ARBTECH

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

Tree Survey

Axis P.E.D. Ltd

Waste Transfer Station

Buckley

Flintshire

CH7 3LY

29 October 2020

Author: Max Bell FdSc BSc (Hons) Arboriculture

Introduction

Arbtech Consulting Limited (Arbtech) received written instruction on 16th October 2020 from Axis P.E.D. Ltd to attend Waste Transfer Station, Standard Road, Spencer Industrial Estate, Buckley, Flintshire CH7 3LY; grid reference, SJ 28856 65035 (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 and Tree Constraints Plan.

I am Max Bell, an arboricultural surveyor at Arbtech Consulting Ltd. I undertook the tree survey on 21st October 2020 and subsequently have produced this summary of my findings.

I hold a FdSc & BSc (Hons) in arboriculture and have professional experience in the industry spanning 5 years.

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	PMS20111 -01
LPA pre-app comments	N/A
British Standard 5837:2012	“BS5837”
Tree Survey Schedule	Arbtech TS 01 (02)
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 Max Bell on 21st 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 four individual trees and three groups 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
Topographical Survey	PM Surveys UK	PMS20111-01	Globe Way, Buckley

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 situated within a quadrant of land situated between the A55, B5128, Liverpool Road and Drury Lane. It contains a number of small businesses, with regular traffic passing to the recycling centre opposite via a public highway. The trees are located within the full radius of the site, however are few in number. The topography of the site is predominantly industrial (by its very nature) with solid concrete substructure- however a soil bank runs around the outer site boundary to the southwest of the site at the corner of Globe Way and Standard road. This soil bank has a small amount of vegetation. To the north of the site there is a large group of trees situated adjacent Standard Road, however, are not within the sites boundary lines (please refer to Appendix 2. Schedule of Trees for further details).

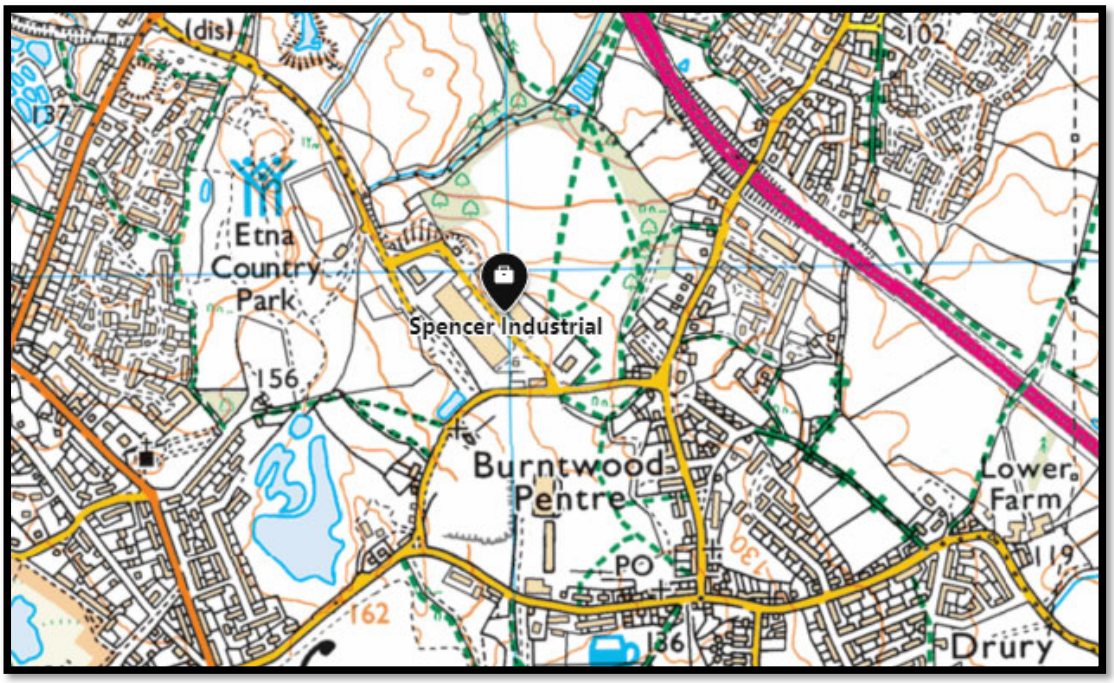

Figure 1: OS Map (Bing Maps)

