



ARBORICULTURAL SURVEY

**Eagle Brewery Wharf
Kingston Upon Thames
KT1 1HH**

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1 INTRODUCTION

1.1 Instruction

1.1.1 PJC Consultancy was instructed by Farrer Huxley Ltd to provide an initial arboricultural survey of Eagle Brewery Wharf. The survey has been undertaken in accordance with BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'.

1.2 Survey objectives

1.2.1 This survey has been undertaken with the following objectives:

- To survey all trees within and adjacent to the site with trunk diameters of 75mm or more at a height of 1.5m.
- To assess the quality and value of the existing tree stock in terms of arboricultural, landscape, historical/conservation, or public amenity value.
- To provide information relating to planning constraints that may restrict works to trees at the site.
- To provide an assessment of the material constraints posed by the existing tree stock on potential future developments at the site.
- To aid the design process, ensuring prospective developments integrate appropriately with the existing tree stock, to maximise the potential of the proposed development site.

1.3 Contents of report

1.3.1 This report includes the following:

- A summary of the existing tree stock and notable arboricultural features.
- Tree constraints plan in accordance with BS5837: 2012.
- Tree survey schedule containing the relevant measurements and information for each tree or tree group as required in BS5837: 2012.

1.4 Documents and information provided

1.4.1 The following documents were used to aid the preparation of this report:

- Topographical Survey ref: 827-FH-XX-00-DP-L-001 Rev: P1



2 SURVEY METHODOLOGY

2.1 Tree survey information

2.1.1 The following information was recorded in the tree survey schedule for each individual tree (average dimensions are recorded for groups):

- Tree reference number. (T=tree, G=group). Tree numbers suffixed with PA on the tree constraints plan indicate that the tree position is approximate.
- Species (common and scientific name).
- Overall tree height (m).
- Stem diameter (mm) per stem or average diameter for multi-stemmed trees with six or more stems.
- Branch spread (m) measured to the four cardinal points.
- Existing height (m) above ground level of lowest significant branch and direction of growth (for individual trees only).
- Existing height (m) above ground level of canopy.
- Age class (young, semi mature, early mature, mature, over mature or veteran).
- Physiological condition (good, fair, poor).
- Structural condition (good, fair, poor).
- Comments (general description of tree(s) including any notable features).
- Preliminary management recommendations (prescriptions for tree management processes based on the current land use and not related to the prospective development).
- Tree categorisation (see below).
- Root protection area (m²).
- Root protection radius (m).

2.2 Tree categorisation

2.2.1 The condition and value of each tree was evaluated based on the current land use. Each tree or tree group has been awarded either category A, B, C or U and a subcategory of either 1,2 or 3 or a combination of the subcategories.

2.2.2 Tree categorisation summary:

- A – Trees of good condition and high arboricultural, landscape or conservation value. Must have a potential life span in excess of forty years.
- B – Trees of moderate condition, with minor defects or sub-optimal form but are still of modest arboricultural, landscape or conservation value. Must have a potential life span in excess of twenty years.
- C – Unremarkable trees of poor condition or form with limited arboricultural, landscape or conservation value, or trees with a stem diameter under 150mm. Must have a potential life span in excess of ten years.
- U – Trees of such impaired condition that they cannot realistically be retained as living trees in the context of the current land use for more than ten years. These trees do not



need to be removed if they are not dangerous and do not conflict with the proposed development, but should not be considered a constraint to development.

2.2.3 Tree sub categorisation summary:

- 1 – Trees have mainly arboricultural value, e.g. trees of good condition, form and vitality or rare tree species.
- 2 – Trees have mainly landscape value, e.g. trees of landscape prominence, that serve to screen unsightly views or that are required for privacy. Also trees present in groups that attain higher collective rating that they would as individuals.
- 3 – Trees with mainly cultural value including conservation, e.g. commemorative trees, trees of historical significance or veteran trees.

2.2.4 Each tree can only be categorised as A, B or C but may comply with more than one subcategory. A cascade chart further explaining how tree categorisation is decided is included in Appendix 3.

2.3 Root protection areas

2.3.1 A root protection area represents a calculation of the minimum volume of rooting medium required to support a tree. It is a standardised calculation based on the stem diameter(s) measured at 1.5m and is not necessarily representative of the actual root spread or total rooting area of a tree. The formulas used to calculate root protection areas are shown below:

Table 1: Root protection area formulas

Number of stems	Root protection area formula
Single stemmed trees	$\frac{(\text{stem diameter (mm)} \times 12)^2 \times \pi}{1000}$
Trees with two to five stems	$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots + (\text{stem diameter } 5)^2}$
Trees with more than five stems	$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$

2.3.2 The root protection areas are plotted onto the tree constraints plan in Appendix 1 and are recorded in the tree survey schedule in Appendix 2. These are represented as a circle on the plan (unless significant rooting constraints are present), and are colour coded depending on the category the tree has been awarded. Where existing site conditions/features are present that are deemed likely to have affected the root morphology, the root protection areas have been represented as a polygon of equivalent area.

