

**10140**

**Tower Street**

**Barnsley**

**– BS 5837 (2012) Tree Survey , Arboricultural Impact  
Assessment and Arboricultural Method Statement**

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**August 2017**

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Report Title: **Tower Street, Barnsley  
BS 5837 (2012) Tree Survey, Arboricultural Impact Assessment  
and Arboricultural Method Statement**

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## Executive Summary

On behalf of Hadfield Developments, Ecus Ltd. have carried out a tree survey to BS 5837 (2012) "*Trees in relation to design, demolition and construction- Recommendations*" in August 2017 at Tower Street. The survey has formed the basis of an assessment of the impact development proposals may have on existing trees and any methodologies to be adopted to protect any retained trees.

The survey records all trees within the site and all those which may be affected by any development proposals within the site boundary, recording a number of parameters including species, crown spread and Root Protection Area (RPA).

Throughout this report 'RPA' is used to refer to 'Root Protection Area'. The RPA of any given tree is the area of ground around that tree which should not be disturbed by excavation, compaction, changes in level or other construction/demolition operations. The extent of the RPA is calculated in accordance with BS5837 (2012), and is an important part of the methodologies described in this report.

The survey recorded two tree groups and 23 individual trees.

A number of trees are protected by Barnsley Council Tree Preservation Order ref. RN.10 TRN.A1. This requires approval by the Local Planning Authority of any works potentially affecting protected trees.

The Client proposes construction of five detached houses with associated hard and soft landscaping. This will require the removal of no trees, but may have an impact on above and below ground parts of retained trees unless adequate protection of these trees is provided.

This report details the arboricultural impact and offers a range of protection measures that should be put in place prior to works starting on site as well as construction methodologies which should be adopted. These measures as described in detail in Chapter 5 will prevent accidental damage and other adverse affects on the health of retained trees and cover:

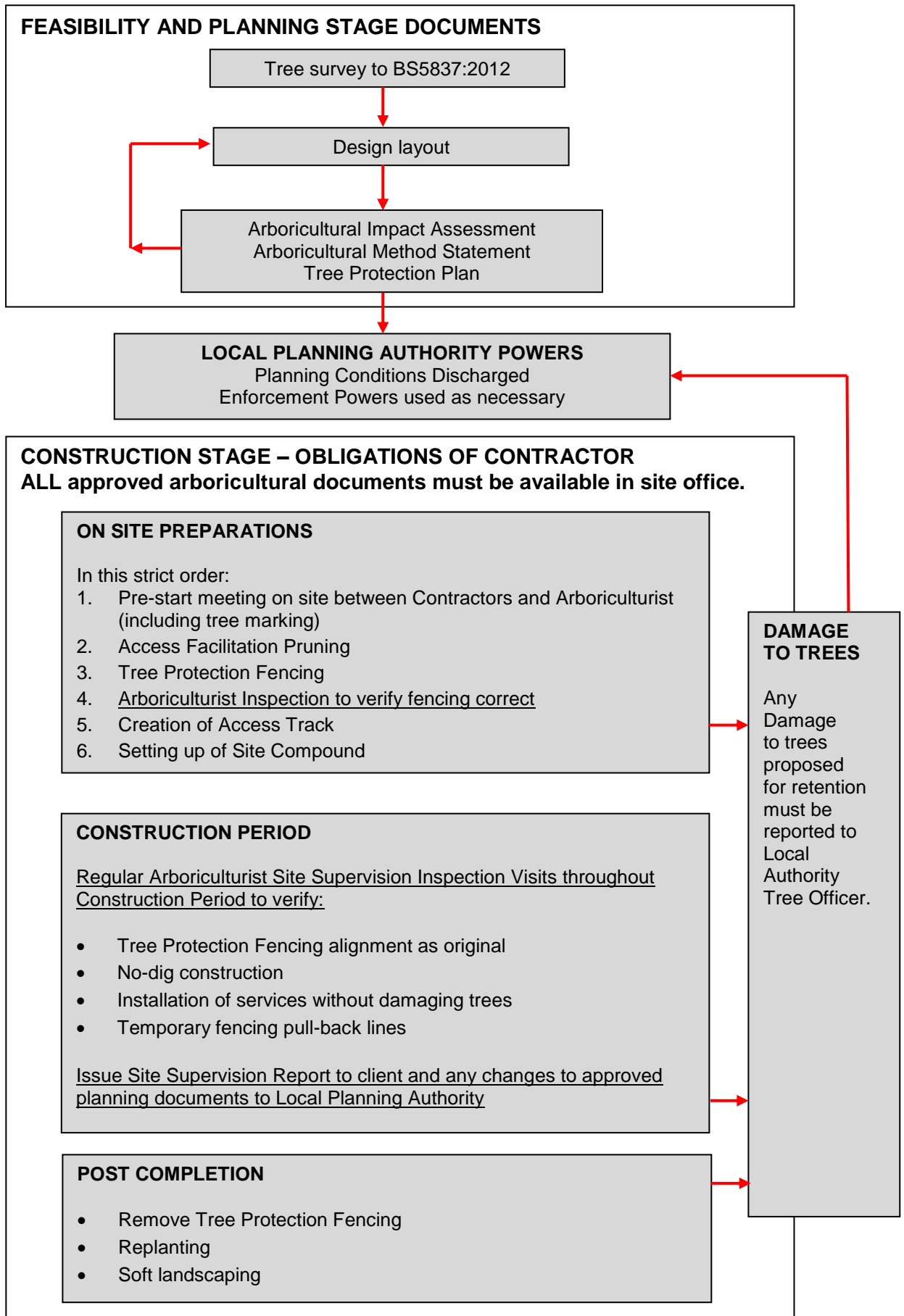
- Access facilitation pruning;
- Protective fencing;
- Construction within RPA  
Fencing, street furniture, surfacing;
- Installation of utilities and services within RPA;
- Level changes within RPA; and
- Soft landscaping and planting within RPA;

This report also makes further recommendations for any measures to mitigate or compensate the loss of trees within the site and the likely impact on the site and the local landscape. These include:

- The preparation of a Landscape Management Plan to ensure the continued monitoring of retained trees and the establishment of newly planted trees and shrubs.

