ARBTECH

BS5837:2012
Trees in relation to design, demolition and construction – Recommendations

Tree Survey

London Borough of Southwark

Beormund Primary School,

Former Bellenden School,

Reedham Street,

London

SE15 4PF

10 June 2021

Author: Michal Mixa FdSc.

Introduction

Arbtech Consulting Limited (Arbtech) received written instruction on 20 May 2021 from London Borough of Southwark to attend the former Bellenden School, Reedham Street, SE15 4PF; grid reference, TQ 34103 75952 (site) 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, Tree Protection Plan and Arboricultural Method Statement.

I am Michal Mixa FdSc., an arboricultural surveyor for Arbtech Consulting Ltd. I undertook the tree survey on 11th December 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 the London Borough of Southwark and developed my knowledge and skills to become an Arboricultural consultant. I hold the FdSc in Arboriculture, and I have four years of 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	B06-TOPO
LPA pre-app comments	N/A
British Standard 5837:2012	"BS5837"
Tree Survey Schedule	Arbtech TS 01
Tree Constraints Plan	Arbtech TCP 01

Tree Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by Michal Mixa FdSc. 20th April 2021.

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 24 individual trees and 1 group of trees 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
Db1523-TOPO	Designstage	Db1523-TOPO	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 in the former Bellenden Primary School grounds.

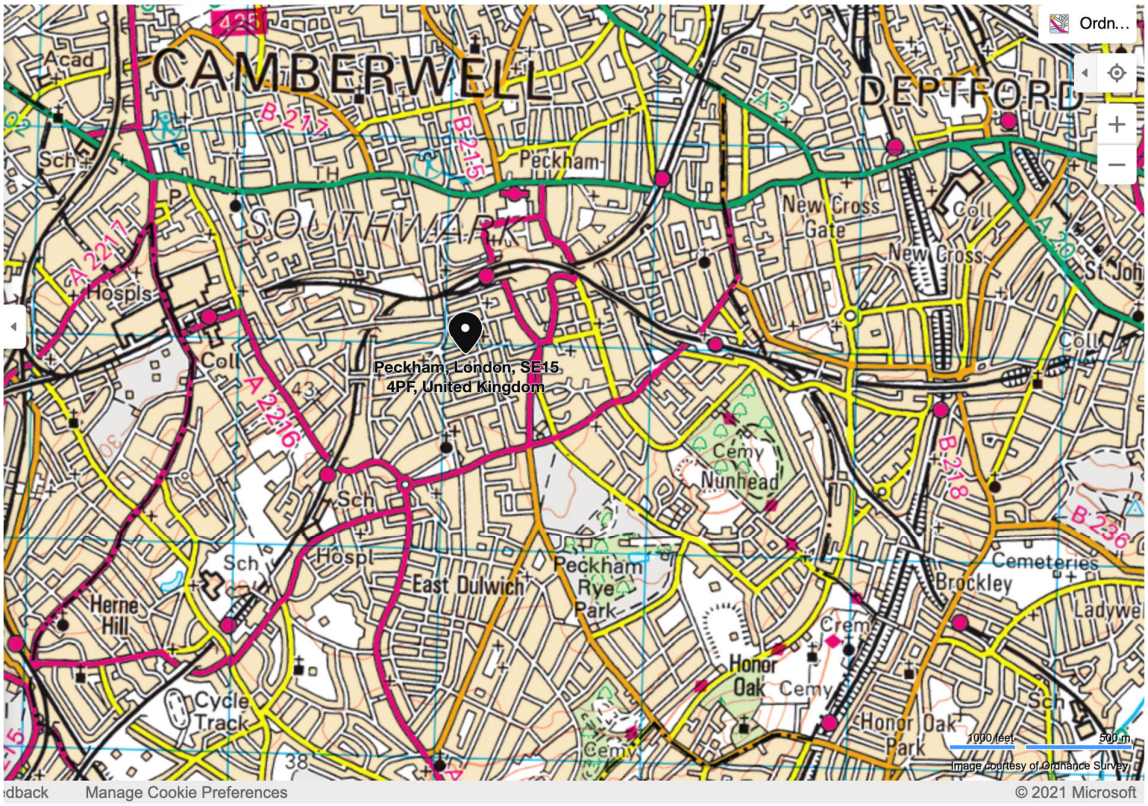

Figure 1: OS Map (Bing Maps)

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.

