



# Woodlands Meed College

Arboricultural Impact Assessment

West Sussex County Council

November 2020

# Notice

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This document has 30 pages including the cover.

## Document history

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## Client signoff

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# 1. Introduction

## 1.1. Terms of reference

Atkins Limited (Atkins) has been commissioned by West Sussex County Council to undertake a tree survey in accordance with the British Standard BS 5837:2012 '*Trees in Relation to Design, Demolition and Construction – Recommendations*' in support of a planning application for the proposed Woodlands Meed College development in Burgess Hill, West Sussex.

This report is an Arboricultural Impact Assessment (AIA), focusing on the trees within and adjacent to the extents of the Site.

It reports on the impacts on the recorded trees from the current proposals and is supplemented by the production of a Tree Protection Plan (TPP), which is included within Appendix D of this report.

## 1.2. Site location

The Site is located within the grounds of the existing college, an existing educational facility with associated infrastructure. It is bound by residential properties to north, south and west, whilst to the east are further educational facilities.

## 1.3. Proposed works

The masterplan drawing number 5190243-ATK-XX-XX-DR-L-1000 showing the outline of the Scheme has been overlaid on to the TPP to determine the impacts of the proposals on the existing tree stock.

The proposed work is to demolish the existing college buildings and redevelop the college site to provide a 100-place new build college with the related facilities and the external works.

## 1.4. Scope of works

This report presents arboricultural information captured by Atkins' Associate Arboriculturist Tom Dale, BSc (Hons), Cert Arb L6 (ABC), M.Arbor.A.

The scope of works includes: the survey of trees that could be impacted by the Scheme; the preparation of an AIA; and the preparation of TPP drawings which display in graphic form the trees surveyed and the impact of the proposed works.

## 2. Methodology

### 2.1. General

This tree survey has been undertaken in accordance with BS 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*. The Standard gives recommendations and guidance on the relationship between trees and the design, demolition and construction process, setting out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

BS 5837:2012 does not set explicit parameters for measuring the sensitivity of an arboricultural resource; nor does it assess the magnitude of impact of a proposed development on trees (other than by providing a record of the number of trees that would need to be removed to facilitate the development). Rather, the British Standard provides parameters which enable the arboriculturist to assess the quality of all the trees and other arboricultural features that may be affected by the development that is proposed.

Whilst the BS categories are open to varied interpretation, the guidelines in the cascade chart of BS 5837:2012 (see insert A. 1 in Appendix A of this report) provide details on how to determine tree qualities and can be used to inform the design process to retain those trees of higher quality where possible.

### 2.2. Statutory protection

Trees may be protected through a Tree Preservation Order (TPO) or through being located within a Conservation Area. The law on TPOs is in Part VIII of the Town and Country Planning Act 1990 as amended and in the Town and Country Planning (Tree Preservation) (England) Regulations 2012.

A TPO is made by a local authority in respect of a tree(s) as the tree is considered to bring amenity value to the surrounding area. A TPO makes it an offence to cut down, uproot, lop, top, wilfully damage or wilfully destroy a protected tree without authorisation.

The local planning authority Mid Sussex District Council's online digital mapping facility (<https://www.midsussex.gov.uk>) was used to determine the presence of any TPOs or Conservation Areas within the Scheme boundary.

### 2.3. Spatial scope

The survey works focused on all trees within the Site red line boundary as shown on the landscape drawing.

This AIA is targeted at the impacts on the trees. It does not cover the subsequent impacts such tree removal would have on ecological or landscape receptors which are outlined in further submitted documentation.

The TPP (see Appendix D of this report) illustrates the trees that have been surveyed.

### 2.4. Survey

The approach to the survey involved a ground-level walked assessment by a qualified and experienced arboriculturist.

The locations of individual trees and the start and end points of groups/hedgerows were supplied, or where possible, plotted using proprietary GIS data capture software on a Trimble hand-held mobile mapper. These locations were verified using available aerial imagery and available topographical data showing tree locations.

The trees and groups were numbered sequentially from 001. Individual trees recorded were prefixed with a 'T' (e.g. T001), groups of trees with a 'G' (e.g. G002) and hedgerows with a 'H' (e.g. H003). No numbered aluminium tree tags were used for the survey.

## 2.5. Data gathering

Data were collected in accordance with BS 5837:2012, as outlined in Appendix A of this report. The purpose of the tree categorisation method applied by the arboriculturist was to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained if development is to occur.

For a tree to qualify under any given category, it should fall within the scope of that category's definition as defined in Appendix A of this report (categories U, A, B, C) and, for trees in categories A to C, it should qualify under one or more of the three subcategories (1, 2, 3). Subcategories 1, 2 and 3 are intended to reflect arboricultural and landscape qualities, and cultural values, respectively.

