

WHITLEY WOOD FIRE STATION

Arboricultural Method Statement



JSL4925_771
Arboricultural Method Statement
-
02 April 2024

TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

Quality Management

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1 INTRODUCTION

- 1.1 This Tree Survey and Arboricultural Method Statement (AMS) has been prepared by RPS on behalf of Royal Berkshire Fire & Rescue Service in respect of the proposed development at the Whitely Wood Fire Station, 270 Whitley Wood Rd, Reading, RG2 8FT.
- 1.2 A tree survey of the application area was carried out by RPS on the 19th of July 2023 in accordance with the requirements of BS5837:2012. Refer to the Tree Constraints Plan in Appendix A.
- 1.3 This report is preceded and informed by an Arboricultural Impact Assessment (JSL4925_770).
- 1.4 This report has been prepared in broad accordance with the requirements set out in BS5837:2010 'Trees in relation to design, demolition and construction – Recommendations.'¹
- 1.5 The purpose of this report is to:
- Assess and quantify the arboricultural impact of the proposed development.
 - Provide arboricultural information and advice in relation to the protection of trees throughout the development of the site.
 - Provide a Tree Protection and Removal Plan to detail the proposed protective measures to be taken in respect of the trees during development of the site.
- 1.6 The Tree Protection and Removal Plan included in Appendix B identifies the following:
- Trees to be retained
 - Trees to be removed
 - Alignment and design of protective fence
 - Root Protection Area (RPA) of trees

Report Implementation

- 1.7 The Tree Protection and Removal Plan shall be made available to all relevant site operatives prior to and throughout the construction process, so they understand the scope and importance of the tree protection measures.
- 1.8 To minimise the potential for harm to occur to retained trees all works shall be carried out with regard to the Tree Protection Measures and construction techniques detailed within this report.
- 1.9 In particular the establishment of a Construction Exclusion Zone (CEZ) by erection of Tree Protection Fencing will minimise the potential for harm to occur to retained trees.

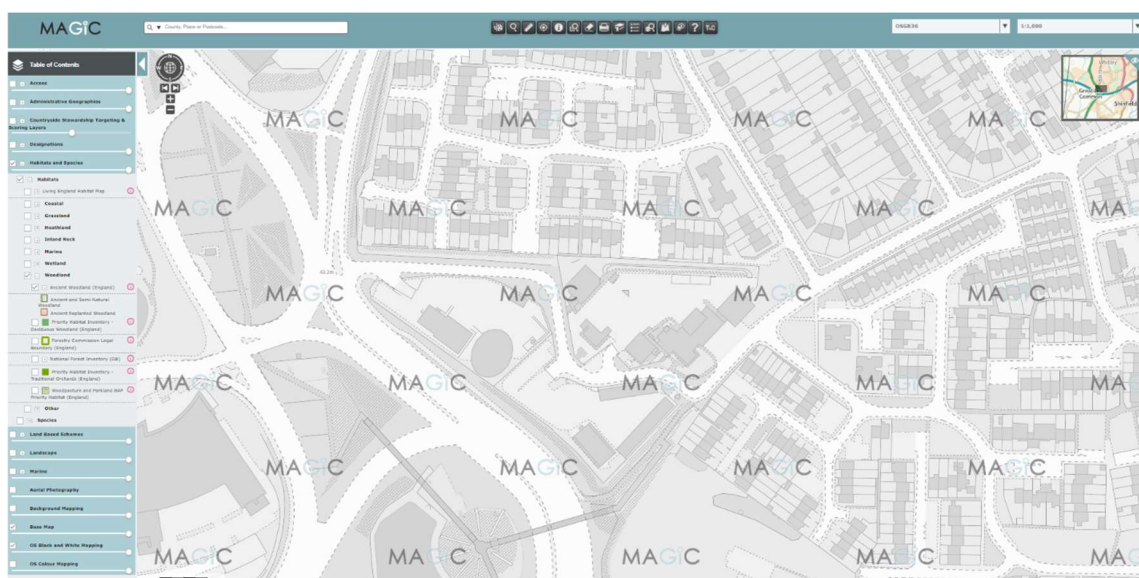
¹ British Standards Institute. British Standard (BS5837) Trees in Relation to Design, Demolition and Construction - Recommendations. 2012.

2 SITE LOCATION

- 2.1 The survey site is located on a land within the grounds of Whitley Wood Fire Station and Training Centre, 270 Whitley Wood Rd, Reading, RG2 8FT.
- 2.2 The land is roughly centred on OS grid reference SU71766899. The Local Planning Authority (LPA) governing this site is Reading Borough Council.
- 2.3 The soilscape of the area in which the survey site is situated typically consists of 'loamy soils with natural high ground water².

