

ARBTECH

BS5837:2012

**Trees in relation to design, demolition and construction –
Recommendations**

Tree Survey

AECOM

Cemetery Depot

Benhall Mill Road

Tunbridge Wells

Kent

TN2 5HJ

2 November 2020

Author: Michal Mixa FdSc.

Introduction

Arbtech Consulting Limited (Arbtech) received written instruction on 22nd September 2020 from AECOM to attend Cemetery Depot, Benhall Mill Road, Tunbridge Wells, Kent, TN2 5JH; grid reference TQ 59326 37755 to undertake an arboricultural survey a to BS5837:2012 guidance to assess trees, hedges and major shrub groups growing on and within influencing distance of the site and to produce a Schedule of trees, Tree Constraints Plan, Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan.

I am Michal Mixa FdSc., an arboricultural surveyor for Arbtech Consulting Ltd. I undertook the tree survey on 8th October 2020 and subsequently, have produced this summary of my findings.

I started my career as a ground's person for tree management company in South West London, where I progressed to the lead climbing arborist. After five years I started my first technical role as a Tree Officer in London Borough of Southwark and developed my knowledge and skills to become Arboricultural consultant. I hold the FdSc in Arboriculture and I have four years technical experience.

The advice below and appended is underwritten by our Professional Indemnity insurance for the business practice of Arboricultural Consultancy in the sum of one million Pounds Sterling in each and every claim.

Table 1: Documents referred to.

Document	Reference No.
Survey base drawing	TUNB-AECOM-P1-00-M3-SV-00001_R0
British Standard 5837:2012	"BS5837"
Tree Survey Schedule	Arbtech TS 01
Tree Constraints Plan	Arbtech TCP 01 A

Tree Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by Michal Mixa FdSc. on 8th October 2020.

During the survey, I categorised the trees using "Table 1 – Cascade chart for tree quality assessment" of the BS5837:2012 (see Appendix 1).

A total of 12 individual trees, 4 groups of trees and 1 hedge were surveyed. Details for each of the trees surveyed are provided in the Schedule of Trees (see Appendix 2).

Table 2: Documents upon which this tree survey has been based.

Document	Originator	Reference Number	Title
Topographical Survey	AECOM	TUNB-AECOM-P1-00-M3-SV-00001_R0	Topographical Survey

Limitations: The survey was made at ground level using visual observation only. Detailed examinations, such as climbing inspections and decay detection equipment were not employed, though may form part of the survey’s management recommendations. Measurements were taken using specialist tapes, laser and GPS devices. Where this was not possible, measurements are estimated.

Scope: Pre-development tree surveys make arboricultural management recommendations based exclusively upon the individual tree or group of trees condition relative to their present context (*i.e. not in relation to the proposed development*).

Legal Status: No statutory protection check has been performed. BS5837 does not draw any distinction between trees subject to statutory protection, such as a Tree Preservation Order (“TPO”), and those trees without. This is principally because a detailed planning consent overrides any TPO protection. Consequently, we do not seek to offer any comparison between or infer any difference in the quality or importance of TPO trees and other trees.

* For more information on the surveyed trees please see Arbtech Consulting Ltd, Tree Survey Schedule (Appendix 1), Tree Survey Report and Tree Constraints Plan.

Site description

The site is currently used as cemetery maintenance yard situated in East part of the Tunbridge Wells Cemetery.