Trees were recorded as individual specimens, groups and hedgerows. Where trees were recorded as groups or hedgerows measurements were taken from the largest tree within the group/hedgerow. The method of measuring diameters is defined in Appendix A of this report.

This level of survey meets the requirements of BS5837:2012, which states that 'trees growing as groups should be identified and assessed as such'. The standard defines the term group as 'trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally including for biodiversity (e.g. parkland or wood pasture)'.

Crown spreads of the surveyed trees were given as an average measurement where the tree's crowns were balanced. Where there was a notable difference in crown spread to a cardinal point, these were recorded. The average measurement was taken from the cardinal point relevant to the direction of the Scheme. This level of survey is deemed sufficient by the arboriculturist to establish the extent of the crown spread in the direction of any future proposals. All crown spread measurements should be taken from the tree survey schedules (see Appendix B of this report).

The trees were assessed in line with the Visual Tree Assessment (VTA) method as developed by Mattheck and Breloer (1994). This method is based on the axiom of uniform stress, whereby a tree will grow in response to environmental stimuli to produce a structure that bears forces evenly across its surface. As such an internal defect, such as decay, would initiate a noticeable change in the stem's shape to accommodate the physical change.

## 2.6. Limitations to survey

Where access permitted, trees were identified and inspected from ground level only and were not climbed. No invasive examination techniques (such as increment boring, or internal decay detection) were carried out and as such no assessment of the internal condition of the wood of these trees can be given.

The tree survey undertaken is not intended to be a tree risk management survey targeting safety-related issues. However, where specific hazards have been identified these have been recorded and management recommendations provided. These are detailed within the tree survey schedules (see Appendix B of this AIA).

Validity, accuracy and findings of the tree locations will relate directly to the accuracy of the supplied topographical data, available aerial imagery and the GIS data capture software being used. As such the accuracy of the tree locations is potentially open to discrepancies and their locations may need verifying.

Where tree groups have been illustrated as an outline this covers the extents of the tree group. It does not always illustrate individual trees within the groups. Where individual trees were identified they were plotted separately.

The report does not comment on possible effects of trees on neighbouring properties, including in relation to subsidence or heave, or with regard to possible hazards presented by trees surveyed.

Trees are living organisms subject to changes outside human control. Trees and their environment alter with the seasons and it is as well to inspect trees whilst in full leaf and when out of leaf. Following harsh or unexpected weather conditions, or heavy storms it is also prudent to inspect trees. Changes to ground water conditions will affect the root growth of a tree. Such changes are not always the result of human influence and other factors may be involved.

## 3. Existing Site conditions

### 3.1. Existing land use

The Site includes infrastructure to support the existing college. The buildings and associated car parking are in the north east extents of the site, all of which are accessed from Birchwood Grove Road in the north.

The remaining site extents includes hard surfaced sports pitches and a large expanse of green space used for outdoor play and sporting activities.

### 3.2. Soil assessment

No soil assessment was carried out on Site by the arboriculturist. If clay-based soils are present, the ground may be susceptible to volumetric changes resulting from the uptake and release of moisture by tree roots, which may influence any potential foundation development.

### 3.3. Existing trees

The existing tree stock is largely growing along the boundaries of the site, as both standard trees and as part of larger groups of trees and shrubs. In general, they are in fair to good condition. The tree stock is a mixture of species including ash, common oak, horse chestnut, hornbeam and weeping willow. The tree's range from young to mature specimens, with the more mature trees being at the north and south extents of the site, and the designers have tried to retain these tree's where feasible.

### 3.4. Protected trees

The arboriculturist has reviewed the Mid Sussex District Council online mapping facility and it shows that there are no trees protected by TPOs and Conservation Areas within the Scheme boundary, see insert 3.1 below.



**Insert 3.1:** image take from Mid Sussex District Council's website to confirm no TPO's or Conservation Areas within the site extents

Trees should be checked for protected species before works are undertaken. While it is outside of the scope of this tree survey to comment on the confirmed or likely presence of protected animal species, it is against the law to disturb bats or their roosts under the Conservation of Habitat and

Species Regulations (2010). Likewise, nesting birds are protected by the Wildlife and Countryside Act (1981) (as amended). If protected species are discovered, then works should cease immediately and Natural England should be contacted for advice.



## 4. Arboricultural impacts

### 4.1. General

This report determines the impact of the Scheme on the recorded tree stock. It provides details on the recorded trees including their condition and in some cases suitability for retention.

The report is supplemented by the TPP (Appendix D of this report) that illustrates the Scheme, the Scheme boundary, the recorded trees and trees that would require removal or potential removal to facilitate the Scheme.