Tree Preservation Orders\ Conservation Areas

- 2.4 A desktop investigation using the Reading Borough Council website³ confirmed that the survey site is not located within a Conservation Area and that no trees on site are protected by a TPO.
- 2.5 A desktop investigation using the Magic Map Application² confirmed that there is no Ancient Woodland on site, as shown below:



² <https://magic.defra.gov.uk/MagicMap.aspx>

³ <https://www.reading.gov.uk/planning-and-building-control/trees-hedges-and-environment/trees/>

3 SURVEY & IMPACT ASSESSMENT SUMMERY

Survey Methodology

- 3.1 This report was completed by Ross Carthew, FdSc Arb & Tree Care, TechArborA, and reviewed by David Cox, a professional member of the Arboricultural Association and Chartered Landscape Architect of RPS Group.
- 3.2 The report and survey were carried out in general accordance with the requirements set out in BS 5837:2012 "Trees in Relation to Design, Demolition and Construction – Recommendations".
- 3.3 The tree survey involved a visual inspection from the ground of individual specimens and groups of trees in order to record their amenity value, management recommendations and dimensions. Where observed, the general condition of all the trees has been noted. The survey does not constitute a full arboricultural condition assessment involving the detailed inspection of trees in relation to their structural condition, decay, and any other physical and pathogenic defects.
- 3.4 The locations of the trees are based upon a topographic survey produced by Warner Surveys in 2017.
- 3.5 The survey assesses individual trees and groups of trees for quality and benefits within the context of proposed development. The quality of each tree or group of trees has been recorded by allocating it to one of four categories as described in table 1. These categories have been differentiated in Appendix A & B by colour.
- 3.6 The survey information was recorded on the attached schedule (Table 2) in general accordance with the guidance contained within Section 4 of BS 5837:2012 "Trees in Relation to Design, Demolition and Construction - Recommendations".
- 3.7 See Table 1 for a breakdown of the information recorded during the survey.

Limitations

- 3.8 The findings of this survey are not valid following adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events.
- 3.9 Trees were not climbed or inspected below ground level and inaccessible trees will have best estimates made about the location, physical dimensions and characteristics. Where direct access to trees was difficult a '#' denotes this within the Tree Survey Schedule (Table 2).
- 3.10 Trees and woody vegetation were not assessed for their potential impact upon future construction issues such as foundation designs (re: NHBC chapter 4.2)⁴. Whilst this report may assist in assessing likely future impacts, it should not be classed as a comprehensive vegetation survey in relation to impact upon future designs.
- 3.11 It is recommended that further arboricultural assessments be undertaken in order to assess the full health and safety of all trees which may possess structural or pathogenic conditions.

⁴ NHBC. 'Chapter 4.2- Building Near Trees'. NHBC Standards 2016. 2016.

Survey Findings

- 3.12 During the survey 17 individual trees were surveyed. Many of these trees were located around the peripheries of the site.
- 3.13 Locally, the context is urban, with a principally residential and major infrastructural setting.
- 3.14 See Tree Survey Schedule JSL4925_750 (Table 1) & Tree Constraints Plan JSL4925_700 (Appendix A) for full survey details.

Brief Description of Proposed Development

- 3.15 This document supports the proposed development, consisting of:
 - Demolition of existing training centre and portacabin style buildings
 - Construction of new training centre building
 - New car-parking spaces
 - Associated works and landscaping.

Proposed Tree Removal and Works

- 3.16 8 trees will require removal in order to facilitate the proposed layout, shown on the Tree Removal & Protection Plan in Appendix B with a Red hatch:
 - **Catagory B:** (T3)
 - **Catagory C:** (T1 x 4, T6 & T10)
 - **Catagory U:** (T4)
- 3.17 The canopy of T8 will also require minor crown reduction of the southern crown by 1-2m in order to allow sufficient clearance from the proposed development.
- 3.18 It may also be necessary to lift the crowns of any trees that overhang the Tree Protection Fencing within the site in order to lift them clear of works. This should be assessed on site as and when necessary and any pruning carried out to the specification laid out in section 4. of this report.

Root Protection Areas

- 3.19 Root Protection Areas for each surveyed tree were determined in accordance with BS5837:2012 and plotted on the Tree Constrains Plan and Tree Protection Plan (Appendix A & B) as a circle, with the tree located centrally, extending to encompass the area of ground, and thus the rootable soil volume, required for protection.
- 3.20 After reviewing the RPAs on site, it can be seen that the proposed development will take place outside the RPA of all trees to be retained. With only landscaping works proposed within close proximity of any retained trees.

4 ARBORICULTURAL METHOD STATEMENT

Physical Tree Protection Measures

Construction Exclusion Zone

- 4.1 The protective fence line defines the Construction Exclusion Zone (CEZ), and the fencing shall not be moved or taken down at any time. Within the Construction Exclusion Zone there must be:
- No mechanical digging or scraping,
 - No alteration to existing ground levels including soil stripping,
 - No earthworks,
 - No handling or discharge of any chemical substance, concrete washings or of any fuels.
 - No vehicular or pedestrian access and the storage of any materials is prohibited within the CEZ.
 - No materials that may contaminate the soil such as concrete mixings, diesel oil and vehicle washings shall be discharged within 10m of the stem of any tree and,
 - No fires shall be lit within 10m of the maximum extent of a trees crown.
- 4.2 Furthermore, vehicular or pedestrian access and the storage of any materials is prohibited within the Construction Exclusion Zone.