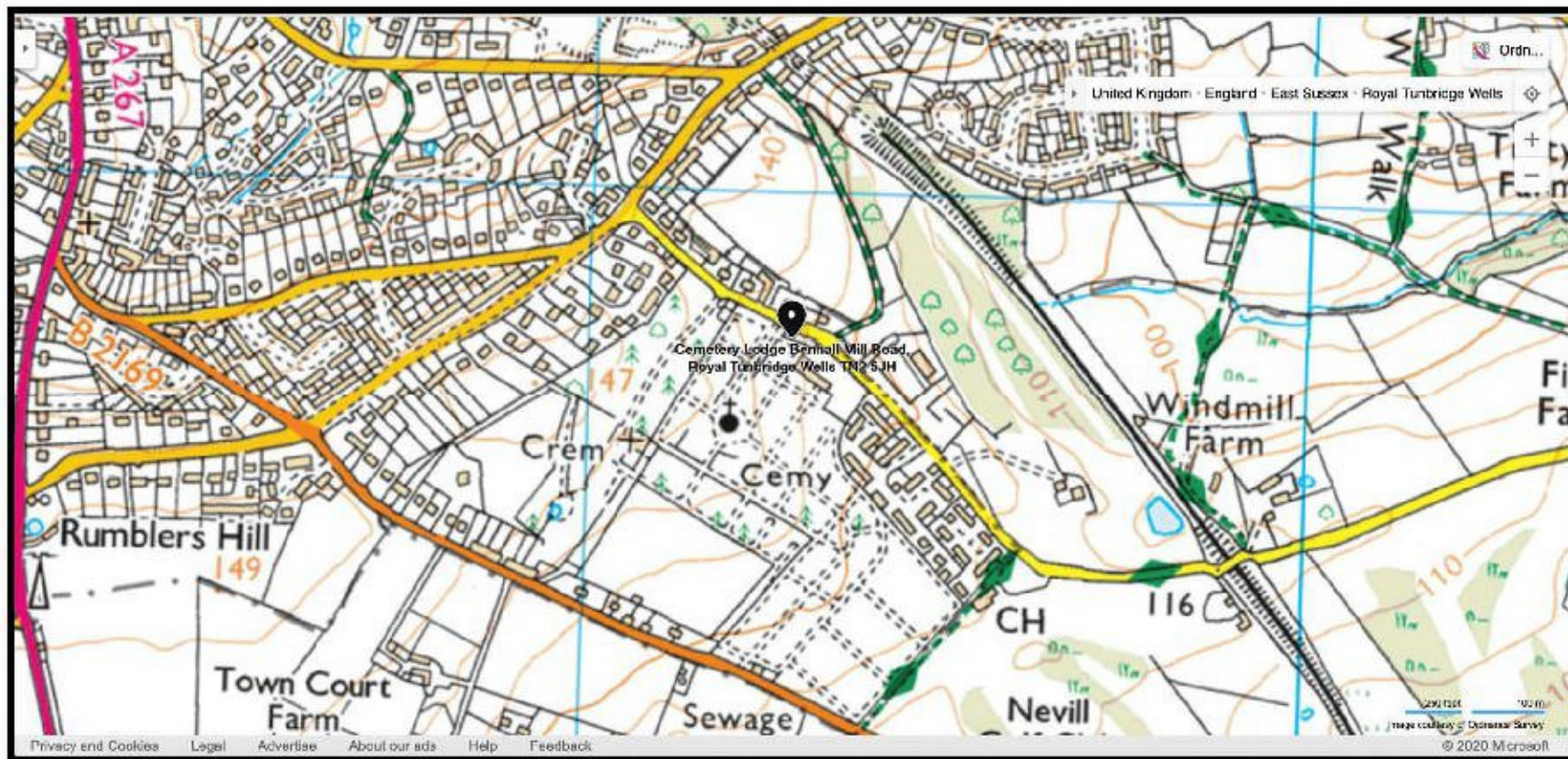


Figure 1: OS Map (Bing Maps)



Figure 2: Aerial Image of Site (Google Maps)

It is likely that arboricultural impacts can be addressed with arboricultural methodology or minor amendments to the proposal.

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BS5837:2012 Scope

This standard recognises that there can be problems for development close to existing trees which are to be retained, and of planting trees close to existing structures. This standard sets out to assist those concerned with trees in relation to construction to form balanced judgements. It does not set out to put arguments for or against development, or for the removal or retention of trees. Where development, including demolition, is to occur, the standard provides guidance on how to decide which trees are appropriate for retention, on the means of protecting these trees during development, including demolition and construction work, and on the means of incorporating trees into the developed landscape.