The tree survey schedules within Appendix B of this AIA cover all the trees recorded as part of this assessment in line with the BS5837:2012 guidance. A column has been included to indicate the impact of the works.

Entries in the impact column include removal (abbreviated as REM and highlighted as red); part removal (abbreviated as PRG and highlighted as orange); and retained (abbreviated as RET and highlighted as green). Where the trees fall outside the Scheme boundary, the default entry is retained.

### 4.2. Root protection areas

The root protection area (RPA), as defined in the BS5837:2012, is the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. This area should be protected from disturbance "in order to avoid unacceptable damage to the tree as a result of severance or asphyxiation of the root system."

The recommended minimum area (m<sup>2</sup>) to avoid potentially harmful disturbance has been calculated and entered into the tree schedules (see Appendix B of this AIA) for all trees. The RPA for each individual tree has been illustrated on the TPPs as a circle centred on the tree's stem, while the RPAs of the tree groups have been illustrated as an offset from the canopy extents, unless trees have specifically been recorded within the groups.

This representation of the RPA does not take into account pre-existing Site conditions or other factors that can influence or modify the shape and disposition of tree roots. Accordingly, the Arboriculturist may make modifications or judgements on the likely extents of RPAs, where through professional judgement it is deemed likely that the root zones have been restricted in a certain direction because of limiting factors such as topography, drainage or the presence of existing built infrastructure. This is relevant for T003 where an existing retaining wall to the east of the tree will have restricted its root spread in this direction, so the TPP has been updated accordingly.

### 4.3. Arboricultural impacts

The Table 4-1 below reflects the current tree totals for the remaining surveyed trees required for removal or potential removal to facilitate the current proposals.

**Table 4-1 – Arboricultural impacts for remaining trees**

Tree ID	BS Category Reference			
	Category A	Category B	Category C	Category U
GROUP (G)	n/a	n/a	G005-23m <sup>2</sup> G009-124m <sup>2</sup> G010-179.5m <sup>2</sup> G024x4no.trees G025x2no.trees G026-93m <sup>2</sup>	n/a
TREE (T)	n/a	T001	T015	n/a
HEDGEROW (H)	n/a	H002 – 17.5m <sup>2</sup>	n/a	n/a

These trees are currently located within the footprint of the Scheme. Where trees are partly within the footprint of the works the arboriculturist has used the percentage of RPA encroachment to determine whether a tree(s) could be retained, also based on existing Site conditions that could have inhibited root development.

Where over approximately 20% of their RPAs are severed by the works the trees have been identified for removal. The 20% figure being referenced within BS5837:2012 for what is deemed potentially acceptable in terms of RPA infringement. But this is also dependant on existing Site conditions, which have also been considered by the arboriculturist. The ability to retain some trees through bespoke designs has been explored, and the proposed raised board walk adjacent to trees T011, T012, T013 & T014 will enable their retention by limiting the RPA encroachment to localised excavations for the boardwalk footings.

The designers have been sympathetic in their approach to the layout of the proposals, ensuring where feasible to place works outside of RPAs. Tree T001 cannot be accommodated within the proposals, this is due to the constrained nature of the northern aspect of the site. Compensation planting is included as part of the proposals to try and offset the loss of the tree.

#### 4.4. Preliminary management recommendations

The tree survey schedules (see Appendix B) show management recommendations for those trees which at the time of the survey were identified as requiring management intervention.

## 5. Mitigation Measures

### 5.1. General

Mitigation measures and compensation for habitat loss and landscape impacts is outlined in further planning submission documents. Please see the Landscape Masterplan drawing number 5190243-ATK-XX-XX-DR-L-1000 which covers the replacement planting being proposed for the scheme.

### 5.2. Arboricultural mitigation measures

The tree survey schedules (see Appendix B of this AIA) show management recommendations for those trees which at the time of the survey were identified as requiring management intervention. Any works recorded for retained trees will be confirmed prior to construction and included within an AMS.

As part of the Scheme, designers have sought to avoid impacts on trees and have achieved this in some cases. Those trees that can be retained are illustrated by having no red cross on the TPPs or do not fall within red hatched areas.

Trees that are to be retained would be protected using temporary fencing to be installed around RPAs or any confirmed buffer zone. The location of any protective fencing for retained trees would need to be confirmed prior to construction and included within updated TPPs and supplemented by an AMS.

The specification for the protective fencing should be a 'Heras'-type fencing, which should be installed to protect both the crowns and RPAs of trees and to establish a Construction Exclusion Zone (CEZ) around the trees. Site operations not permitted in the CEZ without consultation with an arboriculturist include the storage of plant, equipment or materials; vehicular or plant access; the washing down of vehicles or machinery; the handling, discharge or spillage of any substances, including cement washings. No mechanical digging, scraping or excavation shall be permitted in the CEZ and no earthworks or changes in the finished ground levels other than those agreed by an arboriculturist.

