



arbtech

BS5837:2012

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

Tree Survey

Whitshaw Developments Ltd.

Land at Wombwell Road,
Hoyland,
Barnsley,
South Yorkshire,
S74 9SJ

7 January 2022

Author: Emily Kempson (BSc honours)

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1. Introduction

Arbtech Consulting Limited (Arbtech) received written instruction on 17th November 2021 from James Shaw of Whitshaw Developments Ltd to attend Land at Wombwell Road, Hoyland, Barnsley, South Yorkshire, S74 9SJ; grid reference, SE 37112 01356 (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, Arboricultural Method Statement and Tree Protection Plan.

I am Emily Kempson, an arboricultural consultant at Arbtech Consulting Ltd. I undertook the tree survey on 4th January 2022 and subsequently have produced this summary of my findings.

I hold a BSc honors in Geography and have undertaken a Level 4 diploma in arboriculture and have professional experience in arboriculture. I have also attended the Arboricultural Association Intermediate Tree Inspection Course in 2019.

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	S10142
British Standard 5837:2012	“BS5837”
Tree Survey Schedule	Arbtech TS 01
Tree Constraints Plan	Arbtech TCP 01

2. Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by Emily Kempson on 4th January 2022.

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 10No. individual trees and 8No. 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	Haycock & Todd	S10142	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 situated at the corner of Wombwell Road and Kingswood Close. The site is currently vacant, largely comprised of hardstanding through the centre with self-seeded trees growing centrally and around the perimeter. There is a level change across the southern section of the site, which reduces in elevation towards a retaining wall where there is a lower level adjacent to Kingswood Close.

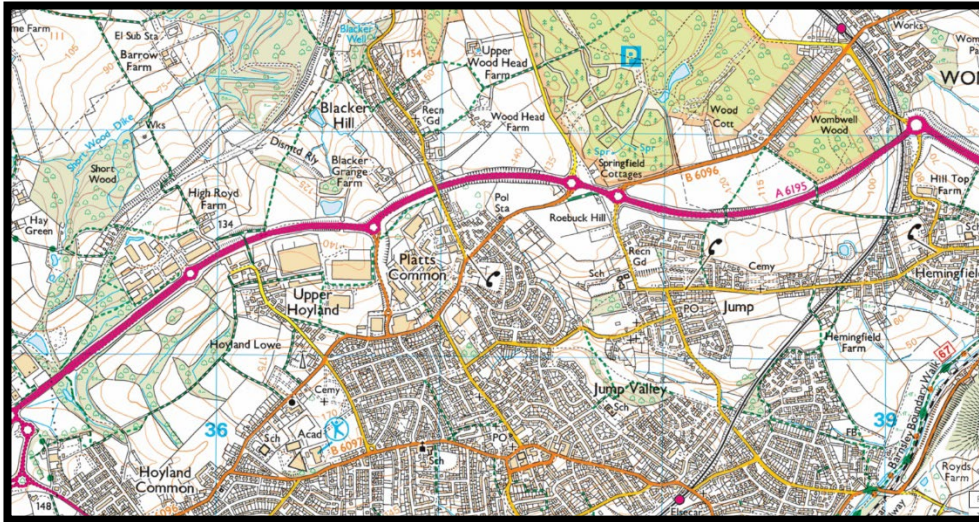


Figure 1: OS Map (Bing Maps)



Figure 2: Aerial Image of site (Google Earth)

Proposed scheme

The proposals include the construction of 8 new dwellings utilising the existing access.

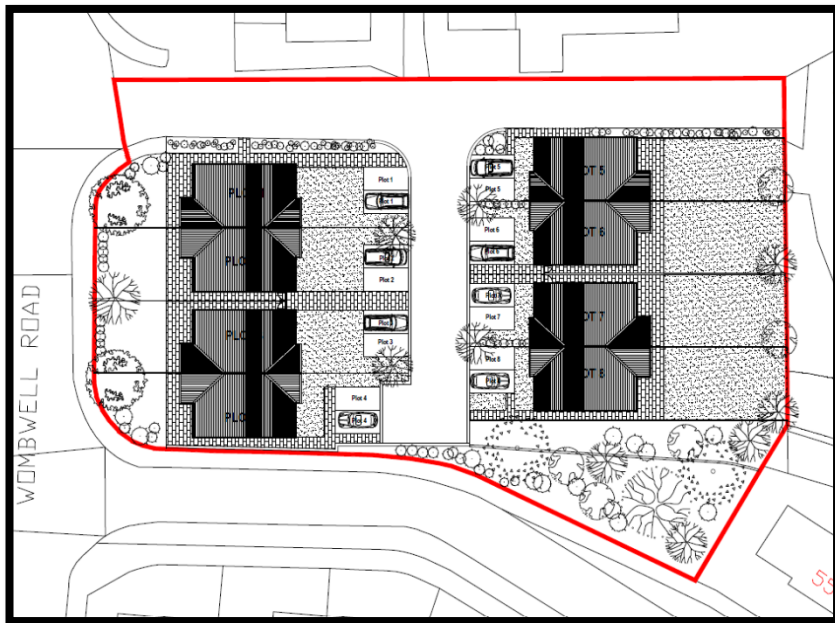


Figure 3: Proposed scheme drawing number (0094) – P500

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

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3. 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.