Methodology

The methodology used to assess the trees was the British Standard 5837:2012 'Trees in Relation to Construction' tree survey method. The aim of the survey is to establish which trees are moderate and good quality; suitable for retention and justifying protection. And, which trees are low or poor quality; either undesirable or unsuitable to retain and protect.

The tree survey includes all trees included in the land survey red line boundary plan, as well as any that may have been missed, and it should categorize trees or groups of trees, including woodlands for their quality and value within the existing context, in a transparent, understandable and systematic way. Where the arboriculturist has deemed it appropriate, the trees have been tagged with small metal or plastic tags, placed as high as is convenient on the stem of each tree.

Whilst master plan proposals for the development of the site might be available, the trees have been surveyed without taking these into consideration. All detailed design work on site layout should take into consideration the results of the tree survey (and the TCP).

Trees forming groups and areas of woodland (including orchards, wood pasture and historic parkland) are identified and considered as groups where the arboriculturist has determined that this is appropriate, particularly where they contain a variety of species and age classes that could aid long-term management. It is often expedient to assess the quality and value of such groups of trees as a whole, rather than as individuals. However, an assessment of individuals within any group has been undertaken if they are open-grown or if there is a need to differentiate between them.

The quality and value of each tree or group of trees has been recorded by allocating it to one of the four categories: **A**, **B**, **C**, or **U** (highest to lowest quality respectively). The categories are differentiated on the tree survey plan by colour, or by suffixing the category adjacent to the tree identification number on the TCP.

The survey schedule lists all the trees or groups of trees. The following information is also provided:

- Sequential reference number (to be recorded on the tree survey plan);
- Species (common and/or taxonomic names);
- Height in meters (m);
- Trunk diameter in millimetres (mm) at 1.5 m above adjacent ground level or immediately above the root flare for multi-stemmed trees;
- Crown (branches) spread in meters taken at the four cardinal and/or intercardinal compass points;
- Height of crown clearance above adjacent ground level in meters (m);
- Age class
- Physiological condition
- Structural condition
- Comments/description of features
- Estimated remaining contribution
- Retention Category as described by application of the BS5837:2012 **Cascade Chart for Tree Quality Assessment (Appendix 1)**

Definitions

Arboriculturist

An arboriculturist (or arboricultural consultant) is a person who has, through relevant education, training and experience, gained recognized qualifications and expertise in the field of trees in relation to construction.

Tree Survey

A tree survey should be undertaken by an arboriculturist and should record information about the trees on a site independently of and prior to any specific design for development. As a subsequent task, and with reference to a design or potential design, the results of the survey should be included in the preparation of a tree constraints plan, which should be used to assist with site layout design.

Tree Constraints Plan

A TCP is a plan, typically delivered as an AutoCAD drawing (.dxf or .dwg file format), prepared by an arboriculturist for the purposes of layout design showing the root protection area and representing the effect that the mature height and spread of retained trees will have on layouts through shade, dominance, etc.

Root Protection Area

An RPA is a 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.

Construction Exclusion Zone (also termed Tree Protection Zone)

A construction exclusion or tree protection zone is an area based on the RPA (in m²), identified by an arboriculturist, to be protected during development, including demolition and construction work, by the use of barriers and/or ground protection fit for purpose to ensure the successful long-term retention of a tree.

Arboricultural Impact Assessment

This is a 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.

Tree Protection Plan

A TPP is a plan, typically delivered as an AutoCAD drawing (.dwg file format), prepared by an arboriculturist showing the finalized layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement, which can be shown graphically.

Arboricultural Method Statement

This is a methodology for the implementation of any aspect of development that has the potential to result in loss of or damage to a tree. The AMS is likely to include details of an on-site tree protection monitoring regime.

