Limb loss has occurred. The bark is cracking in places. The tree has been pollarded to a greater or lesser extent in the past. Recent disturbance and vegetation clearance of soil around the base                                                                                                                             | C       | 2 |            |
| T3          | European Lime, <i>Tilia europaea</i> , Tiliaceae                 | M   | 20            | 1                              | 3 | 5 | 2  | 510          | 6.1        | 8                | 3                 | Fair     | 20-40        | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. The tree has been pollarded to a greater or lesser extent in the past. The tree has grown up in a group in that adjacent trees have affected its growth pattern. Co-dominant Stem from Side Branch. Large pieces of dead wood                                                            | B       | 2 |            |
| T4          | European Lime, <i>Tilia europaea</i> , Tiliaceae                 | M   | 20            | 5                              | 4 | 3 | 5  | 570          | 6.8        | 3                | 3                 | Fair     | 20-40        | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. The tree has been pollarded to a greater or lesser extent in the past. The tree has grown up in a group in that adjacent trees have affected its growth pattern. Co-dominant Stem from Side Branch. Large pieces of dead wood. Ivy on stem. Ivy present precluding VTA                   | B       | 2 |            |
| T5          | European Lime, <i>Tilia europaea</i> , Tiliaceae                 | M   | 20            | 2                              | 3 | 5 | 2  | 560          | 6.7        | 3                | 4                 | Fair     | 20-40        | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. The tree has been pollarded to a greater or lesser extent in the past. The tree has grown up in a group in that adjacent trees have affected its growth pattern. Co-dominant Stem from Side Branch. Large pieces of dead wood. Ivy on stem. Ivy present precluding VTA. Recent Limb Loss | B       | 2 |            |

|     |                                                                         |    |    |   |   |   |   |     |      |   |   |      |       |                                                                                                                                                                                                                                                                                                                                                |   |   |  |
|-----|-------------------------------------------------------------------------|----|----|---|---|---|---|-----|------|---|---|------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|--|
| T6  | European Lime, <i>Tilia europaea</i> , <i>Tiliaceae</i>                 | M  | 20 | 4 | 4 | 8 | 4 | 640 | 7.7  | 3 | 4 | Fair | 20-40 | The tree has been pollarded to a greater or lesser extent in the past.. The tree has grown up in a group in that adjacent trees habve affected its growth pattern. Co-dominant Stem from Side Branch. Large pieces of dead wood. Ivy on stem. Ivy present precluding VTA                                                                       | B | 2 |  |
| T7  | European Lime, <i>Tilia europaea</i> , <i>Tiliaceae</i>                 | M  | 20 | 4 | 4 | 7 | 5 | 550 | 6.6  | 3 | 4 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022.The tree has been pollarded to a greater or lesser extent in the past.. The tree has grown up in a group in that adjacent trees habve affected its growth pattern. Ivy on stem. Ivy present precluding VTA. Bifurcated above 4m. Large pieces of dead wood | B | 2 |  |
| T8  | Horse Chestnut, <i>Aesculus hippocastanum</i> , <i>Hippocastanaceae</i> | LM | 18 | 5 | 6 | 6 | 7 | 900 | 10.8 | 2 | 4 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022.Ivy present precluding VTA. Bifurcated above 4m. Large pieces of dead wood. Recent Limb Loss. bark fluxing/signs of stress. Co-dominant side limb                                                                                                          | B | 2 |  |
| T9  | Horse Chestnut, <i>Aesculus hippocastanum</i> , <i>Hippocastanaceae</i> | LM | 20 | 6 | 5 | 5 | 8 | 890 | 10.7 | 2 | 4 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022.Ivy present precluding VTA. Large pieces of dead wood. bark fluxing/signs of stress. Co-dominant side limb. Bifurcated stem                                                                                                                                | B | 2 |  |
| T10 | European Lime, <i>Tilia europaea</i> , <i>Tiliaceae</i>                 | LM | 20 | 5 | 4 | 6 | 4 | 640 | 7.7  | 2 | 5 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022.Ivy present precluding VTA. Large pieces of dead wood. Bifurcated stem. Lime hedgehog. Healing Wound With dead Core At Base                                                                                                                                | B | 2 |  |
| T11 | Horse Chestnut, <i>Aesculus hippocastanum</i> , <i>Hippocastanaceae</i> | LM | 18 | 4 | 3 | 8 | 3 | 650 | 7.8  | 2 | 3 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022.Ivy present precluding VTA. Bifurcated stem. Lime hedgehog. bark fluxing/signs of stress. The tree has grown up in a group in that adjacent trees habve affected its growth pattern                                                                        | B | 2 |  |
| T12 | European Lime, <i>Tilia europaea</i> , <i>Tiliaceae</i>                 | LM | 19 | 5 | 2 | 3 | 4 | 540 | 6.5  | 2 | 3 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022.Ivy present precluding VTA. Lime hedgehog. The tree has grown up in a group in that adjacent trees habve affected its growth pattern. 1m above general site level                                                                                          | B | 2 |  |
| T13 | English Yew, <i>Taxus Baccata</i> , <i>Taxaceae</i>                     | M  | 10 | 5 | 3 | 3 | 6 | 420 | 5.0  | 2 | 2 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022.Ivy present precluding VTA                                                                                                                                                                                                                                 | B | 2 |  |