Tree Protection Fencing

- 4.3 Prior to the commencement of any demolition works or removal of hard surfaces, the protective fencing is to be erected in accordance with the locations set out in the Tree Protection & Removal Plan (see Appendix B). Tree protection fencing demarks an area of construction exclusion, with its positions determined using the RPAs of recorded trees, in this way, tree protection fencing positions must be considered sacrosanct.
- 4.4 Once the protective fencing is in place, it must remain in place throughout the course of the development until the completion of development, other than to facilitate landscape works, see above.

Heras 151 steadfast system

- 4.5 Either the Heras 151 steadfast system (for high and mid value trees / areas with higher activity anticipated), or a similar and equivalent system, will be used to create the CEZ. The Heras 151 steadfast system is a series of linked fence panels supported by concrete block feet. This is to be used around the majority of retained vegetation within the works area and is denoted by a Magenta dashed line on the Tree Protection & Removal Plan (Appendix B).
- 4.6 The panels will be secured to each other using at least two Heraslock anti-tamper couplers, installed so that they can only be removed from inside the fence, and diagonal bracing of the structure would be achieved through the use of the Heras steadfast strut secured using ground pins and/ or block trays so that it is compliant with the guidance detailed within BS5387:2012 at paragraph 6.2.2.3.

- 4.7 Care will be taken in the installation to ensure no contact of ground pins is made with major roots over 25mm diameter. For further details see BS5837:2012 Figure 3, attached at Appendix C of this document and included on the Tree Protection & Removal Plan (Appendix B).
- 4.8 Signs detailing the purpose of the protective fencing and visual barriers shall be attached to the fencing/ barriers at 10m intervals. Such signs will be weatherproof and shall be substantially in the form of the specimen provided at Appendix D. Signs must be replaced as necessary should they be removed or become illegible.
- 4.9 Following erection of the protective fencing and prior to commencement of the demolition phase, an inspection of the site by either the Council's Tree Officer and/or the Arboricultural Consultant is to be arranged to confirm that fencing has been installed in accordance with the Tree Protection & Removal Plan (Appendix B).

Ground Protection

- 4.10 Generally speaking, any wheeled or tracked machinery is not to enter the RPA of retained trees during instances when the fencing has been installed. However, where access within the RPA on unmade ground is unavoidable, wheeled or tracked machinery not exceeding 2 tonnes is only to enter once ground protection is laid down as a working platform. Ground protection is to consist of proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane in accordance with BS5837:2012.
- 4.11 For pedestrian movements only, 100mm woodchip laid on top of a geotextile membrane with scaffold boards laid on top will suffice.

Tree removal and Pruning works

Standard of Work

- 4.12 All tree works shall be carried out in accordance with BS3998:2010 and latest arboricultural best practice.
- 4.13 All tree work shall be carried out by suitably qualified, competent and insured arboricultural contractors in accordance with Arboricultural Association Standard Conditions of Contract and Specifications for Tree Works (2008) Edition and BS 3998:2010 Tree Work.
- 4.14 All green and woody waste generated by the tree works shall be removed from site and disposed of in an environmentally sustainable manner, or re-utilised within the site in a bio-secure manner.
- 4.15 When a branch is removed at its point of attachment, injury of the wood and bark of the parent stem or branch above the cut shall be avoided. If a branch collar is visible, the final cut shall be just outside it and care shall be taken to avoid tearing retained wood and bark when the cut is made. Preliminary cuts shall be made, if necessary, so as to remove weight, before a final cut is made. Care shall be taken to prevent falling branches from harming other parts of the tree (including its roots), its surroundings, people or property. Heavy branches shall be removed in sections and, where necessary, shall be lowered with ropes.
- 4.16 Prior to the commencement of any tree works an appropriate risk assessment shall be produced to describe the measures required to fulfil the statutory safety obligations. It shall aim to identify and prioritise the necessary control measures and precautions.

- 4.17 Following the works, it is recommended that the trees are monitored on a regular basis to ensure their ongoing vitality and health. These inspections shall be completed by a suitably qualified and experienced person.

Timing of Works

- 4.18 Tree works will be completed prior to the erection of tree protective fencing. No heavy vehicles or machinery are to be brought inside the CEZ as shown on the Tree Protection & Removal Plan (Appendix B) during tree works.
- 4.19 Tree surgery works requiring pruning of trees scheduled for retention are to be completed with regards to the phenological cycle of trees, i.e. when energy reserves are highest, generally observed to be late winter (before bud-burst) or mid-summer.
- 4.20 All works shall be timed to have regard to the phenological cycles of protected species that are associated with trees; notably birds and bats.
- 4.21 Nesting birds are protected by law and any removal / tree works should not be carried out during the bird nesting season (March-August inclusive). Should any vegetation be outlined for removal during this period, then an ecological inspection would be required to check that no nesting birds are present. Should checks reveal nesting birds the vegetation must remain until September or until an ecologist has certified that the fledglings have left the nest. A visual inspection for bats shall also be carried on mature / ivy clad trees prior to commencing operations.

