



**UU WHALEY BRIDGE, DERBYSHIRE
TREE SURVEY AND CONSTRAINTS REPORT**
(Report Ref: TEP.3022.001)
August 2011

for

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Written:	Checked:	Approved:
RT	TP	JS

1.0 INTRODUCTION

- 1.1 TEP has been commissioned by United Utilities to conduct an arboricultural survey on land located at Whaley Bridge, Derbyshire. This report details the arboricultural constraints of developing the aforementioned site.
- 1.2 The survey was carried out in August 2011 by means of inspection from ground level by a qualified Arboricultural Consultant. The inspection was restricted in cases where trees were ivy-clad. Weather conditions during the survey were overcast.
- 1.3 Under *BS 5837:2005 Trees in Relation to Construction - Recommendations* the assessment of trees is made objectively. The tree categorisation method identifies the quality and value of the existing tree stock, allowing informed decisions to be made concerning development.
- 1.4 Information in this report is not meant to be interpreted rigidly and is presented in order to allow an informed judgement on tree retention and removal.
- 1.5 An OS background map of the site was supplied by the client (Ref: Whaley Bridge River Goyt Trees). This was used to plot the position of trees from fixed points of reference. Where the age distribution and species mix of tree cover was relatively uniform, trees were plotted as groups. Location of tree stems and canopy extents should be regarded as approximate.
- 1.6 A total of 7 individual trees (T1-T7) and 1 tree group (G1) were surveyed and mapped (refer to Drawing 1). All arboricultural information recorded during the survey is presented in Appendix 1.
- 1.7 The nature of the soils on site was not assessed during the survey. The possibility of minor soil movement due to tree root activity cannot be discounted.
- 1.8 This report provides the results of the survey and includes the following:
 - A schedule of all trees located within, or in close proximity to, the proposed development site (Appendix 1);
 - An assessment, based on *BS 5837:2005 Trees in Relation to Construction - Recommendations*, of trees in terms of their potential value within any future development. On the basis of this tree quality assessment, trees have been categorised into one of four categories: A, B, C or R (see Appendices 1 and 2);
 - Advice on the constraints imposed by the existing tree stock (Section 5);
 - Advice on removal, retention and management of trees (Section 6); and
 - A Tree Constraints Plan detailing *BS 5837:2005* quality categories, canopy spreads and Root Protection Areas (Drawing 1).

2.0 THE SITE AND SURROUNDINGS

- 2.1 The site is located approximately 8 km north west of Buxton, Derbyshire.
- 2.2 The survey area itself is located in the town centre of Whaley Bridge and contains a narrow section of land between the River Goyt and The White Hart pub. A road bridge over the river marks the southern boundary of the survey area and a row of terrace buildings lies to the west
- 2.3 The topography of the survey area changes abruptly by 1.5 to 2m as the land occupied by the pub garden drops abruptly down to the riverbank.

3.0 STATUTORY PROTECTION

Tree Preservation Orders & Conservation Area Designations

- 3.1 Consultation with High Peak Borough Council confirmed that all trees on site are situated within the designated boundary of Whaley Bridge Conservation Area. If tree works are proposed within the Conservation Area, six weeks notice should be given to the Council to assess the work and to grant consent or place a Tree Preservation Order (TPO) on the tree/s. No trees are currently protected by a Tree Preservation Order.

Birds

- 3.2 Trees offer a potential nesting habitat for birds. All wild UK nesting birds, their nests and eggs are protected under the *Wildlife and Countryside Act 1981* (as amended). It is an offence to intentionally or recklessly, damage or destroy nests and all tree work should ideally be undertaken outside the bird nesting season (March to September inclusive). In addition, protection is afforded to a number of bird species listed on Schedule 1 of the *Conservation (Natural Habitats) Regulations 1994* (as amended).
- 3.3 If tree work is required during the nesting period then a detailed inspection of each tree should be undertaken by a qualified ecologist immediately prior to the arboricultural works. Should an active nest be found (being built, containing eggs or chicks) then any work likely to affect the nest must be halted until the nest becomes inactive.