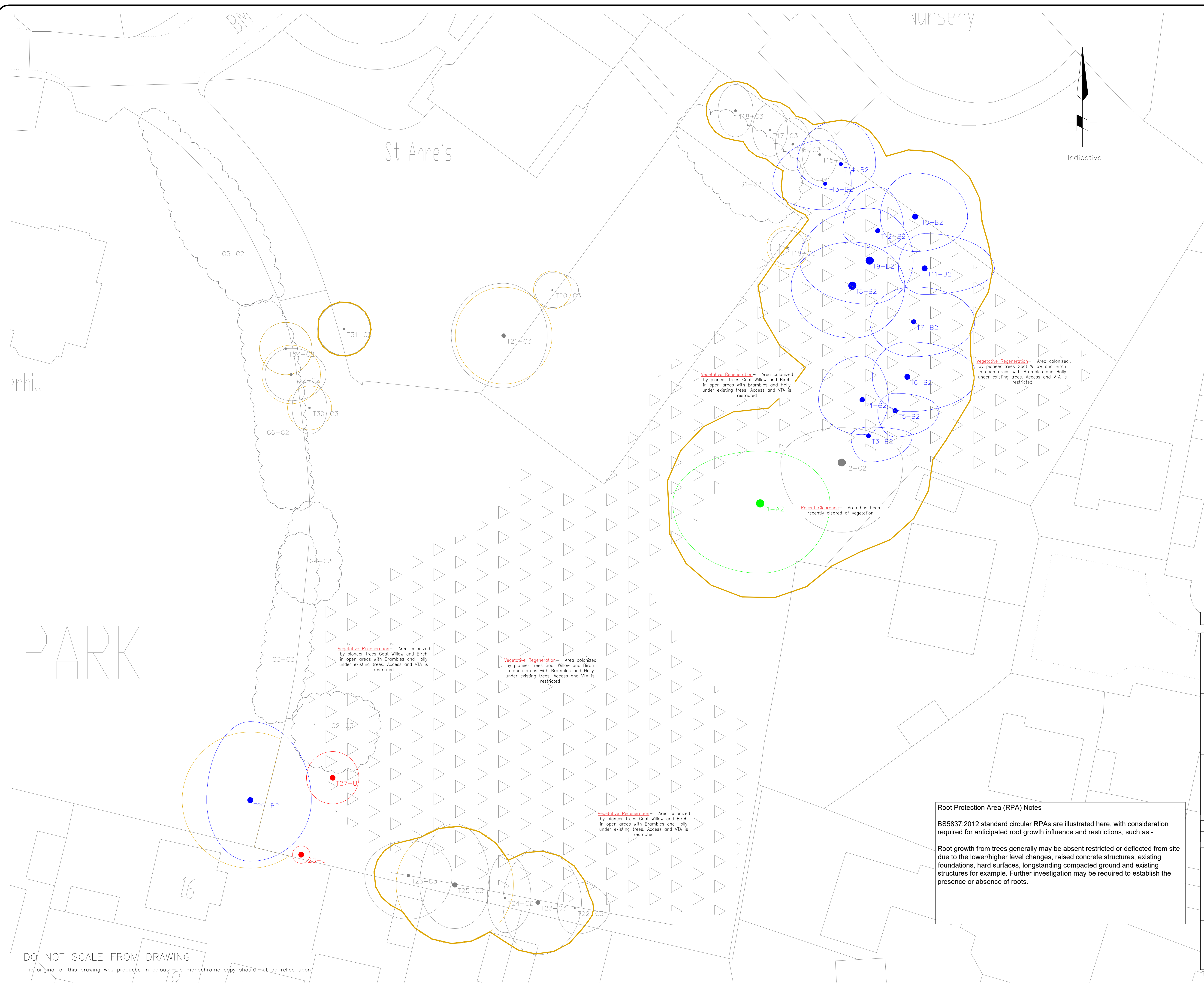
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|-----|-----------------------------------------------------------------|----|----|---|---|---|---|----------|-----|-----|-----|------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|------------------|
| T14 | Sycamore, <i>Acer psuedoplatanus</i> , <i>Aceraceae</i>         | M  | 17 | 5 | 3 | 4 | 5 | 420      | 5.0 | 2   | 2   | Fair | 20-40 | Ivy present precluding VTA. Ivy in crown. In close proximity to building. Leaning N. Bifurcates below 3m                                                                                                                                           | B | 2 |                  |
| T15 | Hybrid Holly, <i>Ilex alterclarensis</i> , <i>Aquifoliaceae</i> | M  | 7  | 3 | 3 | 2 | 2 | 270      | 3.2 | 2   | 2   | Fair | 10_20 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. The tree has grown up in a group in that adjacent trees have affected its growth pattern. Vandal Damage                                                       | C | 3 |                  |
| T16 | Hybrid Holly, <i>Ilex alterclarensis</i> , <i>Aquifoliaceae</i> | M  | 7  | 3 | 3 | 2 | 2 | 270      | 3.2 | 2   | 2   | Fair | 10_20 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. The tree has grown up in a group in that adjacent trees have affected its growth pattern. stubs present                                                       | C | 3 |                  |
| T17 | Hybrid Holly, <i>Ilex alterclarensis</i> , <i>Aquifoliaceae</i> | M  | 7  | 3 | 3 | 2 | 2 | 280      | 3.4 | 2   | 2   | Fair | 10_20 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. The tree has grown up in a group in that adjacent trees have affected its growth pattern. stubs present. cavity at base. Healing Wound With dead Core At Base | C | 3 |                  |
| T18 | Hybrid Holly, <i>Ilex alterclarensis</i> , <i>Aquifoliaceae</i> | M  | 7  | 3 | 3 | 2 | 2 | 280      | 3.4 | 2   | 2   | Fair | 10_20 | The tree has grown up in a group in that adjacent trees have affected its growth pattern. Healing Wound With dead Core At Base                                                                                                                     | C | 3 |                  |
| T19 | Alder, <i>Alnus (species)</i> , <i>Betulaceae</i>               | Y  | 6  | 2 | 2 | 2 | 2 | 200      | 2.4 | 2   | 2   | Fair | 20-40 | Small tree                                                                                                                                                                                                                                         | C | 3 |                  |
| T20 | Goat Willow, <i>Salix capreae</i> , <i>Saliaceae</i>            | Y  | 3  | 2 | 2 | 3 | 2 | 180      | 2.2 | 0.5 | 0.5 | Fair | 20-40 | Dbh measured below 1.5m                                                                                                                                                                                                                            | C | 3 |                  |