For ready reference, the following table is a simplified version of the 'Design and Construction Process and Tree Care' table outlined in BS5837:2012. The table clearly identifies processes and obligations expected at the various stages of the construction project. BS:5837 is considered an iterative process, and as such the project arboriculturalist advice should be ongoing.

**The design and construction process and tree care**



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**Table 1** – Tree Survey Schedule

**Figure 1** – Location Plan (within report text)

**Figure 2** – Tree Survey and Tree Constraints Plan (10140-ARB-01)

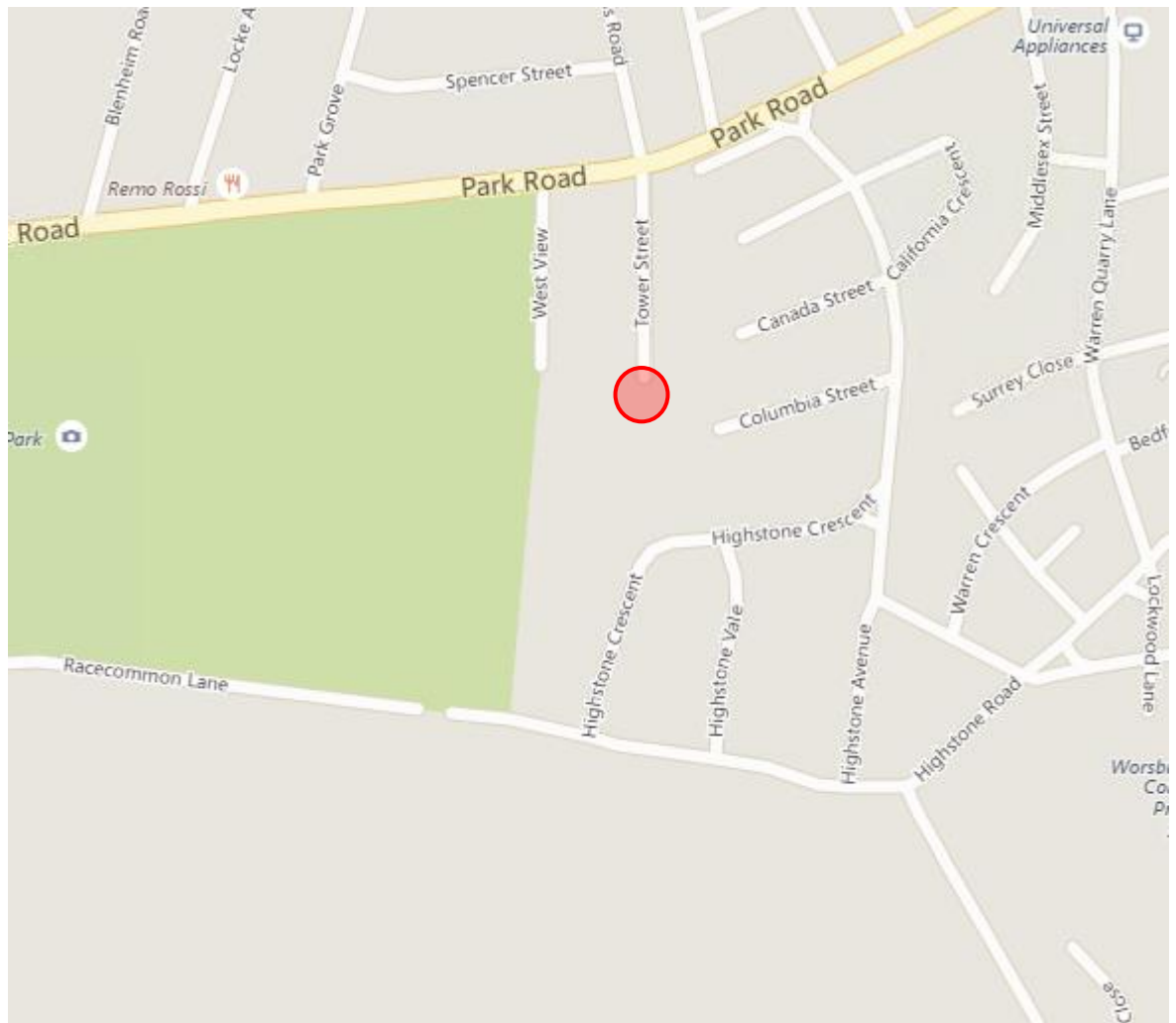
**Figure 3** – Tree Protection Plan (10140-ARB-02)

**Figure 4** – Default specification for protective barrier (within report text)



## 1. Introduction

- 1.1.1 Ecus Limited were commissioned by Hadfield Developments to undertake a tree survey of the site Tower Street, Barnsley. The site location is shown on Figure 1 below.
- 1.1.2 The survey was carried out in accordance with BS 5837 (2012) “*Trees in relation to design, demolition and construction- Recommendations*”. This report sets out the findings of the survey and recommendations have been made for preliminary tree work that may be required.



**Figure 1 – Location Plan**  
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## 2. Tree Survey Methodology

### 2.1 Site survey

2.1.1 Ecus carried out the tree survey in August 2017 when the trees were in leaf. The tree survey was a ground based visual inspection carried out by a suitably qualified arboriculturist. The trees were not tagged as part of the survey.

2.1.2 The inspection of the trees, the site and the immediate surrounding area was carried out by Peter Simpson, MArborA.

2.1.2 The following characteristics were recorded:

- Species
- Stem diameter at 1.5m above ground level (mm).
- Estimated height (m)
- Approximate crown spread (m) as North, South, East and West measurements.
- An estimate of the number of years that the tree is likely to remain suitable for retention.
  - <10 = less than 10 years
  - 10+ = 10-20 years
  - 20+ = 20-40 years
  - 40+ = more than 40 years
- Age class
  - YNG = Young and recently established trees
  - SM = Semi-mature trees age less than 1/3 life expectancy
  - EM = Middle age trees 1/3 – 2/3 life expectancy
  - M = Mature trees over 2/3 life expectancy
  - OM = Over mature – declining or moribund trees of low vigour
- Condition category in accordance with BS5837: Trees in relation to the design, *demolition and construction recommendations (2012)*. The categories listed are defined as per BS5837:2012 and briefly are:
  - U = Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years
  - A = Those of high quality and value- best trees with a long expected safe life
  - B = Those of moderate quality and value
  - C = Those of low quality and value and trees less than 15cm diameter
- Value subcategories in accordance with *BS 5837:2012*. The subcategories listed are defined as per BS5837:2012 and briefly are:
  - 1 = Mainly arboricultural values
  - 2 = Mainly landscape values
  - 3 = Mainly cultural values, including conservation
- General notes about physiological and structural condition and any management recommendations.