Recommendations

We have not seen the proposed scheme and make the following recommendation to ensure that there are no irrevocable issues to the proposed retained trees and so that no conditions relating to arboriculture are attached to any planning consent secured; obtain an arboricultural report to include:

- a) An arboricultural impact assessment (AIA);
- b) An arboricultural method statement (AMS); and
- c) A tree protection plan drawing (TPP).

Limitations

Trees were inspected from using visual observation from ground level only. Trees were not climbed or inspected below ground level. Inaccessible trees will have best estimates made about the location, physical dimensions and characteristics. Trees have been grouped where BS5837 guides us that it is expedient to do so. Trees have been excluded from the survey if they are found by us to be sufficiently far away from the proposed developable area or if they are outside of the red line boundary plan showing the expectations of our Client for the extent of the survey. BS5837 does not draw any distinction between trees subject to statutory protection, such as a Tree Preservation Order ("TPO"), and those trees without. This is principally because a detailed planning consent overrides any TPO protection. Consequently, we do not seek to offer any comparison between or infer any difference in the quality or importance of TPO trees and other trees.

Appendices

The following documents were released to the Client as appendices to this report:

- Survey Schedule (.pdf)
- Tree Constraints Plan drawing (.dwg/.dxf & .pdf)

If you require clarification of information contained herein, please do not hesitate to contact us via 01244 660558.

Yours Sincerely,



Michal Mixa FdSc.
Surveyor

Appendix 1: Cascade Chart for Tree Quality Assessment

Cascade Chart for Tree Quality Assessment (BS5837:2012)

Category and definition	Criteria (including subcategories when appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category 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	<ul style="list-style-type: none"> Trees that have 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) 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 NOTE Category U trees can have existing or potential conservation value which might be desirable to preserve; see 4.5.7.			Dark red
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	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)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Light green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	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 management and storm damage), such that they are unlikely to be suitable for retention of beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	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	Trees with material conservation or other cultural value	Mid blue
Category C Trees of low quality with an estimated remaining expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	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 value	Trees with no material conservation or other cultural value	Grey

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Appendix 2: Schedule of Trees

Tree Survey Schedule

Cemetery Depot, Benhall Mill Road, Tunbridge Wells, Kent, TN2 5JH

Client	AECOM
Survey Date	08/10/2020
Weather Conditions	Overcast with rain spells
Surveyor	Michal Mixa