Breaking Out Existing Hardstanding

- 4.22 Within the RPAs of T5, T7, T8 & T9 existing hardstanding is to be removed and the area restored to soft landscape. This work should be minimally invasive and, if the methodology below is followed, the RPA incursion should result in an overall gain in rootable soil for the tree and can be seen as a positive impact.
- 4.23 In order to be able to carry out these works, the tree protection fencing will need to be set back just outside the existing hardstanding, for the duration of the breaking out process, and will require reinstating as soon as this work is completed.
- 4.24 Hardstanding shall be manually broken up and removed from the RPA using appropriate hand tools e.g. pneumatic breaker, crow-bar, sledgehammer, pick, mattock, shovel, spade, trowel and wheelbarrow.
- 4.25 Where possible, the use of machines with a long reach should be favoured, if they can work from outside of the RPA's or from within the RPA's when supported by suitable ground protection.
- 4.26 Removal of the surface shall occur in strips working from the undisturbed surface, working in a retreating manner away from the retained trees.
- 4.27 Below ground level structures shall be kept in place where possible to reduce the likelihood of root disturbance, this includes redundant services.
- 4.28 No reduction in levels of the underlying soil surface shall occur with retained trees RPA's.

Root Pruning

- 4.29 Any roots less than 25mm in diameter encountered during the excavation within an RPA shall be cut cleanly with a sharp pruning saw or secateurs. Similarly, any clumps of roots under 25mm shall be cut cleanly with a sharp pruning saw or secateurs.
- 4.30 Clumps of fibrous roots or individual roots over 25mm diameter shall, where flexible enough to do so, shall be retained and diverted back into virgin soil where possible.
- 4.31 Where roots above 25mm in diameter are uncovered, and are not flexible enough to divert, the Arboricultural Consultant shall make a decision as to whether the roots can be cut and/or the tree needs to be removed. Any tree removals outside of those already highlighted within this report shall first be considered by the LPA.

General Tree Protection Methodologies

Existing Hard Surface Removal

- 4.32 Where RPAs may extend beneath existing hard surfaces, root growth has likely been limited due to historic compaction of these areas, both through the use of rollers in the installation of the surfaces, and through cumulative pedestrian and site maintenance traffic. It is therefore usually acceptable to use mini excavators not exceeding 2 tonnes to 'trim' off old wearing courses, followed by re-surfacing. Existing sub-base is to remain in place and be re-used or covered over wherever possible.

Soil Compaction & Remediation Measures

- 4.1 Every reasonable measure shall be taken to ensure that the soil within and around the RPA's is not compacted.
- 4.2 If, however, any incidence of compaction does occur within the vicinity of trees then it shall be reported to the appointed project Arboricultural Consultant to review the appropriate remediation measures to be taken.
- 4.3 Dependant on the level of compaction certain remediation measures may be undertaken, such as
- The introduction of well composted wood mulch to the compacted area to encourage the reintroduction of organic matter into the soil sub-base and improve soil structure.
 - Sub-soil aeration using compressed air.

Root Pruning outside of RPAs

- 4.4 It is possible, that roots of retained trees may extend further than their RPAs. Where roots are encountered, those smaller than 25mm diameter may be pruned back using a sharp and clean cutting tool such as secateurs or handsaws. Roots larger than 25mm should only be cut having first consulted the project Arborist and/or the Local Tree Officer as the roots maybe essential to the tree's health and stability.

Services

- 4.5 Service plans are not currently available and therefore their impact has not yet been considered.
- 4.6 When detailed plans become available the layouts and proposed works will be considered in terms of their possible impact to retained and proposed trees.
- 4.7 Any new services should avoid the RPAs of any retained tree. Where it is unavoidable, then the route of the services must be designed by an Engineer in consultation with the appointed project Arboricultural Consultant.
- 4.8 Where encroachment into RPAs is unavoidable, certain measures should be employed to avoid damage to the tree's structural roots such as;
- Hand excavation and protection of large roots throughout installation of service lines;
 - The use of compressed air to displace soil yet retain roots;
 - Solutions other than traditional trenches such as impact moiling, pipe ramming and micro tunnelling.
- 4.9 Any proposed tree pits that may conflict services, shall be designed having consulted the electrical engineer and drainage engineer to ensure that suitable tree pits design is achievable in the desired location.
- 4.10 Further advice can be found in NJUG Volume 4- "Guidance for the planning, installation and maintenance of utility services in proximity of trees"⁵.

Site Operation Protocols

Induction of site personnel

- 4.11 Site contractors are to be inducted prior to site works taking place so as to understand the scope and importance of tree protection measures.

Site Compounds and Materials Stores

- 4.12 Activities related to the establishment of a temporary site compound have the potential to impact upon retained trees by various means. In particular the storage and mixing of chemicals and materials such as concrete can have a damaging effect on tree health if precautions are not taken.
- 4.13 To prevent harm occurring to trees provision for materials storage, site offices, deliveries and other related activities shall be made available in areas away from retained trees.
- 4.14 Spill kits will be available on site in the event of any spillages and drip trays will be used where applicable to minimise the risk of accidental spillage.

⁵ N.J.U.G. 4: Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. 2007

Monitoring

- 4.15 Following erection of the protective fencing and prior to commencement of the construction phase, an inspection of the site by either the Council's Tree Officer or the Arboricultural Consultant should be arranged to confirm fencing has been installed in accordance with the Tree Protection and Removal Plan (Appendix B).
- 4.16 It is also recommended that further monitoring visits be carried out following commencement of the works on site, ideally on at least a monthly basis to ensure ongoing functionality of the CEZ and to check on tree condition.