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- 2.1.3 The survey recorded all trees on site with a stem diameter of 75mm or more at 1.5m height and includes all trees outside the site boundary which may be affected by any future development of the site, either by their crown overhanging the site or their Root Protection Area potentially extending into the site.
- 2.1.4 A full topographic survey of the site was provided; this was used as the basis for producing the tree survey plan. The topographic survey did not pick up all tree locations within or outside the development site and therefore some tree locations were estimated.

## **2.2 Consultation with Local Authority**

- 2.2.1 The survey included identification of any existing designations affecting trees on site such as Tree Preservation Orders and Conservation Area status by checking the map information available on Barnsley Council website [www.barnsley.gov.uk/services/parks-and-open-spaces/tree-preservation-orders](http://www.barnsley.gov.uk/services/parks-and-open-spaces/tree-preservation-orders).

## **2.3 Calculation of Root Protection Area (RPA)**

- 2.3.1 Below ground constraints to development are represented by the root plate around a tree which needs protecting in order for the tree to be incorporated into a proposed scheme, without adverse harm to the tree or structural integrity of any proposed foundation structures. This area is illustrated by the Root Protection Area (RPA) and is calculated according to the formulae set out in BS5837:2012 clause 4.6.1.
- 2.3.2 Any deviation in the RPA from the original circular plot should take account of physical site conditions that influence the disposition of tree roots, e.g. streams, building foundations and retaining walls.

## 3. Tree Survey Results

### 3.1 General Site Description

- 3.1.1 The site is disused allotments, recently cleared. Access is via Tower Street to the north, which terminates at the northern boundary.
- 3.1.2 The trees surveyed during the site visit are located along the southern boundary, with four others located in the north east of the site near the access from Tower Street.
- 3.1.3 The site has recently been cleared of all vegetation using an item of tracked plant. While the vehicle has mainly kept out of the RPA's of the trees, some intrusion has occurred which could have resulted in minor damage to the rooting in the affected areas.
- 3.1.4 The site is elevated from Tower Street so is visible from the north. The southern boundary trees screen it from that direction, as do boundary features on the east and the west.

### 3.2 Results of Tree Survey

- 3.2.1 The Tree Survey Schedule in Table 1, Appendix 1 describes the results of the tree survey and includes preliminary management recommendations. The table should be read in conjunction with Figure 2 Tree Survey and Tree Constraints Plan. This drawing illustrates the location of the trees surveyed, the extent of their canopies as well as the Root Protection Areas (RPA) of each tree and tree group.
- 3.2.2 Two tree groups and 23 individual trees have been recorded during the survey. A full survey to BS 5837 (2012) was carried out for those trees, including the recording of the stem diameter to determine the Root Protection Area (RPA) of the trees.
- 3.2.3 The commonest species present on site is sycamore (*Acer psuedoplatanus*). The TPO group contains a range of native species including English oak (*Quercus robur*) and ash (*Fraxinus excelsior*). All but two trees onsite are semi mature to early mature, with the off site sycamores T24 and T25 being mature.
- 3.2.4 The trees which are covered by the TPO have been placed in the B category for their contribution to the local tree scene as a collective and their long useful life expectancy. However none are particularly impressive examples and a number have experienced vandalism. An arboriculturally guided thinning of the group is recommended to allow the better examples to develop into stronger specimens.

### 3.3 Tree Designations

- 3.3.1 Consultation with Barnsley Councils website confirmed that trees T1 to G22 are protected by Group Tree Preservation order ref. RN.10 TRN.A1.

#### Trees covered by Tree Preservation Order (TPO)

- 3.3.2 Tree Preservation Orders currently exist to cover individual trees, tree groups (Group TPO), woodland (Woodland TPO) and areas of trees (Area TPO). Individual and Group TPOs specify the exact position, number and species of the protected trees, whereas Woodland TPOs and Area TPOs protect all trees within an area of land shown on the TPO map as follows: Woodland - All trees young and old, including the woodland floor regeneration; Area - only those trees that were present at the time the TPO was confirmed (trees younger than the date of the TPO are not covered). If in doubt over the

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protection of specific trees, the local Tree Officer/ Arboricultural Officer should be contacted for clarification prior to site layout proposals being finalised.

- 3.3.3 The Tree Preservation Order prohibits the topping, lopping, damaging, wilful destruction and uprooting of the trees covered by the TPO without prior consent of the Local Authority. This includes any works included in the preliminary management recommendations in the Tree Survey Schedule (Table 1, Appendix 1) and any work proposed in close proximity that may have an impact on both above and/or below parts of these trees.
- 3.3.4 Consent needs to be sought from the Local Planning Authority if tree removal work or tree management work affect protected trees within the site or those which overhang the site boundary. Tree works must not be carried out without permission.
- 3.3.5 Work will also be permitted if it is included in an Arboricultural Impact Assessment, Arboricultural Method Statement and/or Tree Protection Plan approved by the Local Planning Authority where development proposals for a site have been granted Planning Permission.

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## **4. Arboricultural Impact Assessment (AIA)**

### **4.1 Development Proposals**

- 4.1.1 An Arboricultural Impact Assessment of the proposed site plan has been undertaken to assess the likely impact of the development on existing trees and tree groups. This assessment is based on the development plan provided by the Hadfield Developments (ref: Wendle Cook P03 Site layout dated August 2017).
- 4.1.2 The client proposes five detached houses with associated hard and soft landscaping.
- 4.1.3 Construction will be with standard materials and building techniques.