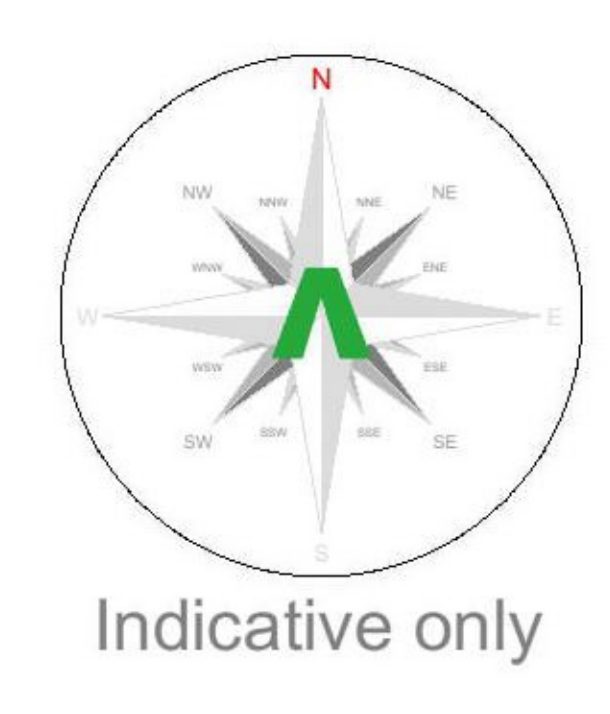
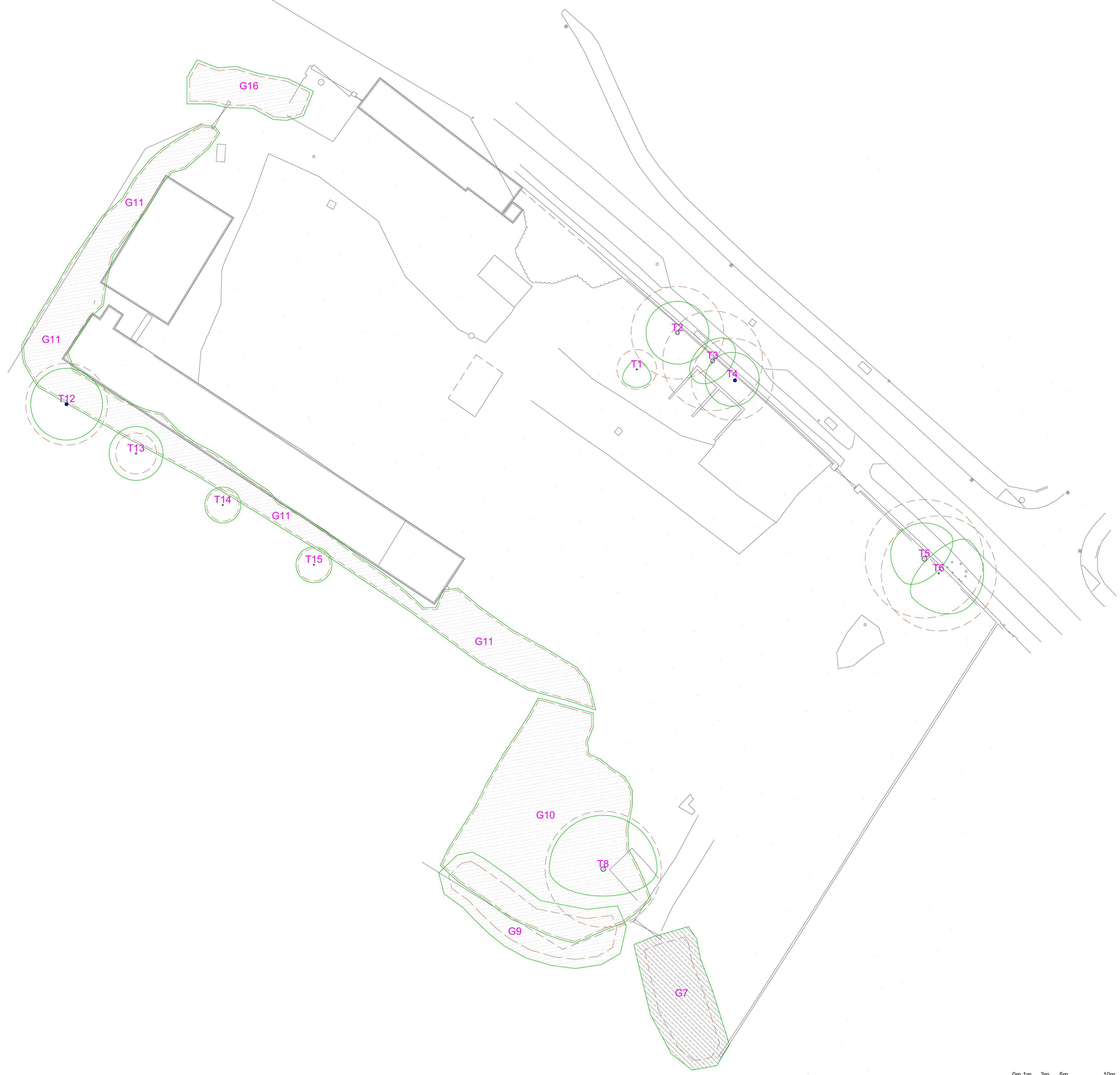
Key:

Tree No.	A unique number or reference to identify trees or groups as shown on associated plans.
Species	Common and/or taxonomic name.
Ht.	The height of the tree in meters (m).
Trunk Diameter	The stem diameter in millimetres (mm) taken at 1.5m above ground level unless otherwise specified.
Crown Spread	The extents of the crown taken, in meters (m), at cardinal points of the compass: North (N); East (E); South (S) and West (W); or intercardinal points: Northeast (NE); Southeast (SE); Southwest (SW); Northwest (NW)
Crown Clear.t	The height of the crown above the current ground level, in meters (m), taken at cardinal points of the compass: North (N); East (E); South (S) and West (W); or intercardinal points: Northeast (NE); Southeast (SE); Southwest (SW); Northwest (NW)
Age Class	Age classification: Young (Y); Semi-mature (SM); Early Mature (EM); Mature (M); Over Mature (OM).
Phys. Cond.	The general physiological condition of the tree: Good; Fair; Poor; Decline; Dead.
Struct. Cond.	The general structural condition of the tree: Good, Fair, Poor, Hazardous.
Comments	Notes and general comments on the structural condition of the tree, its environment and its estimated remaining contribution.
Est. Rem. Cont.	Estimated remaining contribution (years): <10; 10-20; 20-40; 40+
Cat.	Retention Category as described in the Cascade Chart for Tree Quality Assessment at Appendix 1: A, B, C, U (subcategories 1, 2, 3)

Tree No.	Species	Ht. (m)	Trunk Diam. (mm)	Crown Spread (m)				Crown Clear. (m)				Age Class	Phys. Cond.	Struct. Cond.	Comments	Est. Rem. Cont. (years)	Cat.
				N	E	S	W	N	E	S	W						
T1	Salix caprea	5	180	1	1	2	2	0	0	0	0	EM	Decline	Poor	Major crown dieback, epicormic growth	<10	U
T2	Betula pendula	11	430	3.5	3.5	3.5	3.5	1.5	1.5	1.5	1.5	EM	Fair	Fair	Epicormic growth, leaning stem, codominant,	20-40	C1
T3	Salix caprea	6	460	3	2	2	3	0	0	0	0	EM	Fair	Poor	Main trunk dead, regeneration epicormic growth	<10	U
T4	Betula pendula	12	380	3	3	3	3	0	0	0	0	EM	Fair	Good	Low branches, weak union	20-40	B1
T5	Salix caprea	11	550	4	4	2	3.5	1.5	1.5	1.5	1.5	M	Fair	Fair	On the boundary, leaning stem, epicormic growth on stem and principal branches, suppressed crown	20-40	C1
T6	Cupressocyparis leylandii	4	150	3	3	3	3	0	0	0	0	EM	Fair	Fair	Screening group	20-40	C23
G7	Platanus x hispanica	12	250	4	4	4	4	3	3	3	3	EM	Fair	Good	Tree group in the hedge line, suppressed crowns, uniform groups	40+	B2
T8	Salix caprea	13	530	6	3	6	6	0.5	0.5	0.5	0.5	M	Fair	Fair	Significant tree in the group, multi-stemmed, leaning stem,	20-40	C1
G9	Platanus x acerifolia	12	250	4	4	4	4	0	0	0	0	EM	Fair	Fair	Tree group in the hedge line, suppressed crowns, uniform groups	40+	C2

Tree No.	Species	Ht. (m)	Trunk Diam. (mm)	Crown Spread (m)				Crown Clear. (m)				Age Class	Phys. Cond.	Struct. Cond.	Comments	Est. Rem. Cont. (years)	Cat.
				N	E	S	W	N	E	S	W						
G10	Cupressocyparis leylandii	4	150	2	2	2	2	0	0	0	0	EM	Good	Good	Maintained hedgerow	20-40	C23
G11	Cupressocyparis leylandii	11	150	2	2	2	2	0	0	0	0	EM	Good	Good	Screening plantation, access restricted - structure, vegetation, data estimated	20-40	C23
T12	Betula pendula	14	380	4	4	4	4	3	3	3	3	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	B1
T13	Betula pendula	12	190	3	3	3	3	1	1	1	1	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	C1
T14	Betula pendula	8	150	2	2	2	2	1	1	1	1	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	C1
T15	Betula pendula	5	150	2	2	2	2	1	1	1	1	EM	Fair	Fair	Significant tree behind group, behind perimeter fence, location estimated	20-40	C1
G16	Cupressocyparis leylandii	4	150	3	3	3	3	0	0	0	0	EM	Fair	Fair	Screening hedge with self-set trees and collapsed willow in centre	20-4	C23