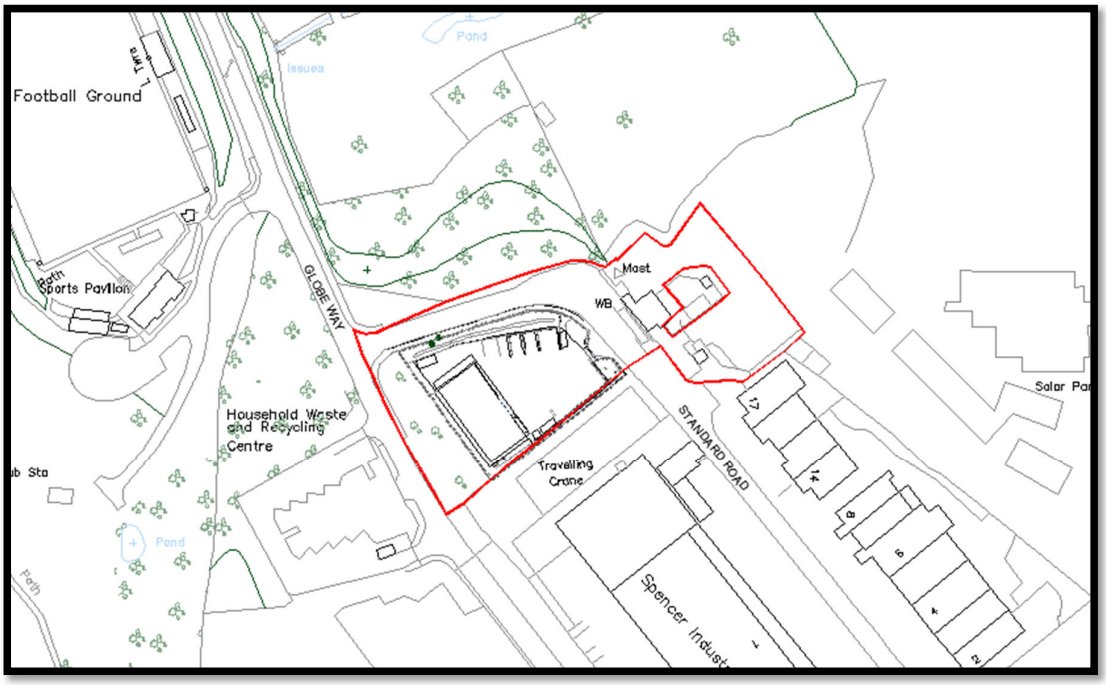

Figure 2: Application Boundary (Dwg. No. 2738-01 Axis))

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:

I. reference number (to be recorded on the tree survey plan);
II. species (common or scientific names);
III. height in meters (m);
IV. stem diameter in millimetres (mm) at 1.5 m above adjacent ground level or immediately above the root flare for multi-stemmed trees;
V. branch spread in meters taken at the four cardinal compass points;
VI. height of crown clearance above adjacent ground level in meters (m);
VII. age class (Newly planted, Young, Semi-mature, Early mature, Mature, Over mature);
VIII. physiological condition (e.g. good, fair, poor, decline and dead);
IX. structural condition (e.g. good, fair, poor and ivy);
X. preliminary management recommendations, including further investigation of suspected defects that require more detailed assessment and potential for wildlife habitat; and
XI. The retention category referring to the quality and useful contribution in years; **U** = <10yrs; **A** = >40yrs; **B** = >20yrs; **C** = >10yrs. The retention sub category referring to the type of amenity; 1 = Arboricultural; 2 = Landscape; 3 = Cultural including conservation (see Table 1 Cascade chart for tree quality assessment).

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 plan, typically delivered as an AutoCAD drawing (.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 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 & .pdf)

If you require clarification of information contained herein, please do not hesitate to contact us via 01244 661170.

Yours Sincerely,

Max Bell
Consultant

07719549550
maxbell@arbtech.co.uk

Appendix 1: Table 1 Cascade chart for tree quality assessment

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

Table 1 Cascade chart for tree quality assessment

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 dominate 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

BS5837:2012 Tree Survey

Arbtech Consulting Ltd.
Unit 3, Well House Barns
Chester Road
Chester
Cheshire
CH4 0DH
Phone: 01244661170

Client: Axis P.E.D. Ltd
Project: Waste Transfer Station, Buckley, CH7 3LY
Survey Date: 21/10/2020
Surveyor: Max Bell