### **4.2 Arboricultural Impact Assessment**

#### ***Removal of trees for amenity and safety reasons (T4 & T12)***

- 4.2.1 Ash tree T12 has been assessed as being “unsuitable for retention”. Unless otherwise agreed with the developer/owner, these trees should be removed to ensure the safety of the site during construction and operation of the development/ improve the amenity spaces within the site. Sycamore T4 has been damaged by a fire at its base. If this tree is incorporated into a domestic garden, then its condition needs closely monitored in future to insure its ongoing safety.

### **4.3 Recommendations**

- 4.3.1 As the development proposals assume the removal of one trees growing within the site, no protection measures will be required for those trees.
- 4.3.2 Chapter 5 Arboricultural Method Statement describes measures to protect the retained trees during the development, and operations within the RPA of retained trees including:
- Access Facilitation Pruning Works;
  - Protective fencing;
  - Change of level within the RPA;
  - Installation of power supply services; and
  - Excavation for soft landscaping;

## 5. Arboricultural Method Statement (AMS)

5.1.1 The Arboricultural Method Statement should be read in conjunction with Figure 3 Tree Protection Plans in Appendix 4. The Arboricultural Method Statement paragraphs below are written in the chronological sequence they are to be carried out.

### 5.2 Pre-Commencement

5.2.1 It is advised that a Pre-Commencement Site Meeting is held with contractors who are responsible for operating machinery on site. The meeting will firstly highlight the potential for damage occurring to tree crowns, but thereafter ensure that extra care is applied when manoeuvring any machinery within close proximity of retained trees to prevent any contact with the tree and consequent damage to crown, stem or roots.

5.2.2 For clarity, prior to any construction or development work proceeding, the alignment of the protective fencing (Section 5.4) and the RPA's of any individual trees to be retained which are not able to be protected by fencing should be marked out using the distances provided in the table within the tree survey report. Marking out should be completed or approved by a person with arboricultural expertise as individual trees will have root zones that may be affected by local conditions and allowances will need to be made to accommodate this. This may be done prior to, or during, the Pre-Commencement Site Meeting.

### 5.3 Access facilitation pruning

5.3.1 As it is expected necessary to operate a wide or tall load, plant bearing booms, jibs and counterweights or other such equipment, and such equipment would have potential to cause injurious contact with crown material i.e. low branches and limbs, of retained trees within, or without, the RPA fencing, it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obvious problem branches. This is classed as 'Facilitation Pruning' within BS 5837 (2012).

5.3.2 The Facilitation Pruning Works specification shall be prepared by an arboriculturist and submitted to the local planning authority for approval before construction, demolition or fencing operations commence on site.

5.3.3 All tree works should be carried out in accordance with BS 3998 (2010) "*Tree Works-Recommendations*".

5.3.4 Owing to trees being protected by a Tree Preservation Order, the Local Planning Authority has to be notified before any pruning and management work can be carried out on trees within the site need.

5.3.5 Tree management work can be carried out if

- (TPO only) Written consent to the work was given by the Local Planning Authority
- (CA only) The Local Planning Authority expresses no objection to the proposed works within 6 weeks of the notification being received
- (CA only) No Tree Preservation Order is placed on any of the trees covered by the proposed works.
- (TPO/CA) The tree management proposals are listed by the Local Planning Authority as an approved document on granting Planning Permission

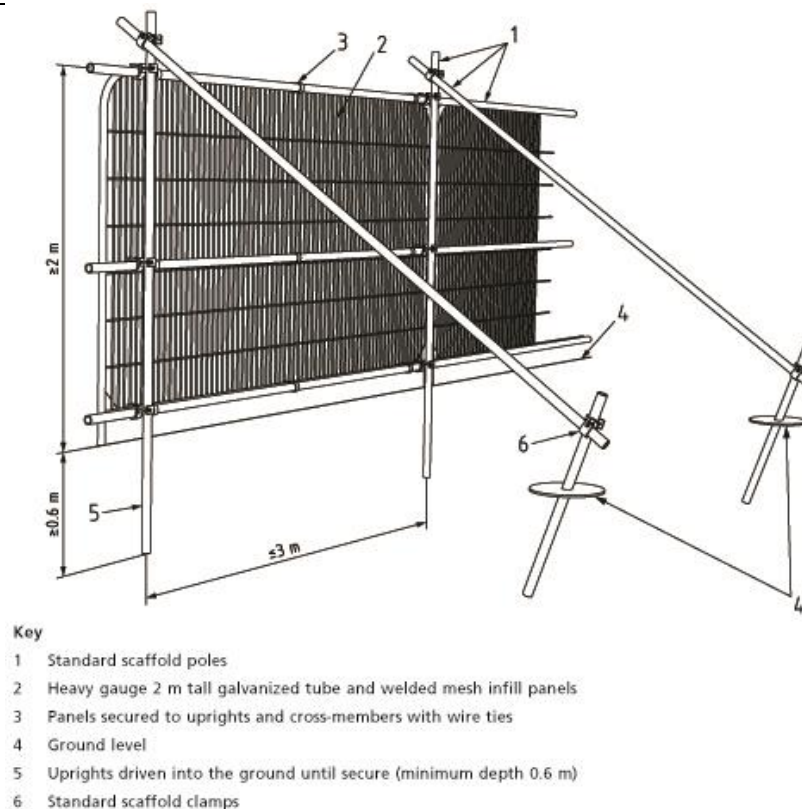
5.3.6 The Facilitation Pruning should be carried out on site by a suitably qualified and

experienced tree surgeon before construction or demolition operations commence on site. The Facilitation Pruning can run concurrent with operations to erect tree protection fencing as long as this can be co-ordinated such that neither presents a hazard to the other.

- 5.3.7 Trees on site which are not to be retained can be removed as part of the Facilitation Pruning (or earlier if the appropriate planning consent is confirmed). To avoid mistakes, the individual trees to be removed should be identified and marked by a person with arboricultural expertise.
- 5.3.8 It is recommended that any trees that require removal or significant canopy works should be checked in advance of works by an ecologist to ensure there is no possibility of any disturbance to nesting birds or roosting bats.