Reporting

- 4.17 Should any arboricultural issues become apparent during the works the site manager should immediately contact the Arboricultural Consultant or the Council's Tree Officer for advice upon how to proceed.

TABLES & APPENDICES

Table 1**Tree characteristics recorded during survey**

Tree Ref No:	Sequential reference number of trees or groups of trees. Avenues, woodlands and hedgerows were also recorded on the tree constraints plan. # - denotes inaccessible trees (best estimates are made about the location, physical dimensions and characteristics.)				
Species	Species listed by common name, with scientific names (<i>italic lettering</i>).				
Height (m)	Estimated height of canopy to nearest metre.				
Branch Spread	branch spread, taken as a minimum at the four cardinal points, to derive an accurate representation of the crown				
Stem diameter @ 1.5 m (m)	Estimated diameter of trunk at 1.5 m above ground level in metres unless otherwise indicated, multi-stemmed trees being measured in accordance with Annex C: BS5837				
Existing height above ground level	To inform on ground clearance, crown/stem ratio and shading the estimated height of the first significant branch and direction of growth and canopy above ground level.				
Stem No.	Number of stems (if necessary) of individual tree.				
Life Stage	Expressed as:-	Y SM EM M	(Young) (Semi-mature) (Early-mature) (Mature)	OM V D	(Over-mature) (Veteran) (Dead)
Physical Condition	Apparent condition expressed as the following categories, based upon a brief visual inspection from the ground only:-				Good Fair Poor Dead
Comments / Management Recommendations	General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations and potential for wildlife habitats (not exhaustive).				
Estimated remaining contribution (years)	Estimated remaining contribution, in years (<10, 10+,20+,40+)				
Tree Quality Assessment Value: <u>Category</u>	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-	A (Trees/Vegetation of high quality and value) B (Vegetation of moderate quality and value) C (Trees/Vegetation of low quality and value) 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)			
	* Category U trees can have existing or potential conservation value which might be desirable to preserve.				
Tree Quality Assessment Value: <u>Sub - Category</u>	Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-	1 (Trees with mainly <i>arboricultural</i> value) 2 (Trees with mainly <i>landscape</i> value) 3 (Trees with mainly <i>cultural / conservation</i> value)			



Table 2

Tree Survey Schedule JSL4925_750

Tree Survey Schedule

Site Whiteley Wood Fire Station, Reading
Project schedule ref: JSL4925_750
Drawing reference: JSL4925_700
Survey date: 20/07/2023

Surveyor: David Cox
Status:
Revision: .
Notes: The location of some trees have been estimated.



Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural condition	Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W										
1	Tilia x euchlora, Fraxinus excelsior Crimean Lime, Common Ash	Ave 4	2.0	2.0	2.0	2.0	Ave 0.15	1.00	1.80	-	Y	Good	Good	Various young saplings. Even aged plantings.	+ 20	C2
2#	Acer campestre Field Maple	6.0	4.0	4.0	3.0	4.0	Ave 0.20	5.00	N/a	-	EM	Good	Good	Off site, beyond wall. Multistemmed. Set in narrow alley, adjacent fence. Ivy.	+ 30	B2
3#	Sorbus aria Whitebeam	5.0	3.0	4.0	3.0	2.0	0.35	1.00	2.00	-	M	Good	Good	Set in paving, damaged paved surface with root activity.	+ 30	B2
4	Fraxinus excelsior Common Ash	6.0	2.0	4.0	4.0	4.0	0.25	1.00	2.00	S	EM	Fair	Fair	Canopy decline, 50% live. Unlikely to survive. Ash Dieback.	<10	U
5	Fraxinus excelsior Common Ash	10.0	7.0	6.0	4.0	4.0	0.40	1.00	3.00	S	M	Good	Good	In current good vigour, 95% canopy. Low pruning wounds.	+ 10	B2
6#	Sorbus aria Whitebeam	3.0	1.0	2.0	1.0	1.0	0.15	1.00	2.00	-	Y	Fair/God	Good	Young planting, various pruning scars.	+ 10	C2
7	Acer platanoides Norway Maple	3.0	3.0	1.0	1.0	1.0	0.15	1.00	1.50	E	Y	Fair	Good	Lacks central leader, biased to north.	+ 10	C2
8	Tilia x euchlora Crimean lime	8.0	5.0	5.0	4.0	4.0	0.20 0.40	2.00	1.50	-	EM	Good/Fair	Good	Few tight unions, good form nonetheless.	+ 30	B2
9	x3 Prunus avium Wild Cherry	4.0	2.0	2.0	2.0	2.0	Ave 0.10	Ave4	1.00	-	Y	Fair	Fair	Trio of unremarkable Cherries, multi-stem. Suppressed.	+ 10	C2
10	Fraxinus excelsior Common Ash	8.0	2.0	3.0	3.0	3.0	0.37	1.00	4.00	E	EM	Fair	Fair/Good	Set adjacent fence, some minor canopy decline. Ivy.	+ 10	C2
11	Fraxinus excelsior Common Ash	9.0	5.0	3.0	4.0	5.0	0.35	1.00	+4	E	EM	Fair	Fair/Good	Set adjacent fence, some minor canopy decline. Ivy.	+ 10	C2
12#	x3 Sorbus aria Whitebeam	3.0	1.0	1.0	1.0	1.0	0.15	1.00	2.00	-	Y	Fair	Fair	Trio of young, suppressed saplings.	+ 10	C2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated tree. * - Indicates off site tree.