Bats

- 3.4 Mature trees often contain cavities, crevices and hollows that offer potential habitats for protected species, most notably, bats. Bats and their roosts are offered protection under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) as well as under the *Conservation of Habitats and Species Regulations 2010*.

- 3.5 A preliminary ground based inspection of each tree in terms of bat roost potential was undertaken during the survey. Although no trees on site were seen to have cracks and/or cavities with bat roost potential, there is a heavy presence of ivy on the majority of trees within the survey boundary. Ivy is known to provide habitat for bats and coupled with the fact that the trees are located along a watercourse, these trees have the potential to support bat activity.
- 3.6 Should the presence of a bat roost be suspected whilst undertaking any works on trees and groups on site, operations must be halted until a licensed bat handler or ecologist can provide advice.

4.0 TREE POPULATION

- 4.1 A schedule of all trees and tree groups in terms of species, condition, age management recommendations and *BS 5837:2005* quality categories is provided at Appendix 1.
- 4.2 The tree population on site comprises a linear group of middle aged to mature trees mainly in fair condition.
- 4.3 Tree T3 (middle aged sycamore) displays typical woodland form with straight slender stem form and a top-heavy crown. It is without visible defects and although ivy-clad and growing on the steep embankment has the potential to develop into a dominant and valuable specimen.
- 4.4 Tree T5 (middle aged ash) is a feature of moderate arboricultural value, being free of ivy (in contrast to its neighbours) and a dominant tree with no visible significant defects. It is multi-stemmed at 4m with well formed stem unions and although growing through the dry stone embankment wall, it displays good balanced form.
- 4.5 Tree T1 (middle aged crack willow) is the southernmost of the main group of trees along the riverbank. A significant southerly stem lean has resulted in lateral limbs growing over the bridge, pavement and highway and mechanical branch damage from passing vehicles is clearly visible. Lateral branches have also begun to touch the pub building at numerous points. There is evidence of previous large stem failures on the western side of the main stem, in keeping with the fragile nature of the species.
- 4.6 Tree T7 (western red cedar) is in an unsuitable location approximately 1m from the pub building and directly beneath the canopy of T1. Its future potential is therefore low.

- 4.7 The remainder of the tree population contains no individual trees of high or moderate value. It is densely ivy-clad and many of the trees exhibit poor form through competition from neighbouring trees, previous stem damage or by virtue of the fact that they are growing directly through the dry stone embankment wall. As a collective, however, they form part of a line of trees that continues north alongside the River Goyt giving them value as a linear landscape feature, screening industrial units behind and forming part of a wildlife corridor.
- 4.8 ations, their quality categories, canopy spreads and Root Protection Areas are shown on Drawing 1.

Tree Categorisation

- 4.9 In order for informed judgements to be made on tree retention, removal and mitigation, a recognised and consistent approach to tree valuation is required. This has been developed within the arboricultural industry and published in *BS 5837:2005 Trees in Relation to Construction – Recommendations*.
- 4.10 Table 1 lists a summary of the categories as stipulated in the *Cascade chart for tree quality assessment* as laid out in *BS 5837:2005*.
- 4.11 Table 2 details which of those trees surveyed come under each tree quality category.

Table 1: BS 5837:2005 Tree Quality Categorisation

Category A	Trees of high value including those that are particularly good examples of their species and/or those that are visually dominant within the landscape
Category B	Trees of moderate value including those that do not qualify as Category A due to minor remedial defects and/or those that collectively form distinct landscape features, thereby attracting a higher rating than they might as individuals
Category C	Trees of low value, their retention should not unreasonably constrain development
Category R	Trees unsuitable for long-term retention that should ideally be removed prior to the commencement of construction unless otherwise advised

Table 2: BS 5837:2005 Quality Categorisation for surveyed trees

Category A	Category B	Category C	Category R
-	T5, T3	T1, T2, T4, T6, G1	T7

5.0 CONSTRAINTS IMPOSED BY THE EXISTING TREE STOCK

- 5.1 Although suitable for retention, Category C trees, which make up the majority of the tree stock on site, should not pose unreasonable constraints to development. Due to their poor form and/or location, appropriate mitigation planting would compensate for the loss of the Category C trees on site.
- 5.2 Tree features labelled as Category B should be given foremost consideration for retention and protection during development. The requirement to remove Category B trees should be justified by sound design rationale.