| T21 | Goat Willow, <i>Salix capreae</i> , <i>Saliaceae</i>            | M  | 7  | 6 | 6 | 5 | 6 | 280; 270 | 5.5 | 0   | 0.5 | Fair | 20-40 | Natural regeneration. Unsighted assessment                                                                                                                                                                                                         | C | 3 |                  |
| T22 | Sycamore, <i>Acer psuedoplatanus</i> , <i>Aceraceae</i>         | EM | 7  | 3 | 3 | 4 | 2 | 180      | 2.2 | 0   | 2   | Fair | 20-40 | Dbh measured below 1.5m. Fence embedded in tree. included bark in main fork                                                                                                                                                                        | C | 3 |                  |
| T23 | Goat Willow, <i>Salix capreae</i> , <i>Saliaceae</i>            | M  | 8  | 6 | 6 | 5 | 4 | 360; 270 | 5.9 | 1   | 2   | Fair | 20-40 | Fence embedded in tree. Multi stem. Natural regeneration                                                                                                                                                                                           | C | 3 |                  |
| T24 | Common Ash, <i>Fraxinus excelsior</i> , <i>Oleaceae</i>         | EM | 8  | 5 | 4 | 3 | 2 | 230      | 2.8 | 2.5 | 2.5 | Fair | 20-40 | Fence embedded in tree                                                                                                                                                                                                                             | C | 3 |                  |
| T25 | Goat Willow, <i>Salix capreae</i> , <i>Saliaceae</i>            | M  | 8  | 7 | 5 | 4 | 4 | 560      | 6.7 | 2.5 | 2.5 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. Appears to have been removed Fence embedded in tree. Dbh measured below 1.5m. Multistemmed from 1.2m. Vandal damage                                           | C | 3 | Possibly removed |
| T26 | Goat Willow, <i>Salix capreae</i> , <i>Saliaceae</i>            | M  | 8  | 4 | 5 | 5 | 5 | 330      | 4.0 | 2.5 | 2.5 | Fair | 20-40 | Ground vegetation is precluding access to the base of the tree, limited VTA in 2022. Appears to have been removed. Fence embedded in tree. Vandal Damage                                                                                           | C | 3 | Possibly removed |
| T27 | Cherry, <i>Prunus (species)</i> , <i>Rosaceae</i>               | OM | 5  | 3 | 3 | 3 | 3 | 610      | 7.3 | 3   | 2.5 | Poor | <10   | Significant limb failure. significant stem cavity/wound. Fungal activity in main stem                                                                                                                                                              | U |   |                  |