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Tree and Tag No / Species	Hght (m)	Stems No	Stems Ø (mm)	Crown	Spread (m)	Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations / Survey Comment	Cat ERC
G1											Estimated Measurements	
Various	8	1	150	N	2	1.5	Y	A: 10.2	Good	C: Good		C.2
See comments for details				E	2	1.5		R: 1.8		S: Good	Of site group of mixed broadleaf trees mainly comprised of willow, silver birch and oak situated outside of site at northern point of site location. As a group the trees provide screening and are of high amenity value, however, individually trees are of low amenity value and are average quality examples of their species. Group would benefit from sequential thinning works to reduce suppression from comparative growth.	>40 yrs
				S	2	1.5				B: Good		
				W	2	1.5						
G2											Estimated Measurements	
Various	5	1	100	N	2	2	Y	A: 4.5	Good	C: Good		C.2
See comments for details				E	2	1		R: 1.19		S: Good	Group along boundary of site to the south point comprised of young hawthorn, ash, willow and birch. Low amenity group at this stage of their lifespan and within context of site.	>40 yrs
				S	1.5	1				B: Good		
				W	1.5	1						
G3												
A Group	11	4	600 (Eq)	N	3	3	M	A: 162.9	Good	C: Good		B.1
See comments for details				E	7	1.5		R: 7.2		S: Good	Group of four oak trees situated at south east point of site adjacent boundary line and public highway. Heavy ivy growth from base up main stem and throughout canopy making detailed inspection unattainable. Some deadwood within canopy as associated with species characteristic. High amenity value to surrounding area, as well as high ecological value.	>40 yrs
				S	4.5	3				B: Good		
				W	5	3.5						

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	Ø (mm)	Crown Spread (m)	Clear (m)	Age	RP A (m2) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T1											
Goat Willow *Salix caprea*	5	3	398 (Eq)	N 4 E 2.5 S 3.5 W 4.5	2 2 2 2.5	SM	A: 71.8 R: 4.78	Good	C: Good S: Fair B: Good	Willow located against fencing within site. Signs of included union and included bark from all 3 stems. Structural canopy forms at approx 2m, primarily with growth to the north. Branches coming into contact with surrounding building roofs. Tree of low amenity value and average example of species.	C.2 >40 yrs
T2										Estimated Measurements	
Silver Birch *Betula pendula*	5	2	120 (Eq)	N 1.5 E 1 S 0.5 W 1.5	1 1.5 1 1	Y	A: 6.6 R: 1.44	Good	C: Good S: Good B: Good	Tree located out of site boundary against palisade fencing. Crown coming into contact with surrounding light masts and phone line. Tree of low amenity value	C.1 >40 yrs
T3										Estimated Measurements	
Goat Willow *Salix caprea*	5	4	224 (Eq)	N 4.5 E 4.5 S 3 W 4	1.5 1.5 3 1.5	Y	A: 22.8 R: 2.69	Good	C: Good S: Good B: Good	Tree located outside of site boundary against palisade fencing. Main stem splits into four structural stems just above ground level. Tree crown coming to contact with surrounding phone line, CCTV and corner of building structure. Tree of low amenity value.	C.1 >40 yrs
T4											
Common Oak *Quercus robur*	10	1	700	N 5 E 4 S 2 W 3.5	4.5 3.5 5 3	M	A: 221.7 R: 8.4	Good	C: Good S: Good B: Good	Tree located south west of site adjacent public highway. Tree of high amenity value to surrounding area. Heavy ivy growth from base of tree up main stem and throughout canopy, making a detailed inspection unattainable.	B.1 >40 yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Appendix 3: Tree Constraints Plan

Note: Existing dwelling(s), retaining wall(s), road(s) and structures are likely to be partial or complete root barriers. We currently do not have enough information with regards to the existing and surrounding properties and structures, foundations, soil types etc. to definitively determine the root barriers. Site features that are significant enough to be considered barriers to root development, irrespective of proximity to trees, have been identified with a light blue hatch (see key for details).

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 m² 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 707m², 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:
A	29/10/20	Addition of redline boundary

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

Project:
Waste Transfere Station
Buckley
Flintshire
CH7 3LY

Client:
Axis P.E.D. Ltd

Drawing:
Tree Constraints Plan

Based on:
PMS20111-01

Drawing No:	Rev:
Arbtech TCP 01	A

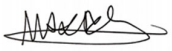
Date:	Scale:	Drawn:
Oct 2020	1:250 @ A1	MB

Key:

Tree Nos.:	T01	Tree Canopies:		Trunks:	
RPAs:		Category 'B' trees:		Category 'B' groups:	
Category 'C' trees:		Category 'C' groups:		Generic notional shading arc:	
Potential root barriers:					

All dimensions should be checked on site. No dimensions are to be scaled from this drawing.
Please notify us of any discrepancies found. Arbtech Consulting Ltd. cannot be held responsible for inaccuracies in the base drawing in which this plan is based.
This drawing is designed to reflect the principles of the layout or design only, and relates only to the protection of retained trees.
This drawing is not to be read as a definitive part of the engineering or construction designs or method statement. An architect or structural engineer should be contacted over any matters of construction, detailing or specification and for any standards or regulatory requirements relating to proposed structures, hard surfacing or underground services.
This drawing was produced in colour - a monochrome copy should not be relied upon.

Document Production Record

Document number	Editor	Signature	Position	Issue number	Date
Arbtech TSR 01	Max Bell		Consultant	2	29/10/2020

Limitations

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