The proposed works are likely to require the use of *in situ* concrete in various situations: for example, the footings for the raised board walk. Concrete should not be poured within the RPAs of trees unless an impermeable liner has been installed to contain the concrete. This is due to the highly alkaline leachate produced during the curing of wet concrete, which is toxic to trees.

Further mitigation measures would need to be included within an AMS especially the removal of any structures within the RPA of tree T003, also any works adjacent to the RPAs of the boundary trees.

# Appendices

# Appendix A. Key & British Standard 5837:2012 Survey Table

## A.1. Survey key

**Tree No:** Sequential reference number given to the tree or group of trees as shown on the tree survey drawings.

**Species:** This is the common name given to the tree. The botanical name is sometimes given.

**Height (Ht.):** tree height from the base of the tree to its full stem height, measured in metres (m). Measurements are taken to the nearest half metre.

**Stem diameter (mm):** measured in accordance with Figure A1 below. Measurements are rounded to the nearest 10mm.

**Branch spread (m):** measurement of crown spread to the four cardinal points; if the crown is balanced a single measurement is given. Crown spread plotted on the tree survey drawings. Measurements are taken to the nearest half metre.

**1st significant branch and direction of growth (m):** measurement of the height of the first significant branch above ground level, given in metres and direction of growth e. g. 2. 4-N

**Canopy height (m):** height of the canopy above ground level. Measurements are taken to the nearest half metre.

**Life stage:** The following abbreviations are used:

Y = Young trees <1/5 life expectancy.

SM = Semi-Mature trees 1/5 – 2/5 life expectancy.

EM = Early Mature trees 2/5 – 3/5 life expectancy.

M = Mature trees 3/5 – 4/5 life expectancy

OM= Over-Mature trees >4/5 life expectancy

**Vitality: Good, fair, poor or dead**

Good – a tree with little or no obvious physiological defects; leaf density and colour are typical for the species, bud, flower and fruit production are good and there are no signs of dieback at any point throughout the crown.

Fair – a tree with moderate physiological defects; leaf density is less than typical for the species, leaf cover is chlorotic, bud, flower or fruit production are deficient, there are signs of minor dieback within the crown, there is a moderate degree of deadwood within the crown.

Poor – a tree with major or multiple physiological defects; evidence of extensive crown thinning, bud, flower or fruit production is poor or missing, there are signs of advanced dieback throughout the crown, there is extensive or major deadwood throughout the crown.

Dead – a tree that has died due to either old age, drought, disease, pest infestation, physical damage to the main stem or rooting system, or a combination of these factors.

**General observations, particularly of structural and/or physiological condition:** e. g. observations of any decay and physical defect.

**Preliminary management recommendations:** any identified preliminary management to rectify defects recorded in general observations. These may include the need for further detailed inspection, or works to address immediate hazard to life or property.

**Estimated remaining contribution, in years:**

<10

10+

20+

40+

**Category grading:** As per BS 5837:2012 chart in accordance with Figure A2 below.

A – Illustrated as light green (RGB code 000-255-000)

B – Illustrated as mid blue (RGB code 000-000-255)

C – Illustrated as grey (RGB code 091-091-091)

U – Illustrated as dark red (RGB code 127-000-000)