|     |                                                                    |     |    |   |   |   |   |     |     |   |     |      |       |                                                                                           |   |   |
|-----|--------------------------------------------------------------------|-----|----|---|---|---|---|-----|-----|---|-----|------|-------|-------------------------------------------------------------------------------------------|---|---|
| T28 | European Lime, <i>Tilia europaea</i> , Tiliaceae                   | LM  | 5  | 1 | 1 | 1 | 1 | 630 | 7.6 | 2 | 2.5 | Poor | <10   | Significant area of bark stripped from main stem. Drastically loped in the recent past    | U |   |
| T29 | Cherry, <i>Prunus (species)</i> , Rosaceae                         | LM  | 12 | 9 | 7 | 7 | 5 | 650 | 7.8 | 2 | 2.5 | Fair | 20-40 | Situated within neighbouring property. Behind Stone Wall 2m+. Unsighted assessment        | B | 2 |
| T30 | Goat Willow, <i>Salix capreae</i> , Saliaceae                      | Y   | 6  | 3 | 3 | 2 | 2 | 210 | 2.5 | 0 | 0.5 | Fair | 20-40 | Natural regeneration. Dbh measured below 1.5m                                             | C | 3 |
| T31 | Common Ash, <i>Fraxinus excelsior</i> , Oleaceae                   | EM  | 10 | 3 | 3 | 3 | 3 | 260 | 3.1 | 1 | 0.5 | Good | 20-40 | Natural regeneration. Unsighted assessment. Behind Stone Wall 2m+                         | C | 3 |
| T32 | Sycamore, <i>Acer psuedoplatanus</i> , Aceraceae                   | EM  | 10 | 3 | 3 | 4 | 3 | 280 | 3.4 | 1 | 0.5 | Fair | 20-40 | Poor crown asymmetry. Unsighted assessment. Behind Stone Wall 2m+                         | C | 2 |
| T33 | Hawthorn, <i>Crataegus monogyna</i> , Rosaceae                     | M   | 10 | 3 | 3 | 3 | 3 | 250 | 3.0 | 1 | 0.5 | Fair | 20-40 | Behind Stone Wall 2m+. Unsighted assessment. Situated within neighbouring property        | C | 2 |
|     |                                                                    |     |    |   |   |   |   |     |     |   |     |      |       |                                                                                           |   |   |
| G1  | Goat Willow, <i>Salix capreae</i> , Saliaceae                      | Y;E | 7  | 0 | 0 | 0 | 0 | 160 | 1.9 | 0 | 0   | Fair | 20-40 | Natural regeneration                                                                      | C | 3 |
| G2  | Goat Willow, <i>Salix capreae</i> , Saliaceae                      | Y   | 6  | 0 | 0 | 0 | 0 | 150 | 1.8 | 0 | 0   | Fair | 20-40 | Natural regeneration                                                                      | C | 3 |
| G3  | Leyland Cypress, x <i>Cupressocyparis leylandii</i> , Cupressaceae | EM  | 13 | 0 | 0 | 0 | 0 | 210 | 2.5 | 0 | 0   | Fair | 20-40 | Behind Stone Wall 2m+. Situated within neighbouring property. Unsighted assessment        | C | 3 |
| G4  | Common Ash, <i>Fraxinus excelsior</i> , Oleaceae                   | Y   | 11 | 0 | 0 | 0 | 0 | 150 | 1.8 | 0 | 0   | Fair | 20-40 | Natural regeneration. Situated within neighbouring property. Behind Stone Wall 2m+        | C | 3 |
| G5  | Lawson Cypress, <i>Chamaecyparis lawsoniana</i> , Cupressaceae     | EM  | 13 | 0 | 0 | 0 | 0 | 320 | 3.8 | 0 | 0.5 | Fair | 20-40 | Unsighted assessment. Situated within neighbouring property. Behind a stone wall 1m+ high | C | 2 |
| G6  | Cherry Laurel, <i>Prunus laurocerasus</i> , Rosaceae               | M   | 5  | 0 | 0 | 0 | 0 | 140 | 1.7 | 0 | 0.5 | Fair | 20-40 | Situated within neighbouring property. Unsighted assessment. Behind Stone Wall 2m+        | C | 2 |

### TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

|                      |   |                                                                                                                                         |
|----------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>TPO/CA</b>        | - | On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;           |
| <b>TREE REF. #</b>   | - | Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);                                  |
| <b>SPECIES</b>       | - | Genus, species and/or common name;                                                                                                      |
| <b>AGE</b>           | - | Age classification (NP - new planting, Y - young, EM - Early-Mature, SM - semi mature, M - mature, LM - late mature, OM - over mature); |
| <b>HEIGHT (in m)</b> | - | Approximate height of tree in metres;                                                                                                   |

|                                         |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CANOPY (in m) N - S - E - W</b>      | - | Approximate branch spread in metres of the four principal compass points;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>STEM (in mm)</b>                     | - | Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>RPA (in m)</b>                       | - | Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>CLEARANCE (in m)</b>                 | - | Crown clearance in metres above the adjacent ground level;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>IST BRANCH (in m)</b>                | - | Clearance in metres to first significant branch and direction of growth (where relevant);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>VITALITY</b>                         | - | Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>ESTIMATED REMAINING CONTRIBUTION</b> | - | Approximate number of years a tree will continue to contribute without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>NOTES</b>                            | - | Structural and physiological condition observations;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>BS CAT.</b>                          | - | BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate useful life expectancy);<br>Standard retention category <b>U</b> : in such a condition that any existing value would be lost within 10 years;<br>Standard retention category <b>A</b> : high quality and value, in such a condition as to be able to make substantial contribution of 40+ years;<br>Standard retention category <b>B</b> : moderate quality and value, in such a condition as to make a significant contribution of 20+ years;<br>Standard retention category <b>C</b> : low quality and value, currently in adequate condition to remain until new planting could be established 10+ years;<br>Standard retention sub-category, mainly due to: <b>1</b> - Arboricultural values, <b>2</b> - Landscape values, <b>3</b> - Cultural values, including conservation; |
| <b>MANAGEMENT</b>                       | - | Preliminary management recommendations (as appropriate);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>' * '</b>                            | - | Within the survey schedule denotes an estimate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



KEY

Tree Crown Spread

Root Protection Area (RPA)

Tree Stem

T1 Tree No.