#### **5.4 Protective Barrier/Tree Protection Fencing**

- 5.4.1 The development design prepared for the site indicates that a large number of trees within the site are being retained. All these trees need to be protected from all construction operations by a protective barrier (fencing to BS5837 (2012) which creates a sacrosanct Construction Exclusion Zone (CEZ).
- 5.4.2 The alignment of the protective barrier is based on the calculated extent of the RPA in accordance with BS5837 (2012). The detailed alignment is shown in Figure 3 Tree Protection Plans in Appendix 4.
- 5.4.3 In principle, protective fencing should be erected before any construction/demolition operations start on site and should be removed only on completion of all construction/demolition works on site.
- 5.4.4 The default specification for protective barrier is shown in Figure 4 below. Site hoarding is an acceptable alternative. It may be appropriate on some sites to use temporary site offices as components of the protection barriers, on the understanding that they will remain in situ for the duration of the construction/demolition works and their removal will be planned to ensure the Contractor's co-ordinated withdrawal from site away from the trees rather than towards them.



**Figure 4: Default Specification for Protective Barrier to BS 5837 (2012)**

- 5.4.5 BS 5837 (2012) clause 6.2.2.3 specifies an alternative protective barrier where site circumstances and associated risk of damage incursion into the RPA do not necessitate the default level of protection. This can include 2m tall welded mesh panels (e.g. Heras fencing) on rubber or concrete feet to protect from cars, vans, pedestrians and manually operated plant. The alternative specification for the protective barrier should only be used if and where agreed with the Local Planning Authority.
- 5.4.6 All weather notices should be placed on fencing to indicate that operations are not permitted within the fenced area, for example "CONSTRUCTION EXCLUSION ZONE – NO ACCESS" or similar.
- 5.4.7 Once set up fences should not be removed or altered without prior consultation with the arboricultural advisor.

## 5.5 Construction within RPA

### *Fence construction within RPAs*

- 5.5.1 Where fence posts need to be installed within RPAs, excavations should be minimal and carried out using hand held tools. Fence posts should be erected at least 1m from trees, using metal post support spikes or semi-dry postcrete mixes if installed within the RPA.
- 5.5.2 The proposed fence alignment should allow for a minimum distance of 500mm between the tree stems and the fence, providing sufficient room for the future increase of the stem diameter and minimising the risk of potential conflicts between the fence structure and the tree stem.

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## **5.6 Installation of power supply and services**

- 5.6.1 There are currently no proposals to route services or utilities through the RPA of any retained trees. If this changes at a later stage of the project, proposals should be submitted to the local planning authority Tree Officer for approval.
- 5.6.2 As guidance only, it is noted here that any underground power supply and services routed through the RPA should be installed in accordance with BS 5837:2012 clause 7.7.2 and NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

## **5.7 Excavations for soft landscaping**

- 5.7.1 Where soft landscaping is proposed within the RPA of retained trees, excavations should be kept to the minimum required to provide adequate conditions for the establishment of new shrubs and trees. Excavations should be carried out carefully and by hand, avoiding the severance of any roots larger than 25mm diameter.

## 6. Tree Management

- 6.1.1 The following section provides some general guidance as to how retained trees could best be protected during construction. More detailed guidelines for tree protection during construction are given in BS5837: Trees in relation to the design, demolition and construction recommendations (2012).
- 6.1.2 Any tree roots severed during site clearance works should be wrapped or covered with hessian sheets (wet in summer, dry in winter) as an immediate protection measure against desiccation and rapid temperature changes. This should be removed prior to backfilling which should be carried out as soon as possible. In addition the advice of an arboriculturist, or the Tree Officer of the local planning authority, should be sought as soon as possible on the potential effect of the root damage on the tree's stability, vitality and legal implications.
- 6.1.3 All tree works should follow best practice procedures as set out in BS 3998 (2010). All trees should be maintained in good condition on site and be inspected annually (where overall condition requires) or every 2 years and after any major storm events, with safety a priority.
- 6.1.4 The best practice principles have been broadly summarised below:
- Once areas around trees have been protected by fencing, any works on the remaining site area may be commenced providing activities do not impinge on protected areas.
  - Wide or tall loads etc. should not come into contact with retained trees. Banksman should supervise transit of vehicles, jibs, booms etc. where this is in close proximity to retained trees.
  - Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree bole. No concrete mixing should be done within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.
  - No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.
  - Notice boards, telephone cables or other services should not be attached to any part of a retained tree.
  - In the event of having caused any branch or limb damage to retained trees, the advice of an arboriculturist should be sought on what tree surgery be carried out, in accordance with BS 3998 (2010) Recommendations for Tree Work, to correct the damage, and the best timescale for that tree surgery which will be determined by season, species, gravity of damage and legal status of the tree (Tree Preservation Order/ Conservation Area/nesting birds/roosting bats).
- 6.1.5 All of the above precautionary measures should be applied to minimise the effect of any damage to long-term tree health and safety.
- 6.1.6 It is recommended that any trees that require removal or significant canopy works,

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should be checked in advance of works by an ecologist to ensure there is no possibility of any disturbance to nesting birds or roosting bats.

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## **Appendix 1 – Tables**

**Table 1 – BS5837 Tree Survey Schedule**

Key:	Measurements	Age – Class	Overall Condition	BS 5837 2005 : Cascade Chart for Quality Assessment/Retention Category	Symbols:
	MS – Multi-stemmed	YNG – Young Mature	G – Good	A – High	< = less than
	Ht - Height in metres	SM – Semi-mature	F – Fair	B – Moderate	~ = approximately
	Stem – Stem Diameter at 1.5m in mm	EM – Early mature	P – Poor	C – Low	> = greater than
	Crown – Crown spread in metres	M – Mature	D - Dead	U – Unsuitable for retention	
	TD - Trunk division (height in metres)	OM – Over mature		<b>Sub-categories:</b> 1 = mainly arboricultural values 2 = mainly landscape values 3 = mainly cultural values.	
		<b>Est Yrs</b> – estimate of years remaining (40+ years; 20+ years; 10+ years, <10 years)			

RPA = Root protection area (equivalent to a circle with a radius 12 x the stem diameter of single stem trees or 12 x the notional stem diameter of multi stemmed trees as per BS 5837:2012 clause 4.6). This will be capped to 707m<sup>2</sup> for trees with a stem diameter larger than 1.25m.