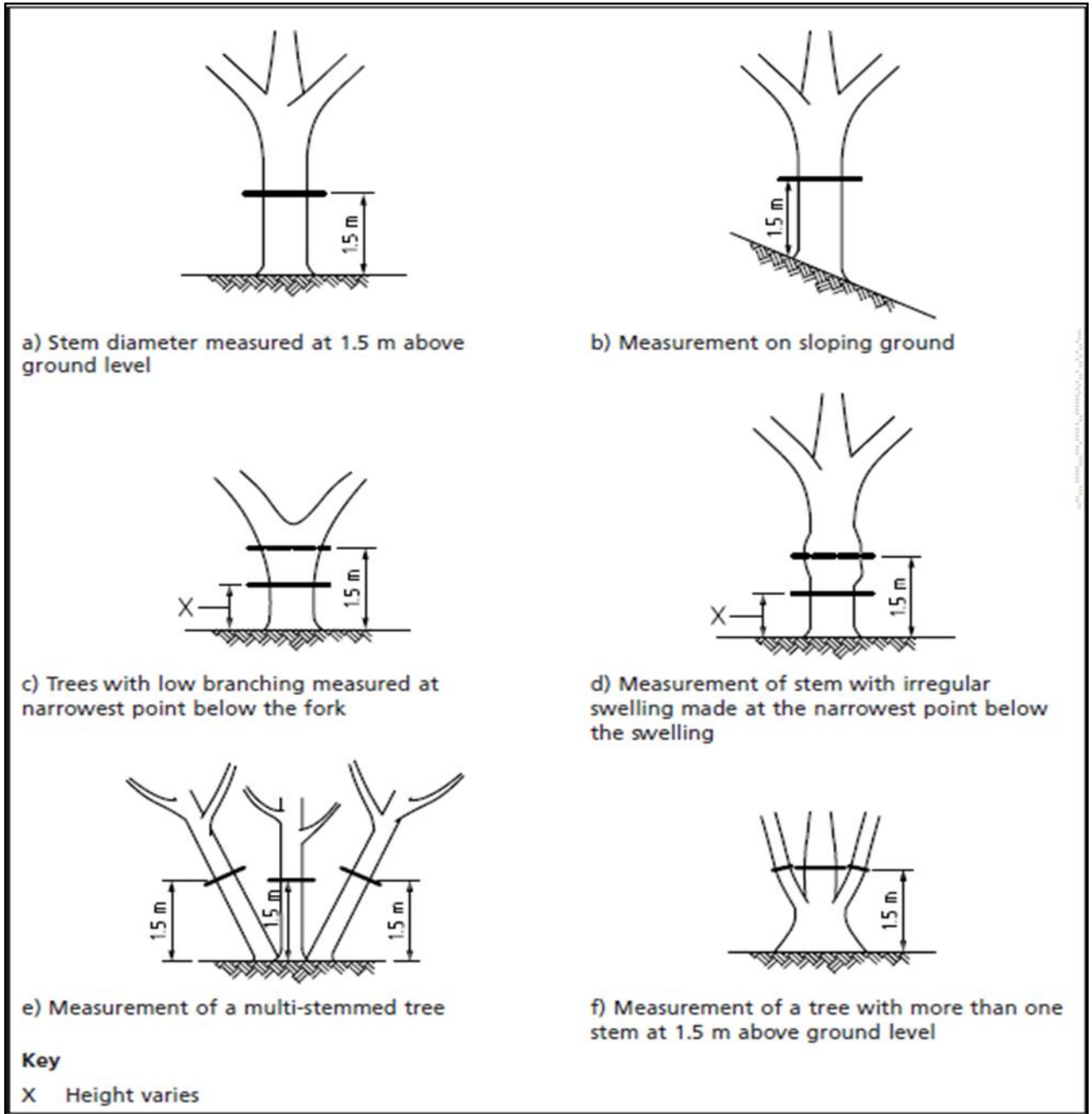
**Root Protection Area (m<sup>2</sup>):** plotted around each of the category A, B and C trees on relevant drawings, illustrating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability. The protection of the roots and soil structure is treated as of paramount importance.

**Impact: RET/PRG/REM** Entries in the impact column include removal (abbreviated as REM and highlighted as red); part removal (abbreviated as PRG and highlighted as orange); and retained (abbreviated as RET and highlighted as green). Where the trees fall outside the Scheme boundary, the default entry is retained.

(Note: Red hash tag '#' will denote that a measurement is estimated)

## A.2. Measuring table

Measurement of tree stems dependant on tree form.



### A.3. BS 5837:2012 cascade chart

#### Cascade chart for tree quality assessment from BS 5837:2012

Table 1 Cascade chart for tree quality assessment	Criteria (including subcategories where appropriate)	Identification on plan
<b>Trees unsuitable for retention (see Note)</b>	<p><b>Category U</b></p> <p>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</p> <ul style="list-style-type: none"> <li>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 category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li>Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>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</li> </ul> <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>	See Table 2
<b>Trees to be considered for retention</b>	<p><b>1 Mainly arboricultural qualities</b></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><b>2 Mainly landscape qualities</b></p> <p>Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features</p> <p><b>3 Mainly cultural values, including conservation</b></p> <p>Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)</p>	See Table 2
<b>Category B</b>	<p><b>Trees of moderate quality</b></p> <p>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 remediable 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>	See Table 2
<b>Category C</b>	<p><b>Trees of low quality</b></p> <p>with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm</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>	See Table 2



# Appendix B. Tree survey schedule

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
T001	Weeping Willow	16	620	7.5	7	7.5	7.5	4-S	1.6	EM	Fair to good	Growing in overflow car park area. Gravel and compacted aggregate around base. Pronounced east buttress root, historic wound on root. Desiccated white rot visible. Partial occlusion. Potential extensive surface root growth towards drainage point in south east, approx 15m from tree. Crown break at 3.5m, into 3no. Stems. Unions appear sound. Occasional small to moderate diameter dead wood in middle crown.	Remove dead wood in crown	20+	B2	7.4	REM
H002	Privet, yew, hawthorn, field maple, sycamore	2.5	100	0.5	0.5	0.5	0.5	N/A	0	SM	Good	Managed boundary hedgerow. Top and sides managed. Good screen function. Ivy encroachment on some stems.	No works presently required	20+	B2	1.2	PRG - 17.5m <sup>2</sup>