Tree Condition Category

A

B

C

U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'

| REV. | DESCRIPTION | DWN | CHK'D | DATE |
|------|-------------|-----|-------|------|
|------|-------------|-----|-------|------|

CLIENT

KDP Architects

PROJECT

Old Sports Hall  
The Orchard, Huyton  
L36 5SU

TITLE

Tree Constraints Plan

| DWN  | DATE       | CHK'D | DATE       | APP'D | DATE | SCALE |
|------|------------|-------|------------|-------|------|-------|
| RPHB | 15/03/2019 | TB    | 23/02/2022 |       |      | 1-200 |

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Drawing Number

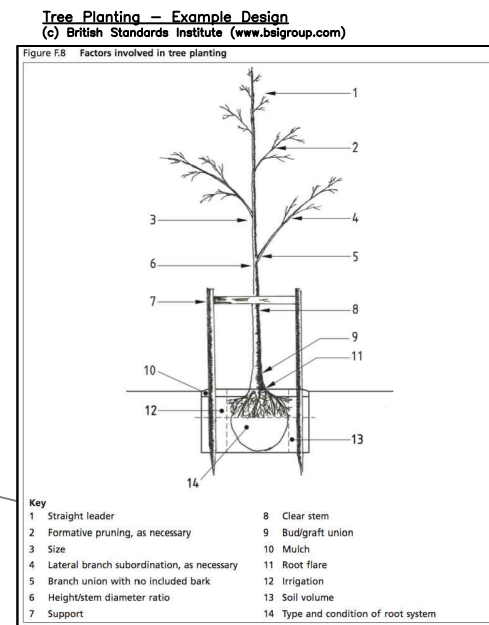
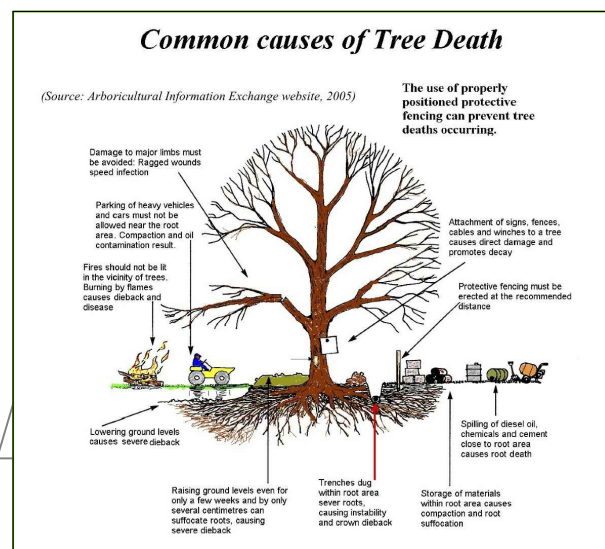
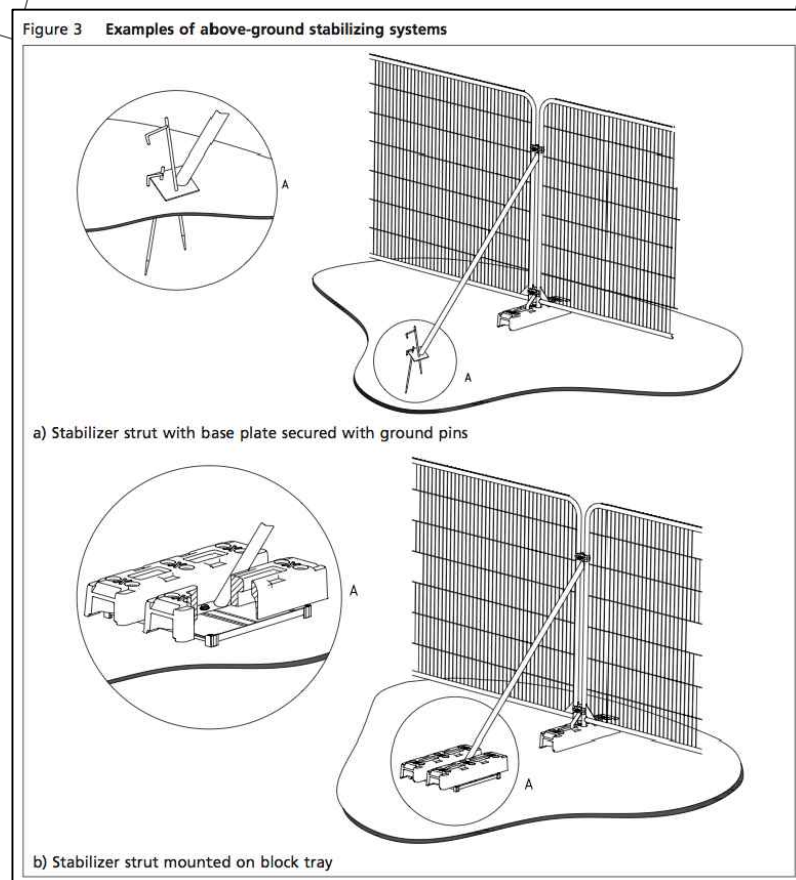
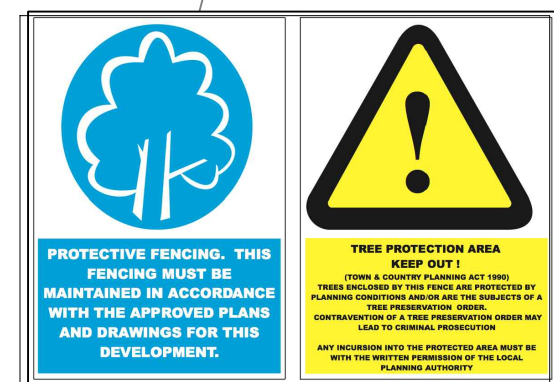
19115\_22/TCP/01