Tree No	Species	Ht (m)	Stem Diam @ 1.5m (cm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations incl. Arboricultural Method Statement	BS 5837 Category	RPA Radius (m)	RPA (m <sup>2</sup> )
T1	Sycamore ( <i>Acer pseudoplatanus</i> )	10	10,12,8,8,8	2	3	2	3	0	SM	20+	Fair	Multi stemmed clump, soil level change, two fallen stems	-	C2	2.52	19.95
T2	Sycamore ( <i>Acer pseudoplatanus</i> )	10	12	1.5	1.5	1.5	1.5	1	SM	40+	Fair	-	-	C2	1.44	6.51
T3	Sycamore ( <i>Acer pseudoplatanus</i> )	15	30,15,15	4.5	4.5	0	4.5	2	EM	40+	Fair	Crown break at 1m	-	B2	4.44	61.93
T4	Sycamore ( <i>Acer pseudoplatanus</i> )	15	38	4.5	0	4.5	0	3	EM	10+	Poor	Severe fire damage on east side	-	C2	4.56	65.33
T5	Sycamore ( <i>Acer pseudoplatanus</i> )	15	40	0	4.5	4.5	4.5	3	EM	40+	Fair	-	-	B2	4.80	72.38
T6	Hawthorn ( <i>Crataegus monogyna</i> )	10	20	2	0	2	2	1.5	EM	40+	Fair	-	-	B2	2.40	18.10

Tree No	Species	Ht (m)	Stem Diam @ 1.5m (cm)	Canopy Spread (m)				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations incl. Arboricultural Method Statement	BS 5837 Category	RPA Radius (m)	RPA (m <sup>2</sup> )
				N-	E-	S-	W									
T7	Hawthorn ( <i>Crataegus monogyna</i> )	10	19	0	0	0	3	1.5	EM	40+	Fair	Leans over fence	-	B2	2.28	16.33
T8	Sycamore ( <i>Acer pseudoplatanus</i> )	15	25	2	1	4.5	4.5	3	EM	40+	Fair	-	-	B2	3.00	28.27
T9	Sycamore ( <i>Acer pseudoplatanus</i> )	15	45	5	3	5	2	3	EM	40+	Fair	Large lateral at 1m south	-	B2	5.40	91.61
T10	Silver birch ( <i>Betula pendula</i> )	15	17	2	2	1	0	3	EM	40+	Fair	Occluding bed frame at base	-	B2	2.04	13.07
T11	Sycamore ( <i>Acer pseudoplatanus</i> )	15	28	4	2	4	4	2	EM	40+	Fair	-	-	B2	3.36	35.47
T12	Ash ( <i>Fraxinus excelsior</i> )	11	11	4	0	0	0	2	EM	<10	Poor	Bark stripped to 2m	Remove	U	1.32	5.47
T13	Goat willow ( <i>Salix caprea</i> )	15	40	5	4	2	4	2	SM	40+	Fair	-	-	B2	4.80	72.38
T14	Ash ( <i>Fraxinus excelsior</i> )	15	35	5.5	5.5	5.5	5.5	2	SM	40+	Good	-	-	B2	4.20	55.42
T15	Goat willow ( <i>Salix caprea</i> )	15	35	4.5	3	0	3	2	SM	40+	Fair	-	-	B2	4.20	55.42
T16	Sycamore ( <i>Acer pseudoplatanus</i> )	15	37	3	3	3	3	2	SM	40+	Fair	Co dominant at 2m	-	B2	4.44	61.93
T17	Silver birch ( <i>Betula pendula</i> )	15	30	4.5	2	2	2	2	SM	40+	Fair	-	-	B2	3.60	40.72
T18	Silver birch ( <i>Betula pendula</i> )	15	20	2	2	2	2	2	SM	40+	Fair	-	-	B2	2.40	18.10
T19	English oak ( <i>Quercus robur</i> )	15	21	4.5	3	1	3	1	SM	40+	Good	-	-	B2	2.52	19.95

Tree No	Species	Ht (m)	Stem Diam @ 1.5m (cm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations <i>incl. Arboricultural Method Statement</i>	BS 5837 Category	RPA Radius (m)	RPA (m <sup>2</sup> )
G20	11 stems consisting of ash ( <i>Fraxinus excelsior</i> ) and sycamore ( <i>Acer psuedoplatanus</i> )	Up to 15	Between 10-20	As per plan				0	SM	40+	Fair	-	-	B2	1.80	10.18
G21	12 stems consisting of sycamore ( <i>Acer psuedoplatanus</i> ) and ash ( <i>Fraxinus excelsior</i> )	15	Ave 25	As per plan				0	SM	40+	Fair	Ivy, closely grown sycamore stems, all similar dbh, 2 ash	-	B2	3.00	28.27
T22	Ash ( <i>Fraxinus excelsior</i> )	9	17	2	2	2	2	1	SM	40+	Fair	-	-	C2	2.04	13.07
T23	Ash ( <i>Fraxinus excelsior</i> )	10	11,12,12,13	3	3	3	3	0	SM	40+	Fair	-	-	C2	2.88	26.06
T24	Sycamore ( <i>Acer psuedoplatanus</i> )	15	40	4	2	4	4	6	M	20+	Fair	Heavily crown lifted	-	C2	4.80	72.38
T25	Sycamore ( <i>Acer psuedoplatanus</i> )	11	25	2	2	0	2	6	M	20+	Fair	Heavily crown lifted	-	C2	3.00	28.27