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
T003	Horse Chestnut	16	530	6	7	7	6	3-E	1.8	EM	Good	Growing in soft surfaces, root zone potentially restricted by concrete raft foundations for storage facilities to north and south. Paving slabs to east. Lifted in places, potential direct damage from surface root activity. Crown break at 1.8m. Co-dominant stems, union appears sound. Occluded and unoccluded wounds in crown from past crown lifting. Leaf miner infestation. Minimal at present.	No works presently required	20+	B2	6.4	RET
G004	Silver Birch	16	350	4.5	4.5	4.5	4.5	4-SW	2.5	EM	Good	Third party trees. Compost heap adjacent to trees in school site. Surface root visible extending into site by approximately 5m. Trees previously topped. South tree co-dominant stems. Union appears sound. Bases not accessible.	No works presently required	20+	B2	4.2	RET
G005	Silver birch and goat willow	6	80	1.5	1.5	1.5	1.5	N/A	0	Y	Good	Informal group. Planted and self-sown. Mutually suppressed crowns.	No works presently required	10+	C2	1.0	REM 23m <sup>2</sup>

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
T006	Ash 'Raywood'	17	450	6	5	4	6	1.5-SE	3	EM	Fair	Growing along boundary fence. Outdoor teaching space to east. Base not accessible given dense scrub vegetation. Co-dominant stems from 2m. Union appears sound. Crown reduced and lifted in past, good regrowth visible, and some abrupt angles on branch unions. Unoccluded wounds present.	No works presently required	20+	B2	5.4	RET
T007	Common Oak	16	550	4	8	7	4	2-SE	2	EM	Fair	Growing on boundary. Crown lifted and reduced in past. Dead ivy on stems. Multi stems from approximately 1m. Unions appear sound. Unoccluded pruning wounds in lower crown. Crown suppression to north.	No works presently required	20+	B2	6.6	RET
G008	cherry, rowan, birch and hawthorn	5	80	2	2	2	2	N/A	0	Y	Fair to good	Planted and self sown group. Mix of cherry, rowan, birch and hawthorn. Intermittent screen function. Limited at present given small scale.	No works presently required	10+	C2	1.0	RET

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
G009	Goat Willow	7	240	4	4	4	4	N/A	0	Y to SM	Good	Informal group of planted and self sown trees. Goat willow dominant. Crowns appear to have been reduced in the past given multi stem form on larger 3no. Goat willows at 1-2m. Internal screen function. Dense scrub established around bases.	No works presently required	10+	C2	2.9	REM 124m <sup>2</sup>
G010	Blackthorn, goat willow, hawthorn, ash	14	200	4	4	4	4	N/A	0	Y to EM	Fair to good	Dense boundary vegetation. Mix of trees, shrubs and dense pockets of bramble. Blackthorn, goat willow, hawthorn. Screen function for third party views. No recent management visible. Some branches collapsed where blackthorn become top heavy. Field maple in places. Crowns cut back from boundary fence in places	No works presently required	20+	C2	2.4	PRG - 179.5m <sup>2</sup>
T011	Horse Chestnut	14	400	3.5	3.5	3.5	3.5	4-N	3	EM	Fair	All measurements estimated. No access to base and obscured by dense vegetation. Crown previously reduced in height and lateral spread. Abrupt angles on some branch tips. Limited horse chestnut leaf miner infestation visible.	No works presently required	20+	B1	4.8	RET

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
T012	Horse Chestnut	14	400	3.5	3.5	3.5	3.5	4-N	3	EM	Fair	All measurements estimated. No access to base and obscured by dense vegetation. Crown previously reduced in height and lateral spread. Abrupt angles on some branch tips. Limited horse chestnut leaf miner infestation visible.	No works presently required	20+	B1	4.8	RET
T013	Common Oak	16	450	4.5	4.5	4.5	4.5	4-E	4	SM	Good	Third party tree. Measurements estimated. Base not visible given dense vegetation. No apparent significant structural defects recorded in crown. Good vitality.	No works presently required	20+	B1	5.4	RET
T014	Horse Chestnut	14	400	3.5	3.5	3.5	3.5	4-N	3	EM	Fair	All measurements estimated. No access to base and obscured by dense vegetation. Crown previously reduced in height and lateral spread. Abrupt angles on some branch tips. Limited horse chestnut leaf miner infestation visible.	No works presently required	20+	B1	4.8	RET
T015	Ash	12	200	3	3.5	3	3	1.5-N	1.8	SM	Good	Growing within boundary group. Dense pockets around base. Crown partially suppressed by adjacent trees. No apparent significant structural defects recorded.	No works presently required	10+	C1	2.4	REM