REV.

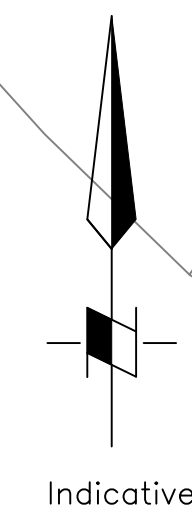
Root Protection Area (RPA) Notes

BS5837:2012 standard circular RPAs are illustrated here, with consideration required for anticipated root growth influence and restrictions, such as -

Root growth from trees generally may be absent restricted or deflected from site due to the lower/higher level changes, raised concrete structures, existing foundations, hard surfaces, longstanding compacted ground and existing structures for example. Further investigation may be required to establish the presence or absence of roots.



DO NOT SCALE FROM DRAWING  
The original of this drawing was produced in colour - a monochrome copy should not be relied upon.



**KEY**

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.
- Tree Condition Category
- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'

**Construction Exclusion Zone** - all RPAs on site, and areas enclosed by tree protection fencing are to have no landscaping until construction completion, soil levels to be retained and works to be undertaken manually (turf, planting etc.)

**Protective Barrier Fencing** - to exclude retained trees from construction works with tree protection signs, fixed in place for the duration of site works for tree protection

**Tree Removals:**  
T19, T20, T21, T22 to T26, T30 G1 and G2 to be removed to facilitate the scheme. These trees are of low arboricultural merit or are young natural regeneration. T27 and T28 are 'U' class trees and should be removed for tree health reasons.