## Appendix 2 – Site Photographs



**Plate 1:** Looking to the site entrance, ash T23 right



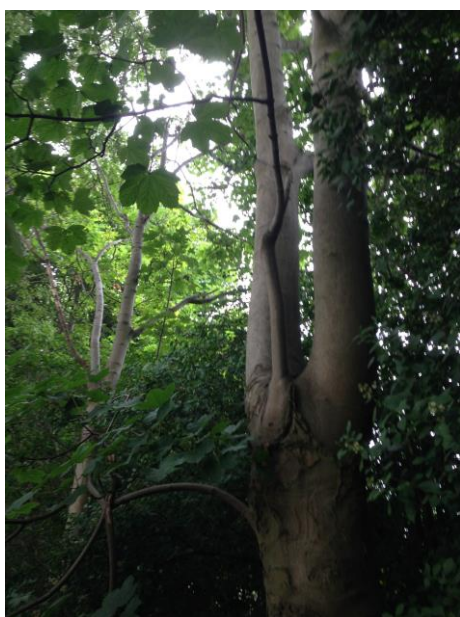
**Plate 2:** G21 in south east corner



**Plate 3:** Sycamore T9 closest



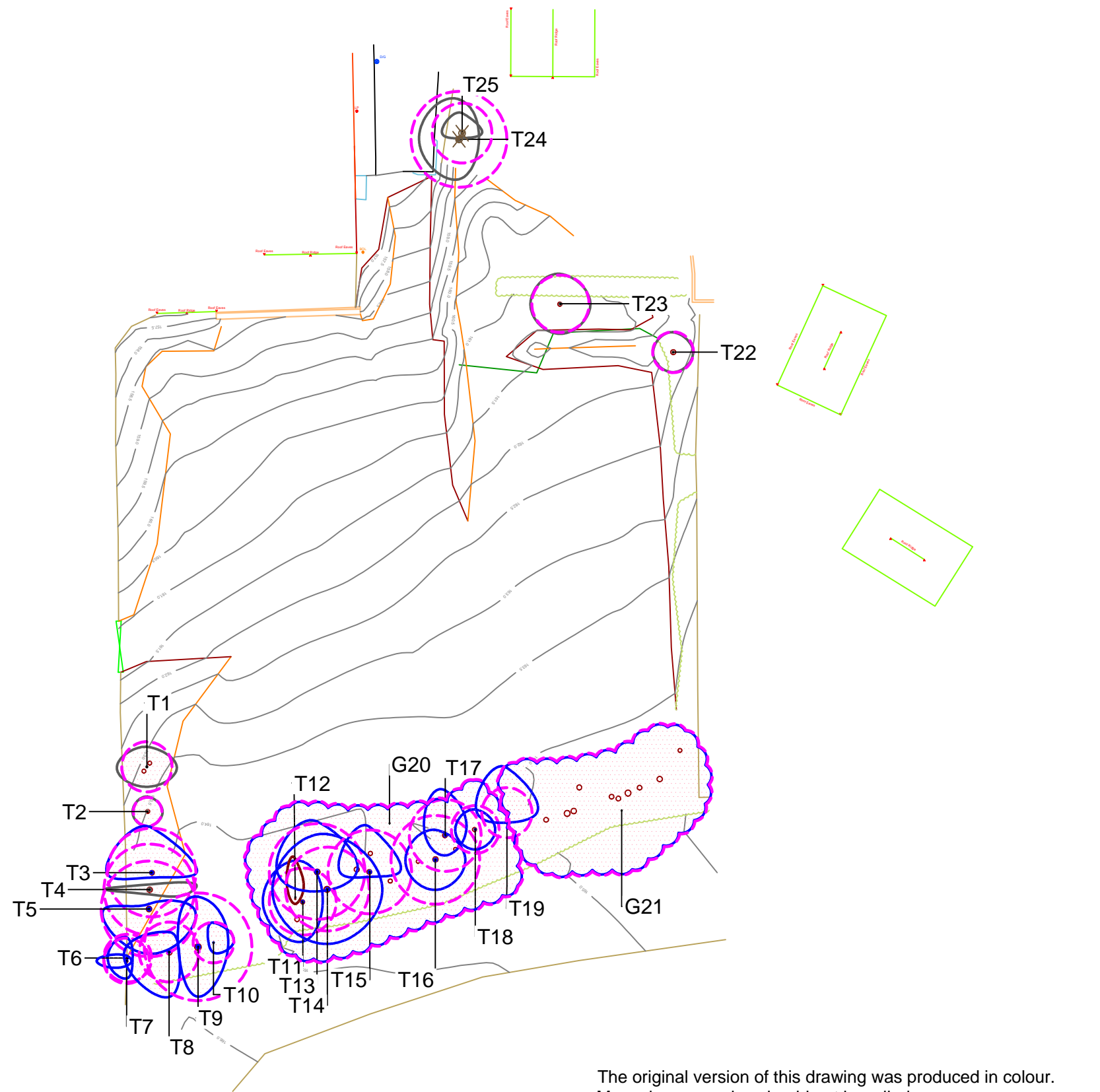
**Plate 4:** TPO group along southern boundary



**Plate 5:** Sycamore T16



**Plate 6:** Goat willow T13



### GENERAL NOTES - TREE SURVEY

- Drawing for Planning purposes only
- Refer to arboricultural report produced by ECUS Ltd titled 10140 Tower Street.
- Based on topographic survey provided by PQS Tech Solutions Ltd dated July 17.
- Check all dimensions on site.
- Do not scale from this drawing.
- Report any discrepancies and omissions to Ecus Ltd.
- This drawing is Copyright.

### 3RD-PARTY INFORMATION

NB This drawing includes information provided by independent surveyors and / or consultants, to whom all queries shall be made. Ecus Ltd can accept no liability for its context or accuracy.

### KEY

- Trunk location from topographic survey
- Trunk location approximated by ECUS

- Shrubs and hedges

### Tree categories (BS 5837:2012)

- Category A Trees
- Category B Trees
- Category C Trees
- Category U Trees

- Root Protection Area (RPA) of category A, B and C trees

- Tree Preservation Order ref. RN.10 TRN.A1

A	09.08.17	PS	Ecus	Preliminary
REV	DATE	DRAWN BY	CHECKED BY	REVISION COMMENT

**DRAWING STATUS:** For Planning

ENVIRONMENTAL CONSULTANTS	Brook Holt Blackburn Road Sheffield S61 2DW Tel. (0114) 2669292 www.ecusltd.co.uk
	Job <b>10140 Tower Road</b>