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
T016	Sycamore	11	200	5	2	2	3	1.5-N	1.8	Y	Fair	Third party tree. Growing on boundary fence, main stem in contact with fence. Wound on stem at point of contact. Goat willow collapsed through into crown. Light ivy encroachment on main stem.	Consider felling. Remove goat willow stem during works.	<10	U	2.4	RET
T017	Ash	20		9	4	7	9	5-N	0	M	Good	Third party tree. Base not accessible. Stem measurements estimated. 3no. Stems from approximately 2m. North and south stems growing on relatively abrupt angles. Correcting further along stem. Large diameter wound on central stem at 2.2m. Onset of decay visible. Old branch wounds in crown. Crown extensively overhangs site.	Third party confirm basal condition.	20+	B1	0.0	RET
T018	Common Oak	18	600	10	9	8	7	5-N	1.5	M	Good	Third party tree. Base not accessible or visible. Stem diameter estimated. Crown partially suppressed to west. Occasional small diameter dead wood in lower and middle crown.	No works presently required	40+	A2	7.2	RET

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
G019	Field maple, hornbeam, hawthorn	10	350	5	5	5	5	2-N	1.5	SM	Good	Third party etc. Field maple, hornbeam, hawthorn. Dense ivy encroachment on stems of field maple. Informal group. Close board wooden fence between trees and site. Low crowns into site. Mutually suppressed crowns.	No works presently required	20+	B2	4.2	RET
H020	Hornbeam, ash, hawthorn	2.2	80	0.5	0.5	0.5	0.5	N/A	0	EM	Good	Managed boundary hedgerow. Hornbeam, ash, hawthorn. Bramble established in places. Screen function. Top and south side managed. Top not managed from point of school boundary. Hornbeam dominates.	No works presently required	10+	C2	1.0	RET
T021	Common Oak	18	650	8	7	7	7	5-N	3	M	Fair to good	Base not accessible. Crown previously reduced. Good regrowth visible. Abrupt angles on some branches. Slight crown thinning. Epicormic growths establishing.	No works presently required	40+	A1	7.8	RET
G022 A-H	Oak, Field Maple, Ash, Hornbeam 'Fastgiata'	6	180	2.5	2.5	2.5	2.5	1.5-S	1.8	Y	Good	Intermittent planted trees within maintained grass area. Crowns coming into contact with wire mesh boundary fence. Balanced forms, long term potential.	Cut back crowns	20+	C2	2.2	RET



Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
H023	Hornbeam	5	80	0.5	0.5	0.5	0.5	N/A	0	SM	Good	Hornbeam. Planted hedgerow. Minimal past management. Sides lifted, bit not cut back beyond 2m. Tops left unchecked. Internal screen function.	Manage as hedgerow	10+	C2	1.0	RET
G024	Common Alder	11	300	4.5	4.5	4.5	4.5	2-N	2	SM	Good	Intermittent planted trees. Mutually suppressed crowns. Grassed area around bases. Direct damage recorded from surface root activity visible to 4m from base of east tree. Mounding of adjacent asphalt surface. Crowns previously lifted, unoccluded wounds present.	No works presently required	20+	B2	3.6	REM X4
G025	Hornbeam	7	160;120;120	4	4	4	4	N/A	1	Y to SM	Good	Planted trees growing within line. Multi stem forms. Mutually suppressed crowns. Crowns lifted in past. North tree growing through tennis court fence.	Cut back crowns from tennis court	10+	C2	15.0	REM X2

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius	Retain / Part remove / remove
				N	E	S	W										
G026	Alder, horse chestnut, blackthorn, laurel, dogwood, oak.	6	150	2	2	2	2	N/A	0	Y	Fair to good	Planted and self sown trees and shrubs. Growing around boundary of gym area. Grassed surfaces around bases. Crowns growing through tennis court fence. Bark damage on standard trees. Internal screen function.	No works presently required	10+	C2	1.8	REM 93m <sup>2</sup>
T027	Silver Birch	5	150	3	3	3	3	2-NW	1	Y	Good	Growing within grassed area. Crown reduced in past. Abrupt angles on some branches.	No works presently required	10+	C1	1.8	REM
G028	Hornbeam 'Fastigiata'	5	150	1.5	1.5	1.5	1.5	N/A	1.5	Y	Good	Planted line of trees. Some replaced more recently. Growing within linear grassed verge.	No works presently required	20+	C2	1.8	RET