Tree Survey Schedule

Site Whiteley Wood Fire Station, Reading
Project schedule ref: JSL4925_750
Drawing reference: JSL4925_700
Survey date: 20/07/2023

Surveyor: David Cox
Status:
Revision: .
Notes: The location of some trees have been estimated.



Ref. no.	Species	Height (m)	Crown spread (m)				Stem dia. (m)	Stem no. at 1.5m	Height of crown clearance (m)	Dir/ height	Age class	Structural condition	Physiological condition	General observations Management recommendations	Estimated remaining contribution (years)	Tree Quality Category (BS5837)
			N	E	S	W										
13#	Carpinus betulus Hornbeam	4.0	2.0	1.0	2.0	2.0	Est 0.20	1.00	-	-	Y	Good	Good	Off site Hornbeam, suppressed to the east.	+ 10	C2
14#	Acer pseudoplatanus Sycamore	4.0	2.0	2.0	3.0	3.0	Ave 0.10	3.00	2.00	E	Y	Good	Good	Self set, in fence; off site.	+ 10	C2
15#	Acer pseudoplatanus Sycamore	5.0	3.0	3.0	3.0	3.0	Ave 0.15	2.00	2.50	E	Y	Good	Good	Self set, in fence; off site, heavy in mast.	+ 10	C2
16	Carpinus betulus Hornbeam	7.0	3.0	3.0	3.0	3.0	0.25	1.00	2.00	-	Y	God	God	Attractive tree, good potential.	+ 30	B2
17#	Betula pendula Silver Birch	10.0	6.0	6.0	5.0	4.0	0.20 0.30	2.00	2.50	N	EM	Good	Good	Off site, attractive twin stem Birch. Some Ivy.	+ 30	B2

Note: This survey is based on a brief visual inspection from the ground.
It is not intended as a full arboricultural inspection.
- Indicates estimated tree. * - Indicates off site tree.

Appendix A

Tree Constraints Plan JSL4925_700



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Notes

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Key

Survey boundary.

Tree with numbered reference.
Canopy spread and BS5837:2012 tree quality category as shown below.

Tree (location estimated) with numbered reference.
Canopy spread and BS5837:2012 tree quality category.

BS 5837:2012 Tree Quality Categories - Table 1

Category A - High quality

Category B - Moderate quality

Category C - Low quality

Category U - Unsuitable for retention

Root protection area (RPA)
Calculated in accordance with Section 4.6 - BS5837:2012

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon topographic survey produced by Warner Surveys in 2017

Scale Bar

0m

10m

25m

Rev	Description	By	CB	Date

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EASY

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Royal Berkshire Fire &
Rescue Service