Title  
**Figure 2**  
**Tree Survey and Tree Constraints Plan**

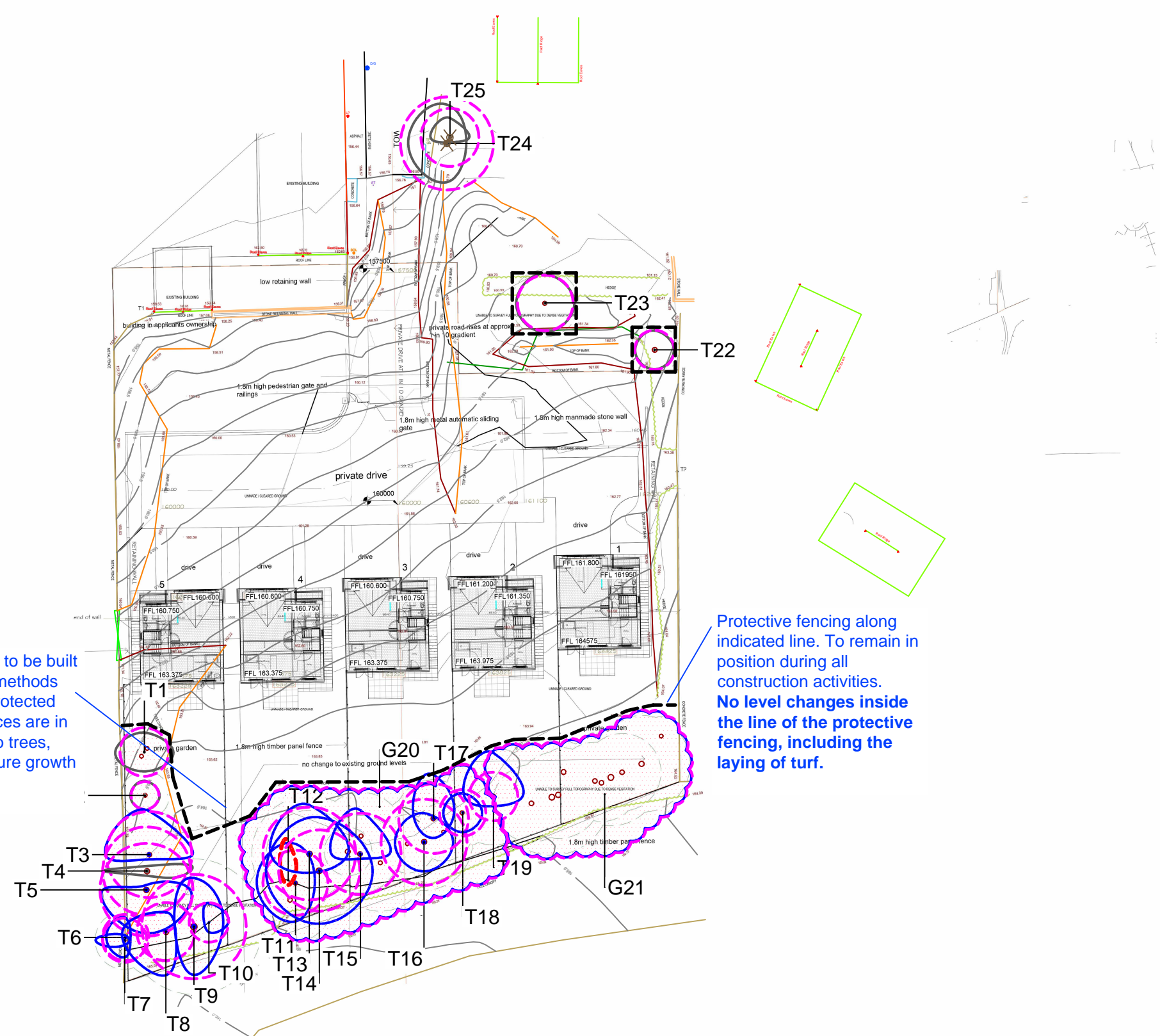
By <b>PS</b>	Date <b>Aug 2017</b>	Scale @ A3 <b>1:500</b>	Drg. no. <b>10140-ARB-01</b>
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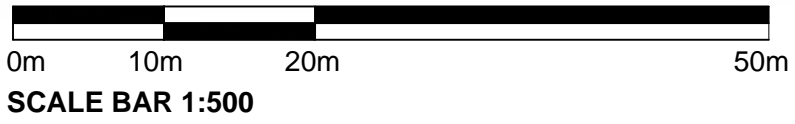
## **Appendix 3 – Tree Survey and Tree Constraints Plan**

Proposed fences to be built using hand dug methods only within the protected area. Where fences are in close proximity to trees, allowance for future growth should be made.

Protective fencing along indicated line. To remain in position during all construction activities. No level changes inside the line of the protective fencing, including the laying of turf.



The original version of this drawing was produced in colour. Monochrome copies should not be relied upon.



**GENERAL NOTES - TREE PROTECTION PLAN**

- Drawing for Planning purposes only unless we are commissioned for construction stage.
- Refer to arboricultural report produced by ECUS Ltd titled 10140 Tower Street.
- Based on topographic survey provided by PQS Tech Solutions Ltd dated July 2017.
- Building layout and masterplan provided by Wendle Cook on drawing number P03.
- Refer to Engineer's details for level and drainage information.
- Check all dimensions on site.
- Do not scale from this drawing.
- Report any discrepancies and omissions to Ecus Ltd
- This drawing is Copyright.

3RD-PARTY INFORMATION  
 NB This drawing includes information provided by independent surveyors and / or consultants, to whom all queries shall be made. Ecus Ltd can accept no liability for its context or accuracy.

**KEY**

	Trunk location from topographic survey		Trunk location approximated by ECUS
Tree categories (BS 5837:2012)			
	Category A Trees		Category B Trees
	Category C Trees		Existing tree to be removed
	Root Protection Area (RPA) of trees to be retained		
	Protective Barrier - BS5837 (2012), clause 6.2.2		
	Tree Preservation Order ref. RN.10 TRN.A1		

A	09.08.17	PS	Ecus	Preliminary
REV	DATE	DRAWN BY	CHECKED BY	REVISION COMMENT

DRAWING STATUS: For Planning

 ENVIRONMENTAL CONSULTANTS	Brook Holt Blackburn Road Sheffield S61 2DW Tel. (0114) 2669292 www.ecusltd.co.uk
	Job <b>10140 Tower Street</b>

Title  
**Figure 3**  
**Tree Survey and Tree Constraints Plan**

By <b>PS</b>	Date <b>Aug 2017</b>	Scale @ A3 <b>1:500</b>	Drg. no. <b>10140-ARB-02</b>
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