# Appendix C. Glossary of terms

**Table C-1 Glossary Table**

Term	Description
Access Facilitation Pruning	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on Site.
Adaptive Growth	The process whereby wood formation is influenced both in quantity and in quality by the action of gravitational force and mechanical stresses on the cambial zone
Amenity Value	The environmental and landscape benefits of trees as opposed to their commercial value for timber
Ancient Woodland	Sites which have been wooded since at least 1600, as defined by English Nature and recognised as being of high nature conservation value, whether managed or not. They may be semi-natural or replanted.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculture	The study and care of trees and other woody vegetation
Arboriculturist	A person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Cavity	An open wound, characterised by the presence of decay and resulting in a hollow
Co-dominant stems	Where a tree's main stem splits into two leaders, can also be called twin-stemmed.
Competent person	A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.
Construction	Site-based operations with the potential to affect existing trees.
Construction Exclusion Zone	The area based on the root protection area to which access is prohibited for the duration of a project.
Coppice	A traditional method of woodland management in which young tree stems are repeatedly cut down to near ground level. In subsequent growth years, many new shoots will emerge, and, after a number of years the coppiced tree, or stool, is ready to be harvested, and the cycle begins again
Crown clearance	This is the removal of all dead, dying and diseased branches; in addition branches that are cleared away from a specific hazard e. g. live railway line.
Crown lifting	The removal of lower branches to provide a desired amount of clearance above ground level. This can be achieved either by the complete removal of a branch or only parts of which extend below the desired height
Crown reduction	The overall reduction of both the height and spread of the crown.
Decay	Process of degradation of woody tissues by fungi and bacteria through decomposition of cellulose and lignin.
Deadwood	Deadwood is often present within the crown or on the stems of trees. In some instances it may be an indication of ill health; however, it may also indicate natural growth processes. If a target is present beneath the tree, and falling deadwood may cause injury or damage it should be removed; if no target is

Term	Description
	present the deadwood may be retained intact for conservation purposes (insects, fungi, birds etc.).
Epicormic growth	A secondary growth from dormant adventitious buds on the stem or main branches.
Failure	In connection with tree hazards, a partial or total fracture within woody tissue or loss of cohesion between roots and soil.
Hazard beam	A branch that has over-extended in which strong internal stresses may occur without the compensatory formation of extra wood (longitudinal splitting may occur in some cases).
Hung-up limb	Dead or fallen branch from within the crown or from another tree's crown that has failed and been caught up by, and resting on, branches of a tree
Included Bark Junction	Pattern of development at branch junctions where bark is turned inward rather than pushed out. Potential weakness due to a lack of a woody union.
Ivy Growth	Ivy growth may ascend into the tree's crown, increasing wind resistance, concealing potential defects and reducing the tree's photosynthetic capacity. Ivy growth is often acceptable in woodland areas as a conservation benefit.
Monolith	A large bulk of standing dead wood. Usually the trunk of the tree or the trunk with the base of the branch frame work. These should be retained for wildlife habitat when the risk is appropriate for the location.
Pollarding	This involves the removal of whole branches to leave only the main trunk. In species such as willows and poplars such significant pruning is acceptable with new branches developing from the pollard heads. Secondary pruning of the new wood can help form a new canopy to the tree several years after the initial pollard
Reaction Wood	Specialised secondary xylem, which develops in response to a lean or similar mechanical stress, attempting to restore the stem to the vertical.
Root Protection Area (RPA)	The layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
Service	Any above or below ground structure or apparatus required for utility provision.
Stem	The principal above-ground structural component(s) of a tree that supports its branches.
Structure	A manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
Structural Defect	Internal or external points of weakness, which reduce the stability of the tree
Sub-dominant stem	A branch within the crown that is not the dominant leader
Suppressed	Trees which are dominated by surrounding vegetation and whose crown development is restricted from above.
TPO	A Tree Preservation Order is an order made by a Local Planning Authority which in general makes it an offence to cut down, lop, top, uproot, wilfully damage or wilfully destroy a tree without first getting permission. Tree Preservation Orders are usually made to protect trees that make a significant contribution to the amenity of an area. They may particularly be made when it is felt that a tree may be under threat.
Tree Constraints Plan	Abbreviated to TCP. Plans showing specific tree constraints including Root Protection Areas and Crown spread.

Term	Description
Tree Protection Plan	Abbreviated to TPP. Scaled drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Visual Tree Assessment	A non-invasive method of examining the health and structural condition of trees. Developed by Claus Mattheck and David Breloer 1994
Wound	Any injury, which induces a compartmentalisation response
Wound Wood	Wood with atypical anatomical features, formed in the vicinity of a wound and a term to describe the occluding tissues around a wound as opposed to the ambiguous term “callus.”

# Appendix D. Tree protection plan

Drawing(s) supplied separately

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