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

With the benefit of making an assessment of your planning proposals, we 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

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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	• 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

Appendix 2: Schedule of Trees

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Tree Survey Schedule
Beormund Primary School, Crosby Row, London SE1 3PS

Client	London Borough of Southwark
Survey Date	01/05/2020
Weather Conditions	Bright and sunny
Surveyor	Michal Mixa FdSc.

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 it estimated remaining contribution.
Est. Rem. Cont.	Estimated remaining contribution (years): <10; 10+; 20+ 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	Sycamore (Acer pseudoplatanus)	14	340	4	4	4	4	1	1	1	1	Early Mature	Good	Good	Weak union, low branches	20+ Years	B1,3
T2	Sycamore (Acer pseudoplatanus)	12	134	3	3	3	3	0	0	0	0	Early Mature	Fair	Fair	Multistemmed, raise bed	10+ Years	C1,3
T3	Sycamore (Acer pseudoplatanus)	14	520	5.5	5.5	5.5	5.5	2	2	2	2	Mature	Fair	Fair	Major deadwood, spreading crown	20+ Years	B3
T4	Sycamore (Acer pseudoplatanus)	12	157	3	3	3	3	0	0	0	0	Early Mature	Fair	Fair	Crown conflict with the structure, multistemmed	20+ Years	C3
T5	Sycamore (Acer pseudoplatanus)	14	444	5	5	5	5	3	3	3	3	Mature	Fair	Fair	On the neighbouring property behind perimeter fence, Access restricted data estimated, multistemmed, codominant	20+ Years	C1,3

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						
T6	Sycamore (Acer pseudoplatanus)	14	150	2.5	2.5	2.5	2.5	2	2	2	2	Early Mature	Fair	Fair	Bark wounds, weak union	10+ Years	C1,3
T7	Sycamore (Acer pseudoplatanus)	12	170	3.5	3.5	3.5	3.5	1.5	1.5	1.5	1.5	Early Mature	Fair	Fair	No Significant defect found	20+ Years	C1,3
T8	Sycamore (Acer pseudoplatanus)	14	80	1.5	1.5	1.5	1.5	1	1	1	1	Young	Good	Good	Supressed crown	20+ Years	C1
T9	Sycamore (Acer pseudoplatanus)	12	460	5	4	4	6	2	2	2	2	Mature	Fair	Fair	In the raised bed, Supressed crown, weak union, codominant	20+ Years	C1,3
T10	Sycamore (Acer pseudoplatanus)	14	380	4	3	5	4	2	2	2	2	Early Mature	Fair	Fair	In the raised bed, Supressed crown, weak union, codominant	20+ Years	C1,3
T11	Sycamore (Acer pseudoplatanus)	14	320	5	4	2	6	2	2	2	2	Early Mature	Fair	Fair	In the raised bed, Supressed crown, weak union, codominant	20+ Years	C1,3