Appendix 3: Tree Constraints Plan



Tree Categories

These are categorised in accordance with the cascade chart in Table 1 of the British Standard BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'

Category 'U' - Trees in such condition that they cannot realistically be retained as living trees in context of the current land use for longer than 10 years.

Category 'Y' - Trees of high quality with an estimated remaining life expectancy of at least 40 years.

Category 'M' - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.

Category 'L' - Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.

Root Protection Area

In order to avoid damage to the roots or rooting environment of retained trees, the Root Protection Area (RPA) should be plotted around each of the category 'L', 'M' and 'Y' trees. This is a minimum area in which should be left undisturbed around each retained tree.

The RPA is calculated using the British Standard BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.

The calculated RPA is capped to 757m², which is the equivalent to a circle with a radius of 15m. Where there appears to be restrictions to root growth the root protection area is reshaped to more accurately reflect the likely distribution of the roots.

Tree Survey Report

Please refer to Arbtech Consulting Ltd. Tree Survey Report and Tree Schedule for full details on all surveyed trees, hedgerows and major shrub groups.

All trees were surveyed and categorised in accordance with the guidance as set out in the British Standard BS5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.

We make the following recommendation to ensure that no conditions relating to arboriculture are attached to any planning consent secured, obtain an arboricultural report to include:

- An arboricultural impact assessment (AAI);
- An arboricultural method statement (AMS), and
- A tree protection plan (TPP).

Rev:	Date:	Notes:
A	02/10/20	Updated RPA offsets from crown spreads

ARBTECH

Unit 3, Well House Barns, Chester, CH4 0DH
<https://arbtech.co.uk>, 01244 661170

Project:
 Cemetery Depot,
 Benhall Mill Road,
 Tunbridge Wells,
 TN2 5JH

Client:
 AECOM

Drawing:
 Tree Constraints Plan

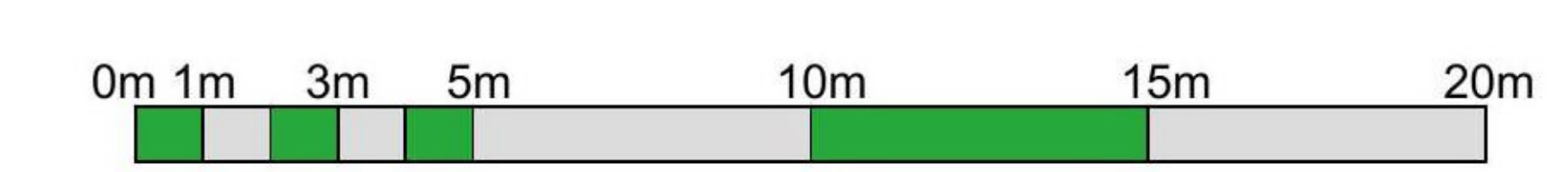
Based on:
 TUNB-AECOM-P1-00-M3-SV-00001_R0

Drawing No: Arbtech TCP 01	Rev: A
Date: Oct 2020	Scale: 1:150 @ A0
Drawn: MM	

Key:

Tree No.:	T01	Tree Category:	Category 'U' trees	Trunk:	○
RPA:	○	Category 'Y' trees:	○	Category 'M' trees:	○
Category 'M' groups:	○	Category 'L' trees:	○	Category 'L' groups:	○

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Document Production Record

Document number	Editor	Signature	Position	Issue number	Date
Arbtech TSR 01	Michal Mixa		Surveyor	2	02/11/2020

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