4. 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:

- a) reference number (to be recorded on the tree survey plan);
- b) species (common or scientific names);
- c) height in meters (m);
- d) stem diameter in millimetres (mm) at 1.5 m above adjacent ground level or immediately above the root flare for multi-stemmed trees;
- e) branch spread in meters taken at the four cardinal compass points;
- f) height of crown clearance above adjacent ground level in meters (m);
- g) age class (Newly planted, Young, Semi-mature, Early mature, Mature, Over mature);
- h) physiological condition (e.g. good, fair, poor, decline and dead);
- i) structural condition (e.g. good, fair, poor and ivy);
- j) comment about the tree, its location and preliminary management recommendations, including further investigation of suspected defects that require more detailed assessment and potential for wildlife habitat; and
- k) 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).

5. 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.

6. 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).

7. 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.

8. 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,



Emily Kempson BSc (Hons)
Consultant Arboriculturist

07874 872745
Emilykempson@arbtech.co.uk

Appendix 1: Table 1 Cascade chart for tree quality assessment

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	<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 <p><i>NOTE Category U trees can have existing or potential conservation value which might be desirable to preserve; see 4.5.7.</i></p>	Dark red
	<p>1 Mainly arboricultural qualities</p> <p>2 Mainly landscape qualities</p> <p>3 Mainly cultural values, including conservation</p>	
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
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
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, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
		Trees with material conservation or other cultural value
		Trees with no material conservation or other cultural value
		Light green
		Mid blue
		Grey

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Ecology – Protected Species - Licensing – **Arboriculture** – Biodiversity Net Gain – Land/Topographical Survey

Appendix 2: Schedule of Trees

BS5837:2012 Tree Survey

Arbtech Consulting Ltd

Client: Whitshaw Developments Ltd
 Project: Land at Wombwell Road, Hoyland, Barnsley
 Survey Date: 04/01/2022
 Surveyor: Emily Kempson



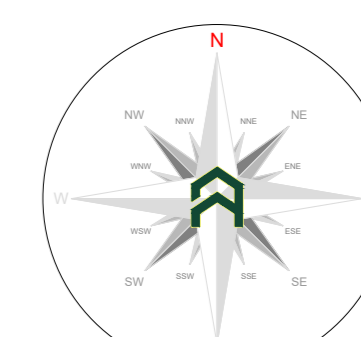
Unit 3, Well House Barns
 Chester Road
 Chester
 Cheshire
 CH4 0DH
 Phone: 01244661170

Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m ²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC	
		No	Ø (mm)	Spread (m)	Clear (m)							
Estimated Measurements												
G1												
Various <i>See comments for details</i>	6	1	150	N	2.5	0.5	Y	A: 10.2 R: 1.8	Good	C: Good S: Good B: Good	Group of trees including self set goat willow and sycamore. Dimensions represent maximum for group.	
				E	2.5	0.5					C.2 10+ yrs	
				S	2.5	0.5						
				W	2.5	0.5						
Estimated Measurements												
G2												
Various <i>See comments for details</i>	6	1	125	N	2.5	0.5	Y	A: 7.1 R: 1.5	Good	C: Good S: Good B: Good	Group of trees including goat willow and sycamore. Multi stem trees with saplings around base. Overgrown by brambles. Dimensions represent maximum within group.	
				E	2.5	0.5					C.2 10+ yrs	
				S	2.5	0.5						
				W	2.5	0.5						
Estimated Measurements												
G3												
Various <i>See comments for details</i>	6	1	125	N	3	1	Y	A: 7.1 R: 1.5	Good	C: Good S: Good B: Good	Group of largely self set trees located centrally within the site bounded by tarmac, including silver birch, goat willow, sycamore, ash, alder. Dimensions represent average within group.	
				E	3	1					C.2 10+ yrs	
				S	3	1						
				W	3	1						
Estimated Measurements												
G4												
Various <i>See comments for details</i>	6	1	140	N	3	1	SM	A: 8.9 R: 1.68		C: Good S: Good B: Good	Group of goat willow located offsite, adjacent to tarmac.	
				E	3	1					C.2 10+ yrs	
				S	3	1						
				W	3	1						
Estimated Measurements												
Age Classifications:	N	Newly planted	EM	Early Mature	Condition:		C	Crown	Stems:		Ø	Diameter
	Y	Young	M	Mature			S	Stem			(Eq)	Equivalent stem diameter using BS5837:2012 definition
	SM	Semi-mature	OM	Over Mature			B	Basal area	ERC:			Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m ²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC	
		No	Ø (mm)	Spread (m)	Clear (m)							
Estimated Measurements												
G5 Various <i>See comments for details</i>	4.5	3	189 (Eq)	N	3	0	SM	A: 16.1 R: 2.26		C: Good S: Good B: Fair	Grows within tarmac, comprising ash, alder, sycamore, silver birch. Dimensions represent maximum of group.	C.2 10+ yrs
Estimated Measurements												
G6 Various <i>See comments for details</i>	6	2	250 (Eq)	N	4	0	SM	A: 28.3 R: 3		C: Good S: Good B: Fair	Group growing within tarmac, comprising goat willow and sycamore, mostly multi stem from the base. Dimensions represent the maximum within the group.	C.2 10+ yrs
Estimated Measurements												
G7 Various <i>See comments for details</i>	12	1	290	N	4	2	SM	A: 38.1 R: 3.48	Good	C: Good S: Good B: Good	Group of trees adjacent to road, at lower elevation to site. Dimensions represent the maximum of group. Species include sycamore, silver birch, hawthorn.	B.2 20+ yrs
Estimated Measurements												
G8 Various <i>See comments for details</i>	12	1	225	N	3.5	2	EM	A: 22.9 R: 2.69	Good	C: Good S: Good B: Good	Located at the upper level of the retaining wall, on an embankment that slopes away from the site. Includes silver birch, sycamore and hawthorn. Dimensions represent average of the group.	B.2 20+ yrs
Estimated Measurements												
T1 Common Hawthorn <i>Crataegus monogyna</i>	4.5	3	184 (Eq)	N	2	0.5	SM	A: 15.3 R: 2.2	Good	C: Good S: Good B: Good	Located on elevation change.	C.2 10+ yrs
Estimated Measurements												
T2 Common Hawthorn <i>Crataegus monogyna</i>	4.5	3	184 (Eq)	N	2	0.5	SM	A: 15.3 R: 2.2	Good	C: Good S: Good B: Good	Located on elevation change.	C.2 10+ yrs
Estimated Measurements												
Age Classifications:	N	Newly planted	EM	Early Mature			Condition:	C	Crown	Stems: Ø Diameter		
	Y	Young	M	Mature				S	Stem	(Eq) Equivalent stem diameter using BS5837:2012 definition		
	SM	Semi-mature	OM	Over Mature				B	Basal area	ERC: Estimated Remaining Contributio		

Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m ²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC
		No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment		
T9												
Sycamore <i>Acer pseudoplatanus</i>	12	1	570	N	5.5	4	M	A: 147 R: 6.84	Good	C: Good S: Good B: Good	Street tree growing in grass. No notable features.	B.2 20+ yrs
T10												
Sycamore <i>Acer pseudoplatanus</i>	12	1	560	N	6	6	M	A: 141.9 R: 6.72	Good	C: Good S: Good B: Good	Street tree growing in grass. Suckers around base. Pruning wounds at 4 to 5m largely occluded.	B.2 20+ yrs
Age Classifications: N Newly planted EM Early Mature Condition: C Crown Stems: Ø Diameter Y Young M Mature S Stem (Eq) Equivalent stem diameter using BS5837:2012 definition SM Semi-mature OM Over Mature B Basal area ERC: Estimated Remaining Contributio												

Appendix 3: Tree Constraints Plan



Indicative only

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

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

Category 'X' - Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 100mm.

Root Protection Area

In order to avoid damage to the roots or rooting environment of retained trees, the Root Protection Area (RPA) should be defined around each of the category 'U' and 'V' 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.