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						
T12	Sycamore (Acer pseudoplatanus)	12	862	5	5	5	5	3	3	3	3	Mature	Fair	Fair	In the raised bed, Supressed crown, weak union, codominant	20+ Years	B1,3
T13	Sycamore (Acer pseudoplatanus)	14	310	5	2	5	3	3	3	3	3	Mature	Fair	Fair	In the raised bed, Supressed crown, weak union, codominant	20+ Years	C1,3
T14	Sycamore (Acer pseudoplatanus)	12	390	5	5	5	2	3	3	3	3	Mature	Fair	Fair	In the raised bed, Supressed crown, weak union, codominant	20+ Years	C1,3
T15	Sycamore (Acer pseudoplatanus)	14	200	2	2	2	2	3	3	3	3	Early Mature	Good	Fair	In the raised bed, ivy on the stem	20+ Years	C1,3
G16	Sycamore (Acer pseudoplatanus)	14	157	2	2	2	2	0	0	0	0	Semi Mature	Fair	Fair	Self set trees and shrubs	20+ Years	C3
T17	Sycamore (Acer pseudoplatanus)	12	170	3	1	3	3	0	0	0	0	Early Mature	Good	Fair	Leaning stem	20+ Years	C1,3

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						
T18	Sycamore (Acer pseudoplatanus)	14	320	4	4	4	4	1	1	1	1	Mature	Fair	Fair	Multistemmed, rubbing branches, minor deadwood	10+ Years	C3
T19	Sycamore (Acer pseudoplatanus)	12	214	3.5	3.5	3.5	3.5	2	2	2	2	Early Mature	Fair	Fair	Crown conflict with the structure, rubbing branches	10+ Years	C3
T20	Sycamore (Acer pseudoplatanus)	14	230	4	4	4	4	2	2	2	2	Early Mature	Fair	Fair	Rubbing branches	20+ Years	C1,3
T21	Sycamore (Acer pseudoplatanus)	14	500	5	5	5	5	2	2	2	2	Mature	Fair	Fair	On the neighbouring property behind perimeter fence, access restricted data estimated,	20+ Years	B3
T22	Sycamore (Acer pseudoplatanus)	12	400	2	5	5	5	2	2	2	2	Mature	Fair	Fair	On the neighbouring property behind perimeter fence, access restricted data estimated, supressed crown	20+ Years	C1,3
T23	Sycamore (Acer pseudoplatanus)	14	640	6	6	6	6	2	2	2	2	Mature	Fair	Fair	On the neighbouring property behind perimeter fence, access restricted data estimated, codominant	20+ Years	B1,3

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						
T24	Sycamore (Acer pseudoplatanus)	12	728	4	5	6	6	2	2	2	2	Mature	Fair	Fair	On the neighbouring property behind perimeter fence, access restricted data estimated, supressed crown, weak union, codominant	20+ Years	B1,3
T25	Sycamore (Acer pseudoplatanus)	14	500	5	5	3	5	2	2	2	2	Mature	Fair	Fair	On the neighbouring property behind perimeter fence, access restricted data estimated, supressed crown, weak union, codominant	20+ Years	C1,3

Appendix 3: Tree Constraints Plan

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Indicative only

Tree Categories

Trees 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 'A' - Trees of high quality with an estimated remaining life expectancy of at least 40 years.
Category 'B' - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
Category 'C' - 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 Areas (RPAs) should be plotted around each of the category A, B and C trees. This is a minimum area in m^2 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 707m^2, 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 Tree 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 and arboricultural report to include:

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

Rev:	Date:	Notes:

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https://arbtech.co.uk, 01244 661170

Project:
Beormund Primary School,
Former Bellenden School,
Reedham Street,
London
SE15 4PF

Client:
London Borough of Southwark

Drawing:
Tree Constraints Plan

Based on:
B06-TOPO

Drawing No:	Rev:
Arbtech TCP 01	--

Date:	Scale:	Drawn:
June 2021	1:150 @ A0	MM

Key:

Tree Nos.:	T1	Tree Canopies:		Trunks:	
RPAs:		Category 'B' trees:		Category 'C' trees:	
Category 'C' groups:					

All dimensions should be checked on site. No dimensions are to be scaled from this drawing.
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Document Production Record

Document number	Editor	Signature	Position	Issue number	Date
Arbtech TSR 01	Michal Mixa FdSc.		Surveyor	1	10/06/2021

Limitations

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