**Piled Foundations:**  
Piling or pad and beam type foundations to be used as indicated within the RPA of T1 T4 and T8. Areas indicated are proposed piling locations for the proposed building. Where piling is to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. If a piling mat is required, this should conform to the parameters for ground boarding. Use of the smallest practical piling rig is also important where piling within the branch spread is proposed, as this can reduce the need for access facilitation pruning. The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, e.g. sleeved bored piles or screw piles.

**Ground Protection:**  
Ground protection will be necessary during construction to allow suitable working space requirements only to be removed during the landscape phase. They should take the form in this instance of BS5837 scaffolding within RPA specifications as per diagram.

**Protective Barrier Fencing (PBF):**  
To comprise of 2m tall welded mesh panels on rubber or concrete feet. Panels are to be joined together using a minimum of two anti-lamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabilizer struts, which should be attached to a base plate and secured with ground pins. All weather notices should be erected at regular intervals on the weld mesh panels with words such as "Tree Protection Area - Keep Out". See example on TPP.

**Tree Pruning:**  
G4 to be pruned by lateral branch reduction back towards the boundary to provide 2m crown clearance to the proposed car parking. T1 to be crown lifted by 3m on the western side to leave space and clearance for the proposal

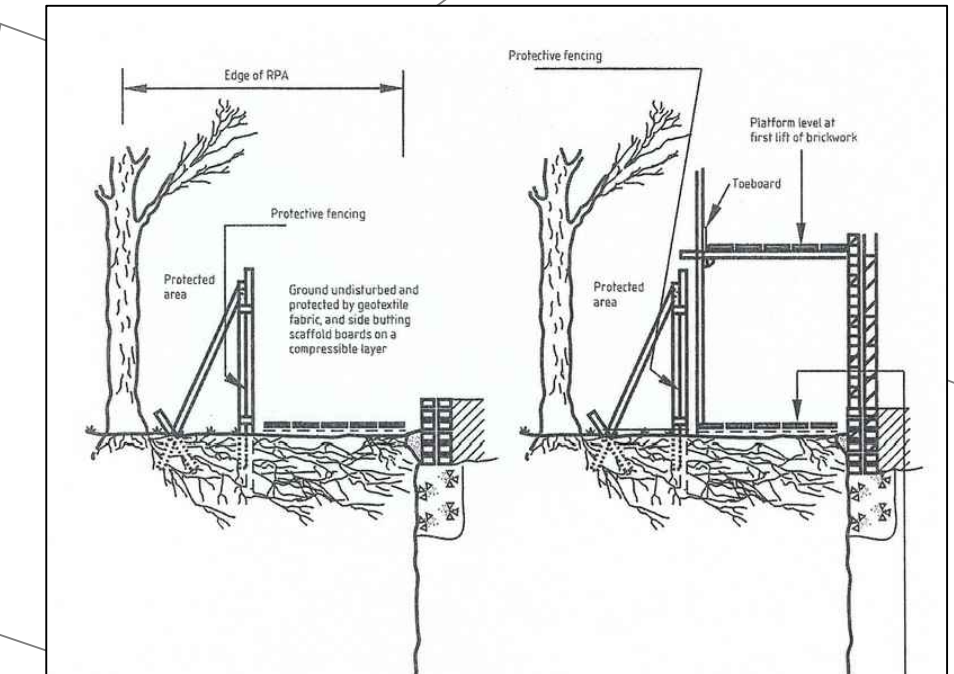


Figure 3. - Scaffolding within the RPA

|      |                                                   |     |       |          |
|------|---------------------------------------------------|-----|-------|----------|
| A    | New Layout 1301_The Orchard Apartments 2022_Rev D | RB  | TB    | 23/02/22 |
| REV. | DESCRIPTION                                       | DWN | CHK'D | DATE     |

CLIENT  
KDP Architects

PROJECT  
Old Sports Hall  
The Orchard, Huyton  
L36 5SU

TITLE  
Tree Protection Plan

|      |            |       |            |       |      |       |
|------|------------|-------|------------|-------|------|-------|
| DWN  | DATE       | CHK'D | DATE       | APP'D | DATE | SCALE |
| RPHB | 15/03/2019 | TB    | 15/03/2019 |       |      | 1-200 |



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