Below Ground Constraints: Root Protection Areas (RPA)

- 5.3 As per *BS 5837:2005* the **RPA** is calculated using the trees diameter at 1.5m (refer to Appendix 1) and delineates a sufficient area necessary for ensuring enough root and the soil structure are protected to successfully retain trees post-construction.
- 5.4 Tree roots spread on average two times the width of the crown. The majority of tree roots are found in the top 600 mm of soil and most of the fine roots that absorb water and nutrients are found in the top 100 mm.
- 5.5 The morphology of roots is influenced by past and present site conditions (the presence of roads, structures and underground services), soil type, topography and drainage. This means that a tree's roots may not be uniform in their extent and the **RPA** may not be a circular area centred on the tree stem. As is the case of the majority of trees on site which, due to them growing through the embankment wall, are likely to have increased concentrations of roots to the east.
- 5.6 Excavation and other construction activities within the **RPA** of retained trees may have the effect of de-stabilising trees or severely compromising nutrient/water uptake and thus physiological well-being. Ground disturbance should therefore be kept to a minimum and any unavoidable activity within **RPA's** is likely to require further expert advise (see Section 6).

6.0 ARBORICULTURAL RECOMMENDATIONS

Tree Works

- 6.1 Due to its proximity to the highway and building and its potentially fragile state, it is recommended that remedial tree surgery is carried out to tree T1. This should involve the pruning back of branches overhanging the pavement, highway and building.
- 6.2 Furthermore, an overall 30% reduction in crown size of T1 would lessen the likelihood of future failure. This would, however, require ongoing maintenance to contain the size and weight of the crown; for this reason, pollarding the tree to leave the main stem at 3 m in height may be a preferred option.

- 6.3 Tree work should be carried out by suitably qualified arboricultural operatives working in accordance with *BS 3998: 2010 Tree Work- Recommendations*.

Mitigation Planting & Landscaping

- 6.4 Replacement tree planting will be required in the event trees are lost as a result of ensuring development proposals. The extent of mitigation planting required will be determined in agreement with High Peak Borough Council.
- 6.5 Native trees (in accordance with National Vegetation Classifications) are recommended to be consistent with the vegetation of the area for the benefit of the local ecology.

Supervision during Excavation

- 6.6 It is recommended that any excavation within the Root Protection Areas of retained trees is supervised by a qualified Arboricultural Consultant to ensure that root damage can be kept to a minimum, controlled and monitored to inform future tree management.

Post Development Management

- 6.7 Hazard recommendations are based on observations at the time of visit. Trees are dynamic living organisms whose structure is constantly changing; even those in good condition can suffer from damage or stress. Following site development, regular – annual or biennial – inspections of all retained trees should be undertaken by a qualified Arboricultural Consultant.

7.0 SUMMARY

- 7.1 Based on an objective assessment made in accordance with *BS 5837:2005*, there are 2 Category B tree features, 5 Category C tree features and 1 Category R tree feature on site. The tree categorisation method identifies the quality and value of the existing tree stock but it is not meant to be interpreted rigidly and is presented in order to form a balanced judgement on tree retention and removal.
- 7.2 The tree locations, their quality categories and Root Protection Areas are shown on Drawing 1 - Tree Constraints Plan.
- 7.3 The tree population on site comprises a linear group of middle aged to mature trees along the bank of the River Goyt. They are in predominantly fair condition yet there are two trees of moderate value that should be given foremost consideration for retention and protection during development/excavation.
- 7.4 The site is located within Whaley Bridge Conservation Area. Any work to the trees on site will require written notification to the High Peak Borough Council. No trees on site are subject to a Tree Preservation Order.
- 7.5 It is recommended that any excavation within the Root Protection Areas of retained trees is supervised by a qualified Arboricultural Consultant to ensure that root damage can be kept to a minimum, controlled and monitored to inform future tree management.
- 7.6 Replacement tree planting will be required as mitigation in the event of the loss of trees and associated habitats. The extent of mitigation planting required will be determined in agreement with High Peak Borough Council once the extent of operations has been finalised.