2.3.3 The proposed layout should avoid level changes or the placement of new buildings and areas of hard standing within the root protection areas of retained trees. In certain situations, engineered solutions are available to allow construction within the root protection areas however further input from an arboriculturist should be sought regarding their site-specific viability before these methods are relied upon.

2.3.4 The disturbance of a tree’s root system can result in crown dieback and even death of the tree. Roots are used to support the tree structurally as well as the absorption of moisture and nutrients from the soil. They also act as storage and transport for water and nutrients.



- 2.3.5 Direct damage such as root severance can lead to ill health, as can compaction of the soil by construction traffic, heavy plant and storage of materials. Changing the nature of the surface above the growing medium, (i.e. from porous to non-porous), can alter the resources available to the tree, which in turn can lead to its decline.
- 2.3.6 The majority of root growth is usually found within the top 600mm of soil. As such, even a shallow disturbance within a root protection area can potentially have a significant impact on the tree.
- 2.3.7 The root protection areas must be left free from excavation and disturbance and protected from compaction or contamination during any proposed works. Any construction works within a root protection area required for the proposed development must be justifiable within an arboricultural impact assessment.

2.4 Limitations of survey

- 2.4.1 The survey methodology was restricted to a visual tree assessment from ground level. No tree climbing or invasive ground investigation was carried out for this report. Where existing site constraints are present such as ivy-covered trees, a very dense under-storey, or where trees are located on third party land to which access was not granted, tree dimensions were estimated by eye as accurately as possible.
- 2.4.2 This survey represents a preliminary overview of the condition and value of trees at the site. It is not a detailed assessment of any individual tree and although preliminary management recommendations are included, this report will not be sufficient to be used as a detailed condition and safety survey.
- 2.4.3 The information and measurements in this report are representative of the date of the site visit. The tree survey data will need to be updated to reflect tree growth and changes in the condition of the trees after prolonged periods.



3 SITE VISIT AND SURVEY FINDINGS

3.1 Site visit

3.1.1 A site visit was carried out on 4th April 2023. The weather conditions at the time were dry and bright. The visibility was adequate for visual tree inspection from ground level. Deciduous trees were not in leaf.

3.2 Site layout

3.2.1 The site is located to the west of High Street, Kingston Upon Thames. The site access is located off the High Street from Rams Passage which is located between The Ram and a convenience store. The site consists of a small cluster of trees and seating areas with shops. A public footpath is located on the western boundary adjacent to the River Thames. The surrounding land use comprises of shops to the north, a carpark and shops to the east, commercial and residential properties to the south and the River Thames to the west.

3.3 Statutory tree protection

3.3.1 The Royal Borough of Kingston Upon Thames online mapping tool was used on 3rd April 2023 to check whether there are any tree preservation orders (TPOs) within the site. No TPOs were shown within or immediately adjacent to the site.

3.3.2 However, the online mapping tool can be updated at any time, therefore any persons proposing to undertake tree works should still check the status of the trees with the local planning authority prior to undertaking any tree works. Failure to adhere to the TPO legislation could lead to prosecution and if convicted a fine and criminal record. The crown of a tree and its roots are protected. The person carrying out the works, the person instructing the works and the Directors of that company are potentially liable. Failure to check whether tree/s are the subject of TPO/s could not be used as mitigation.

3.3.3 The site is located within the Kingston Old Town Conservation Area.

3.4 Findings

3.4.1 A total of ten trees and one shrub groups were surveyed. Their locations are shown on the tree constraints plan at Appendix 1 and details and measurements are shown in the tree survey schedule at Appendix 2.