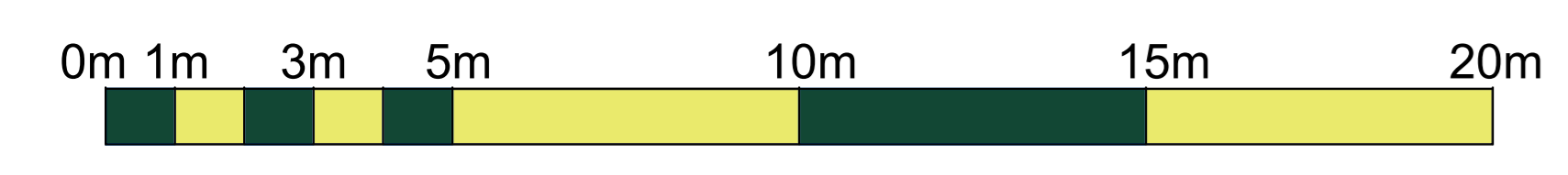
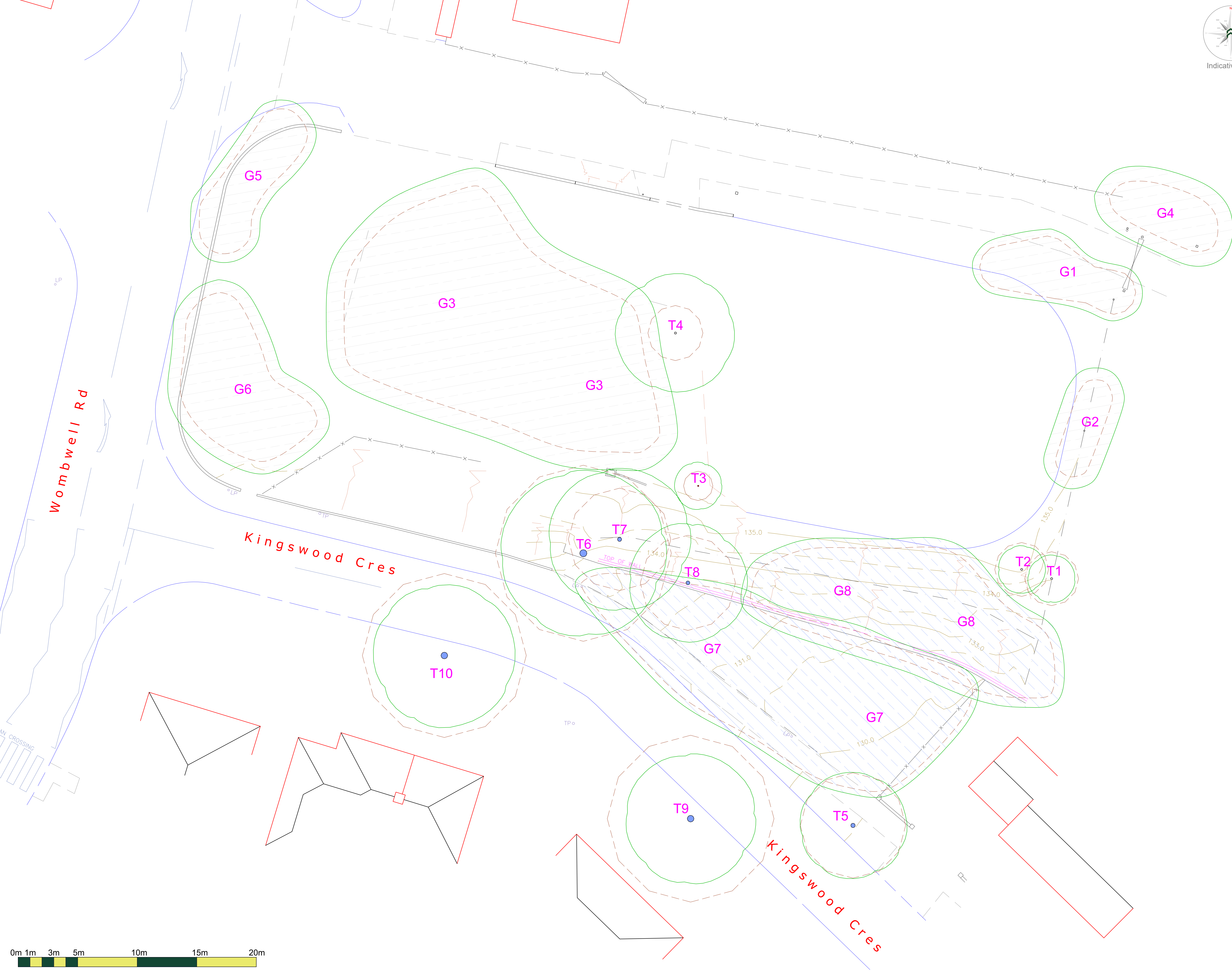
Tree Survey Report

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:

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



Project: Land at Wombwell Road, Hoyland, Barnsley, South Yorkshire, S74 9SJ

Client: Whitshaw Developments Ltd.

Drawing: Tree Constraints Plan

Based on: S10142

Drawing No: Arbtech TCP 01

Date: Jan 2022 **Scale:** 1:100 @ A0 **Drawn:** EK

Key:

Tree No.	T1	Tree Category	Tree	Trunk	○
RPA	Category 'U' trees	Category 'V' trees	Category 'W' trees	Category 'X' trees	○
Category 'U' trees	Category 'V' trees	Category 'W' trees	Category 'X' trees	○	○

Arbtech Consulting Ltd. 2022

9. Document Production Record

Document number	Editor	Signature	Position	Issue number	Date
Arbtech TSR 01	Emily Kempson		Consultant	01	07/01/22

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