APPENDIX 1

ARBORICULTURAL SURVEY DATA SHEETS

APPENDIX 1: Arboricultural Survey Data Sheets



Surveyor RT
 Date 04.08.2011
 Town Whaley Bridge
 Site Goyt Riverbank
 Dwg Ref D3022.001

Ref	Species	Height	Stem Dia.	No. of stems/individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA	Management Recommendations	Estimated Remaining Contribution
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)	Young, Middle Age, Mature, Veteran	Good, Fair, Poor		A,B,C,R (1,2,3)	(m)	(m2)		Long, Medium, Short
Trees																	
T1	Crack willow	18.0	690.0	1.0	2.0	14.0	10.0	4.0	4.0	Mature	Fair	Heavily ivy-clad. Bifurcate at 3m. Moderate stem lean towards highway (15 degrees). Previous limb failure on eastern side of main stem at 1.5m. Branches touching pub building and overhanging road and walkway by approximately 5m. Mechanical damage to branch over road from vehicles. Minor tip die-back and foliage discolouration. End weighted branches. Minor dead branches over river. Inspection limited by ivy.	C,1	8.3	215.4	Remove limbs overhanging road and pavement. Reduce weight of crown by 30%	Medium
T2	Ash	10.0	650.0	5.0	2.0	3.0	5.0	4.0	2.0	Middle Age	Fair	Heavily ivy-clad. Multi-stemmed at base. Minor tip die-back and dead wood. Poor form. Inspection limited by ivy.	C,1	6.5	132.7		Medium
T3	Sycamore	12.0	290.0	1.0	2.0	3.0	5.0	2.0	2.0	Middle Age	Good	Ivy-clad. Straight, single stemmed form. Growing through dry stone wall. No visible significant defects. Inspection limited by ivy.	B,1	3.5	38.0		Long
T4	Bird cherry	8.0	280.0	1.0	1.0	3.0	1.0	3.0	6.0	Middle Age	Fair	Ivy-clad. Poor, asymmetric form through competition from neighbouring trees. Minor dead wood. Inspection limited by ivy.	C,1	3.4	35.5		Short
T5	Ash	14.0	530.0	1.0	4.0	4.0	4.0	4.0	4.0	Middle Age	Good	Good balanced form. Minor dead wood in central crown. Multi-stemmed at 4m with good strong looking unions. Growing through dry stone wall on vertical river bank. No ivy present.	B,1	6.4	127.1		Long
T6	Sycamore	10.0	510.0	3.0	4.0	1.0	5.0	4.0	1.0	Middle Age	Fair	Growing through dry stone wall on vertical river bank. Poor form due to competition from T5. Re-growth from previous injury. Low future potential.	C,1	5.1	81.7		Medium
T7	Western red cedar	4.0	190.0	1.0	1.0	1.0	1.0	1.0	1.0	Middle Age	Fair	Poor location. Growing against building and suppressed by T1. Low future potential.	R				Short

APPENDIX 1: Arboricultural Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA	Management Recommendations	Estimated Remaining Contribution
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)	Young, Middle Age, Mature, Veteran	Good, Fair, Poor		A,B,C,R (1,2,3)	(m)	(m2)		Long, Medium, Short
Groups																	
G1	Sycamore, ash	to 16	280 to 390	3.0	3.0	3.0	6.0	3.0	1.0	Middle Age	Fair	2 sycamore. 1 ash. Heavily ivy-clad. Ash less dominant than sycamore and leaning over pub garden. Ash growing through dry stone wall. No visible significant defects. Inspection limited by ivy.	C,1				Medium

APPENDIX 2

SURVEY METHODOLOGY & GLOSSARY

APPENDIX 2: ARBORICULTURE SURVEY METHOD

Arboricultural surveys are conducted from ground level only. The nature of the soils on site is not assessed during the survey. The possibility of minor soil movement due to the root activity of the trees cannot be discounted; therefore, the advice of a structural engineer should be sought with regard to appropriate foundation depths.

Trees are dynamic living organisms with a constantly changing structure; even trees in good condition can suffer from damage or stress. Regular annual or bi-annual inspections by a qualified arboriculturalist can help to identify potential problems before they become acute.