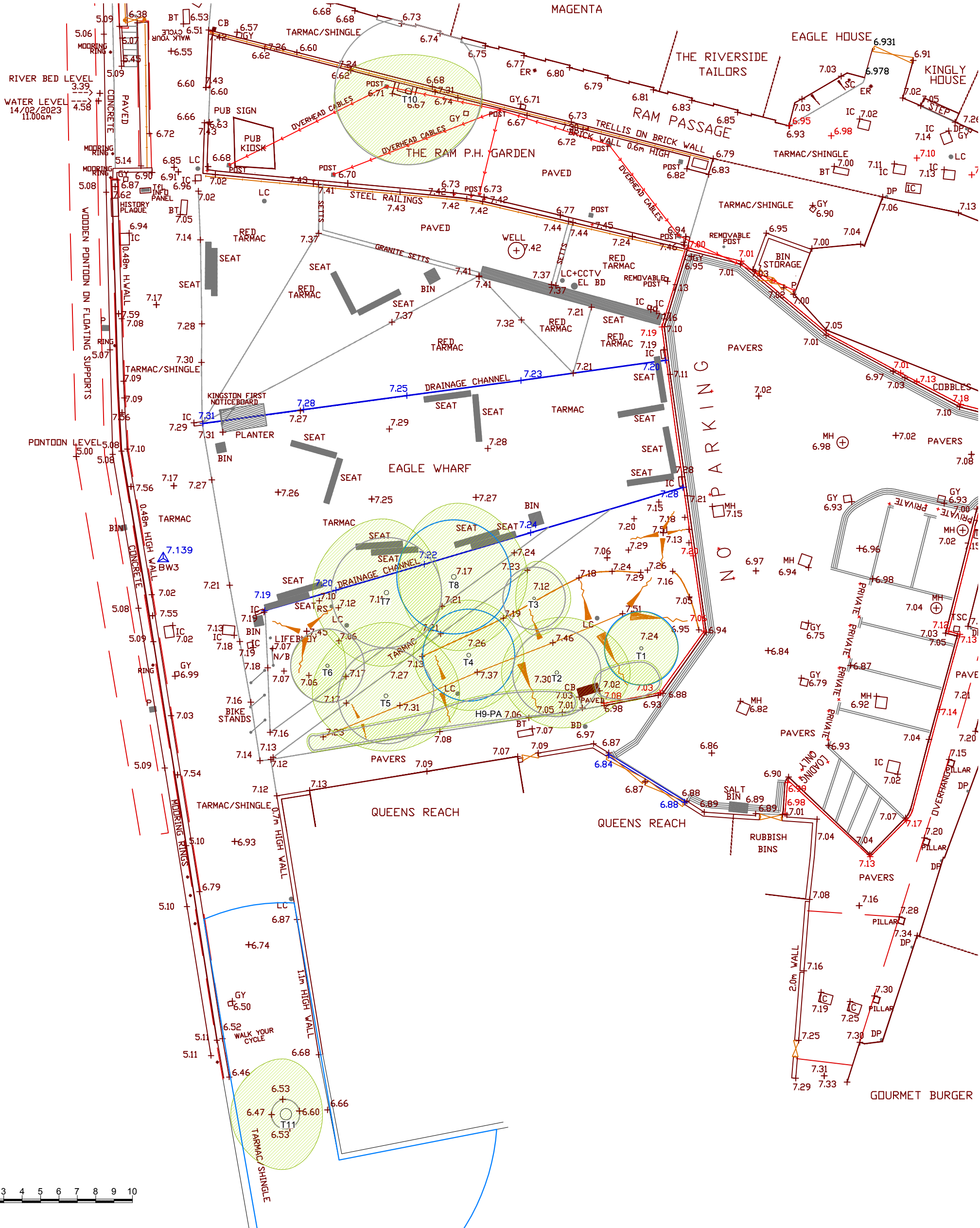
3.4.2 A summary of their British Standard categorisation is shown at Table 2 below.

Table 2: Tree categorisation summary

Tree category	Individual tree	Tree group
A	-	-
B	4	-
C	6	1
U	-	-
Total	10	1



Appendix 1: Tree Constraints Plan



* Tree categorised in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.

Tree survey schedule contained within the arboricultural report ref. PJC/6289/23-01 contains further information for each tree.

This drawing should be viewed in colour.

Tree numbers suffixed with PA indicate the tree position is approximate.

- Key:**
- Root protection area for category B* tree
 - Root protection area for category C* tree
 - Tree canopy

Drawing no: PJC/6289/23/A Rev: - Sheet number: 1 of 1

Client and site:
Farrer Huxley Ltd

Eagle Brewery Wharf
Kingston Upon Thames
KT1 1HH

Drawing title: Tree Constraints Plan

Date drawn: 06/04/2023

Scale: 1:200 at A3

Drawn by: NH **Checked by:** PD

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Appendix 2: Tree Survey Schedule