Project

Whitley Wood Fire Station
Reading

Title

Tree Survey

Status
Information

Drawn By
SH

PM/Checked by
DC

Job Ref
JSL4925

Scale @ A2
1:500

Date Created
July 2023

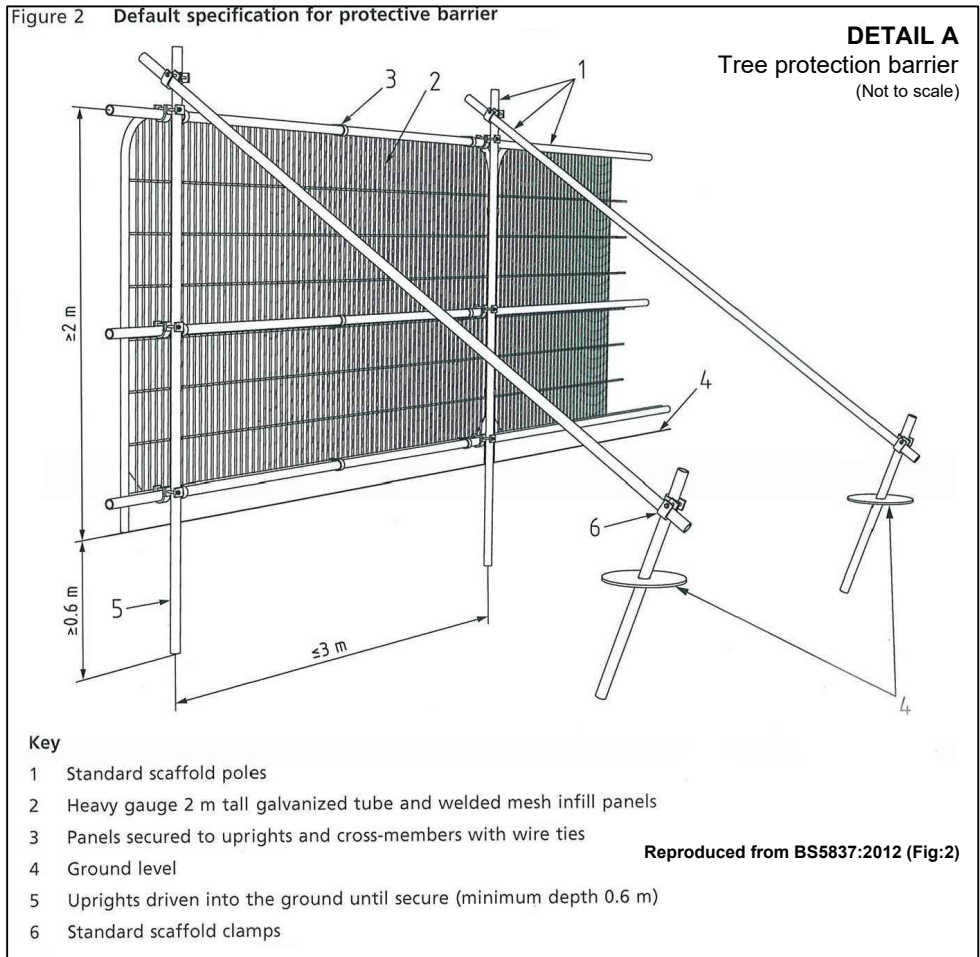
RPS Drawing / Figure Number
700

Rev
-

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Appendix B

Tree Protection Plan JSL4925_701



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Key

- Survey boundary.
- Tree with numbered reference.
Canopy spread and BS5837:2012 tree quality category as shown below.
- Tree (location estimated) with numbered reference.
Canopy spread and BS5837:2012 tree quality category.

BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

Root protection area (RPA)
Calculated in accordance with Section 4.6 - BS5837:2012

Tree to be removed with numbered reference. Canopy spread and BS5837:2012 tree quality category.

Temporary protective fencing in accordance with Section 6.2 - BS5837:2012. See inset details for example barriers.

Existing hard surfaced area to be restored to soft landscape. Breaking out to be completed using hand-held machinery. Avoid removing redundant services, where safe, retain within the existing soils.

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon topographic survey produced by Warner Surveys in 2017.
- Pedestrian/ vehicular emergency access routes to be maintained at all times.
- All protective fencing to be completed and approved by LPA / CA prior to commencement of any site works.
- All works to conform with requirements of:
 - BS 3998:2010 - Tree Works
 - BS 5837:2012 - Trees in relation to design, demolition and construction
 - NUJG 4 - Guidelines for Utility Services in Proximity to Trees
 - APN 12 - 'Through the Trees to Development'

Rev	Description	By	CB	Date

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Client **Royal berkshire Fire & Rescue Service**

Project **Whitley Wood Fire Station Reading**

Title **Tree Removal & Protection Plan**

Status **Information** Drawn By **SH** PM/Checked by **DC**

Job Ref **JSL4925** Scale @ A2 **1:500** Date Created **July 2023**

RPS Drawing / Figure Number **701** Rev **-**

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Appendix C

Example Tree Protection Barriers (BS5837:2012 Fig 2 & 3)

Figure 2 Default specification for protective barrier

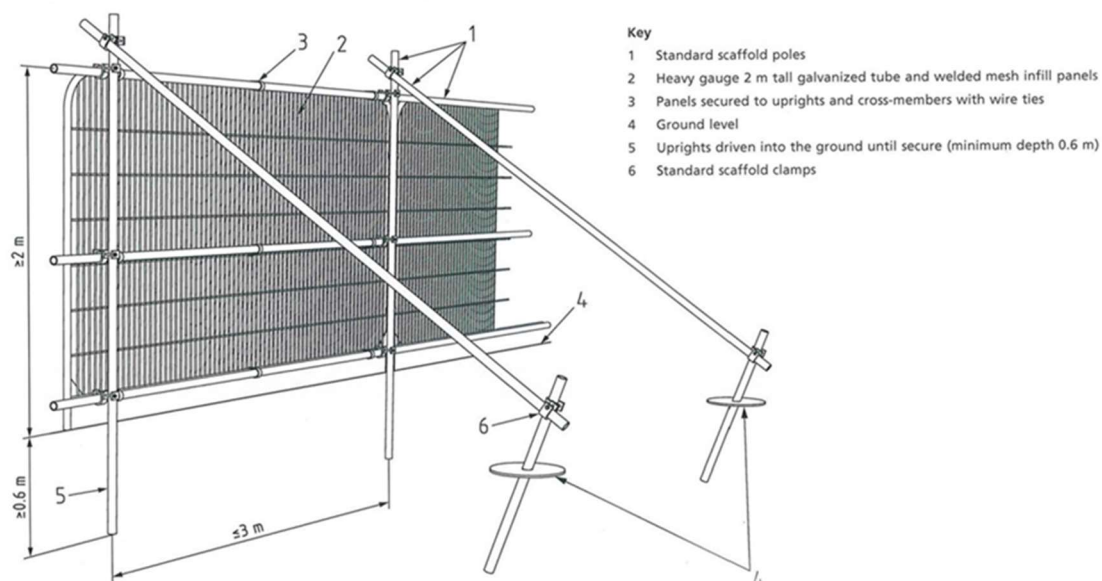
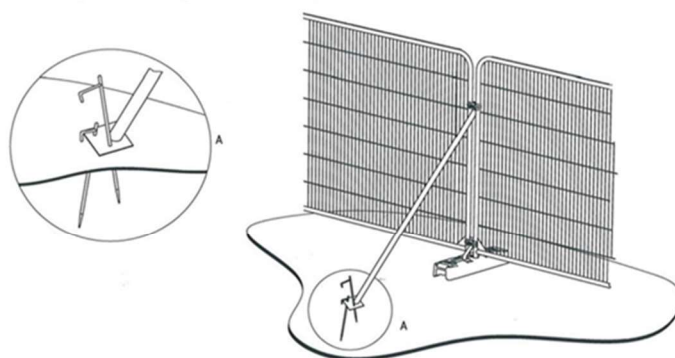
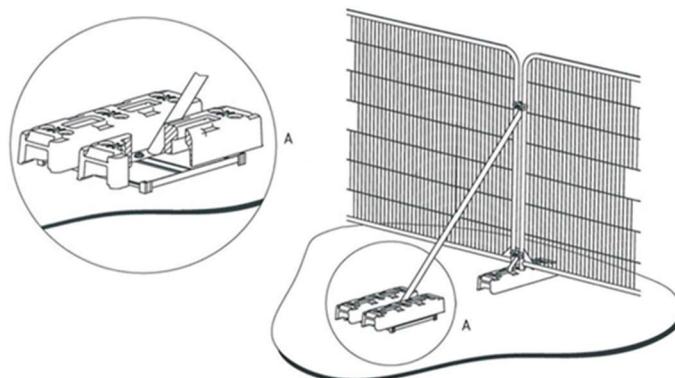


Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Appendix D

Construction Exclusion Zone (CEZ) Sign



Appendix E

Arboricultural Glossary

Age-class - A general classification of the tree into either - young, semi-mature, early mature, mature, over-mature, or veteran.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Arboreal - In connection with, or in relation to, trees.

Arboriculturist – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

Arboricultural Implications Assessment (AIA) – 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 (AMS) – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AMS is likely to include details of an on-site tree protection monitoring regime.

Asymmetric crown- Crowns that have a morphological bias in a particular direction. This can give the tree an aesthetically unfavourable appearance, but can also subject the tree to uneven wind- loading forces and potentially result in failure.

Basal – Referring to the bottom part of a tree's stem.

Basifugal mortality – A natural process seen in trees in an advanced life stage whereby the trees extremities die back and the inner crown expresses new growth, in order to conserve energy reserves.

Bifurcated - A growth characteristic, where two stems of similar size grow from the same point. Can create an inherent weakness.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Brown Rot- Decay caused by certain species of fungus which results in the affected wood becoming brittle and liable to suddenly 'break out', especially if in key structural areas.

Buttress flares – Extensions of the basal stem of a tree that provide additional structural support. See reaction wood.

Bifurcated- A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

Cable braces – Cable braces used to support the crown of a tree, reduce impacts caused by wind- throw oscillation.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Central leader- See apical dominance.

Chalara ash dieback- A disease affecting ash trees caused by the fungus *Hymenoscyphus fraxineus*. Usually fatal, the disease causes leaf loss and crown dieback in infected trees. It was first confirmed in Britain in 2012.

Chlorosis- yellowing of leaves which can be caused by a range of factors, often an indicator of nutrient deficiency.

Compaction - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange, and inhibits root growth.

Companion shelter- Shelter provided by neighbouring trees in groups to one another, factors such as wind throw are reduced due to supporting branches and interlocking root systems. Removing individual trees on the peripheries of such groups can expose neighbouring trees to environmental factors they have not previously been subjected to and can lead to individual failure.

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

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

Condition – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

Conservation dead- wooding- Removal of deadwood using 'coronet cuts' that mimic the way a branch would naturally break off, maximising deadwood habitat availability for invertebrates.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Form - A general assessment of the shape and position of the tree within its environment.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure.

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

Invertebrate tower – Pollarding of a (usually dead) tree to a safe height that leaves part of the main stem as a deadwood habitat for invertebrate species.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immovable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Phototropic growth – Growth responding to a light stimulus i.e. the sun. This can influence the form of a tree, particularly where other factors e.g. buildings or other trees, affect the amount/ direction light is received.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

Rhizosphere - The rhizosphere is the narrow region of soil that is directly influenced by root secretions and associated soil microorganisms. In particular, mycorrhizal fungi form a symbiotic relationship with trees and assist in the assimilation of phosphates essential to the trees health.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

Root Protection Area (RPA) – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m².

Scaffold limbs - The main structural branches within the crown.

Tree protection plan – scale drawing prepared by an arboriculturist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

U.L.E – ‘Useful Life Expectancy’ is an estimate based on currently known factors of the possible remaining life of the tree as an asset. AKA ‘Estimated remaining contribution’.

Veteran tree – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

White Rot - A type of decay caused by certain species of fungi which results in the affected wood becoming flexible with little compressive strength.