The following features of each tree, group of trees or wood may have been recorded in the Arboricultural Data Sheets (Appendix One).

Species	The common name is given. The Latin name may also be given if further clarification is required.	
Height	Top height of tree recorded in metres.	
Stem Diameter	For single-stemmed trees the measurement is taken at 1.5 metres above ground level and recorded in millimetres. For multi-stemmed trees the measurement is taken directly above the root flare in millimetres. For tree groups the measurement is taken in the same way as with single-stemmed trees and is recorded in millimetres as a range from minimum to maximum diameters.	
No. of Stems	A count of stems arising below a height of 1.5m.	
Crown Spread	The N, S, E and W branch spreads are recorded in metres to provide a representative crown shape.	
Height of Lowest Branch	Crown clearance above ground level recorded in metres.	
Tree Age	Young	Trees than can reasonably be relocated or replaced like for like, without undue cost;
	Middle Age	Trees in the established growth stage of their life with the potential to continue increasing in size;
	Mature	Trees that have reached their ultimate size, given their location and surroundings;
	Veteran	A tree recognised by features of a biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Condition

An overall assessment of a tree's physiological and structural state in which factors that may increase its susceptibility to the effects of development are taken into account.

Comments

A brief evaluation and description of the tree with comments on the form, vitality, health and any significant defects that may be present.

Trees are surveyed without reference to any proposed development. The implications of any development are discussed in the Arboricultural Implication Assessment.

Tree Quality Assessment

The tree quality assessment is based on Table 1 of BS 5837:2005 (See below). Four categories (A, B, C and R) are used to denote tree quality (A = High, B = Moderate, C = Low, R = Unsuitable for retention). Subcategories (1-3) denote the specific function value of the trees and the reasoning behind the assessment (the subcategories may be used in combination but do not accumulate collective weight).

BS 5837 Root Protection Area (RPA)

The Root Protection Area (RPA) is allocated to ensure that a sufficient area is left undisturbed during development to prevent direct and indirect damage to tree roots and the soil structure.

The RPA is calculated using a mathematical equation included in BS 5837:2005 (Table 2) and is based on a trees stem diameter. In some cases the RPA may need to be adapted to ensure survival based on criteria such as the tree's condition, species and crown spread. Any alteration should be justifiable but is made at the arboriculturists discretion.

The surrounding RPA should remain undisturbed and be treated as a sacrosanct Construction Exclusion Zone (CEZ) until development completion and removal is approved by an arboriculturist.

APPENDIX 2: ARBORICULTURE SURVEY METHOD

Recommendations

Recommendations for arboricultural works, etc. are based on the **current** land use, and take into account the tree or group attributes without bias to the proposed development.

Estimated Remaining Contribution

An estimation of the trees useful life expectancy.