Site: Eagle Brewery Wharf

Tree Survey Schedule

Survey date: 04/04/2023

Surveyor: N.Hollett



Tree ref.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Preliminary management recommendation	Category grading	Root Protection Area (m ²)	Root Protection Radius (m)
T1	Silver birch (<i>Betula pendula</i>)	11	170	N: 2 E: 2 S: 2 W: 2	Crown: 1 average Branch: 3 average	Semi mature	Good	Good	Previously crown lifted. No major visible defects.	No action required on date of survey.	B1+2	13.1	2.0
T2	Silver birch (<i>Betula pendula</i>)	10	200	N: 3 E: 4 S: 3 W: 3	Crown: 1 north Branch: 2 north	Semi mature	Good	Good	Pruned to the south for building. Minor deadwood within crown. Historic wound at base with heartwood visible and good wound wood present.	No action required on date of survey.	C1+2	18.1	2.4
T3	Silver birch (<i>Betula pendula</i>)	10	140	N: 2 E: 2 S: 2 W: 1	Crown: 1 east Branch: 3 south	Semi mature	Good	Good	Lower limbs previously removed. Minor east lean due to suppression from T8.	No action required on date of survey.	C1+2	8.9	1.7
T4	Silver birch (<i>Betula pendula</i>)	11	210	N: 3 E: 3 S: 3 W: 3	Crown: 2 east Branch: 2 north	Semi mature	Good	Good	Crown over hanging light column. No major visible defects.	No action required on date of survey.	B1+2	20.0	2.5
T5	Silver birch (<i>Betula pendula</i>)	12	220	N: 4 E: 4 S: 3 W: 4	Crown: 2 north Branch: 2 north	Semi mature	Good	Fair	Pruned to the south for building. Crossing and rubbing branches within crown. 0.3m wound present on the east side of the stem with stem bulge and wound wood present.	No action required on date of survey.	C1+2	21.9	2.6
T6	River birch (<i>Betula nigra</i>)	8	170	N: 2 E: 1 S: 2 W: 2	Crown: 2 average Branch: 2 south	Semi mature	Good	Good	Previously crown lifted with dense crown. No major visible defects.	No action required on date of survey.	C1+2	13.1	2.0

Site: Eagle Brewery Wharf

Tree Survey Schedule



Survey date: 04/04/2023

Surveyor: N.Hollett

Tree ref.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Preliminary management recommendation	Category grading	Root Protection Area (m ²)	Root Protection Radius (m)
T7	River birch (Betula nigra)	12	250	N: 4 E: 3 S: 4 W: 4	Crown: 2 average Branch: 3 average	Semi mature	Good	Fair	Previously lifted with dense crown. Bark around base has been stripped up to 0.6m possible by animals gnawing on stem.	No action required on date of survey.	C1+2	28.3	3.0
T8	River birch (Betula nigra)	11	260	N: 4 E: 4 S: 4 W: 3	Crown: 2 average Branch: 3 north	Semi mature	Good	Good	Lower limbs previously removed with poor finishing cuts.	No action required on date of survey.	B1+2	30.6	3.1
G9	Mixed shrubs	1-2 average	Under 75 average	1-2 average	0 average	Semi mature	Good	Good	Holly dominant mixed group maintained to 1.5m.	No action required on date of survey.	C2	2.5 average	0.9 average
T10	Whitebeam (Sorbus aria)	8	220, 220, 100, 70	N: 2 E: 4 S: 4 W: 4	Crown: 2 south Branch: 1 average	Semi mature	Good	Fair	Multistem from 1m. Previously crown lifted and pruned north for building. Minor cavity and decay present in the southern union. Located within a 2ft raised brick planter. Lights and cables within crown.	No action required on date of survey.	C1+2	50.5	4.0 amended on the tree constraints plan.
T11	Sycamore (Acer pseudoplatanus)	16	620	N: 3 E: 2 S: 3 W: 3	Crown: N/A Branch: 4 average	Mature	N/A	Fair	Multistem from 4m. Heavily pollarded with no twigs or foliage present.	No action required on date of survey.	B1+2	173.9	7.4 amended on tree constraints plan.

Appendix 3: Cascade Chart for Tree Quality Assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan		
Trees unsuitable for retention				
<p>Category U</p> <p>Those in such a condition that they cannot realistically be retained as living trees in the context of their current land use for longer than 10 years.</p>	<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 the removal of other category U trees (e.g. 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, or very low quality trees suppressing adjacent trees of better quality. <p>Note Category U trees can have existing or potential conservation value which it might be desirable to preserve.</p>	Red		
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
<p>Category A</p> <p>Trees of high quality with an estimated remaining life expectancy of at least 40 years.</p>	<p>Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).</p>	<p>Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.</p>	<p>Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood--pasture).</p>	Green
<p>Category B</p> <p>Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.</p>	<p>Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remedial defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation.</p>	<p>Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.</p>	<p>Trees with material conservation or other cultural value.</p>	Blue
<p>Category C</p> <p>Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.</p>	<p>Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.</p>	<p>Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits.</p>	<p>Trees with no material conservation or other cultural value.</p>	Grey

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