Long	> 40 years
Medium	20 – 40 years
Short	10 – 20 years
Very Short	< 10 years

Table 1 — Cascade chart for tree quality assessment

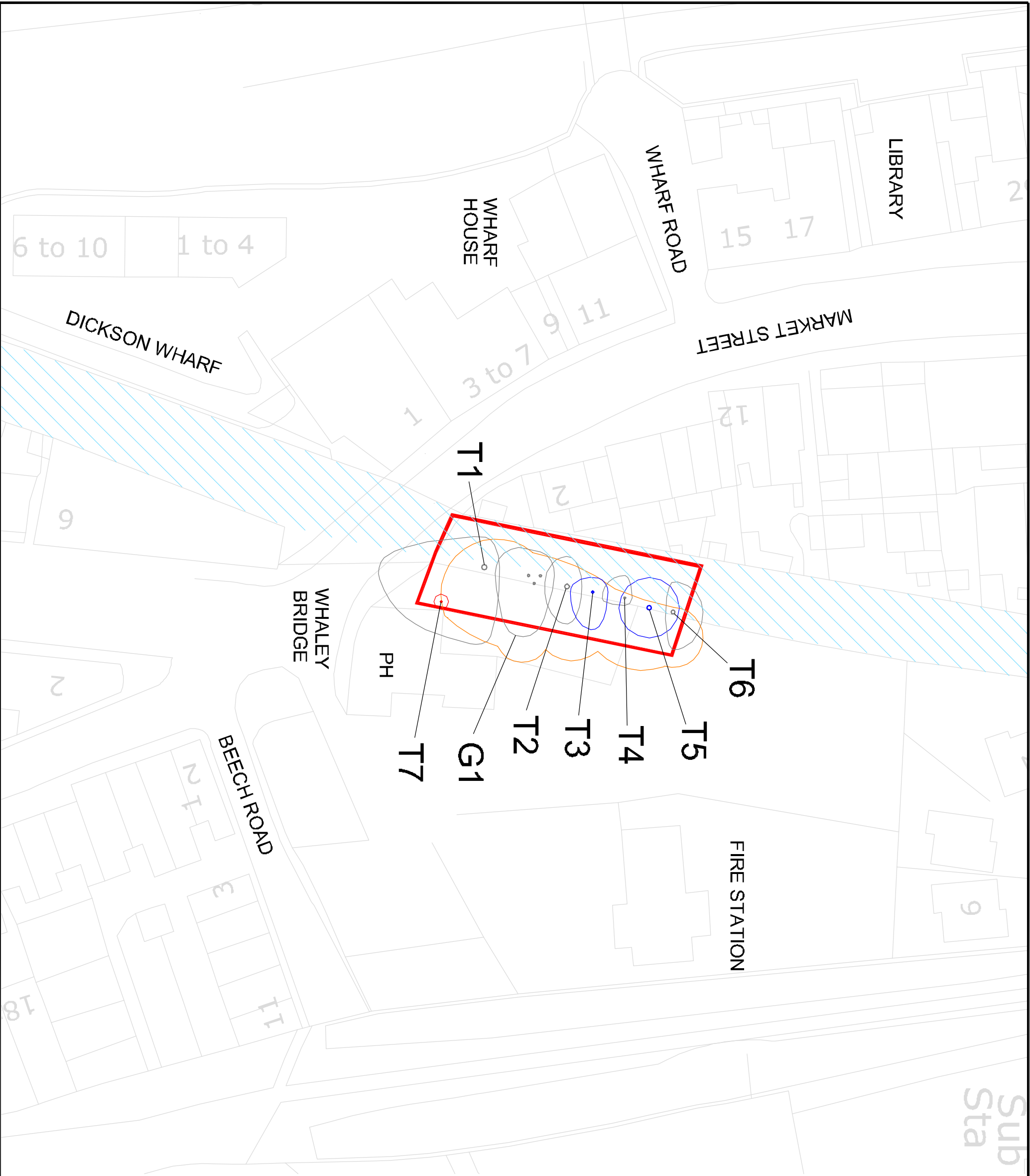
TREES FOR REMOVAL				
Category and definition	Criteria			Identification on plan
Category R Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	<ul style="list-style-type: none">• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline• Trees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality <p>NOTE: Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).</p>			DARK RED
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria — Subcategories			Identification on plan
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
Category A Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	MID BLUE
Category C Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	GREY
	NOTE: Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150 mm should be considered for relocation.			

British Standards Institute 2005, p.6

NOTE: All young trees are assessed as category 'C' quality but this does not preclude their retention within a development; all retention and removal recommendations will be detailed within the Arboricultural Implications Assessment report.

DRAWING 1

TREE CONSTRAINTS PLAN



- KEY**
- T1

Individual trees
- G1

Groups of trees
- Survey Boundary
- Root Protection Area
- River Goyt

Tree/Group Quality Categories
Categories based on BS 5837:2005 *Trees in Relation to Construction – Recommendations*

Category B Trees/Groups

Trees of moderate quality and value

Category C Trees/Groups

Trees of low quality and value

Category R Trees/Groups

Trees unsuitable for retention

NOTE: see Arboricultural Data Sheets (Appendix 1) for further information.



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Project		
Whaley Bridge, Derbyshire		
Title		
Tree Constraints Plan		
Dwg No		
D3022.001		
Scale		Date
1:500 @ A3		04/08/11
Drawn	Checked	Approved
RT	TP	JS