ARBTECH Consulting Limited

BS5837:2012

Trees in relation to design, demolition and construction – Recommendations

Land at Wrexham Road, Abermorddu, Flintshire.

Author: Alan Thompson FdSc (Arb), M Arbor A

Ian Stevens
Fisher German LLP
The Clarke Estate
c/o Edward Clarke
4 Vicars Lane
Chester
Cheshire
CH1 1QU

26/07/16

Dear Ian

BS5837 Tree Survey – Land at Wrexham Road, Abermorddu, Flintshire.

Fisher German LLP appointed Arbtech Consulting Ltd. in July 2016 to undertake a BS5837 Tree Survey and Tree Constraints Plan at the aforementioned site. Our arboricultural consultant, Mr. Alan Thompson undertook the survey on the 20th July 2016; weather conditions were hot, dry & bright. Subsequently we have produced this summary of our findings. Mr. Alan Thompson FdSc has over 7 years experience in both local authority and private practice environments.

Tree Survey Executive Summary

All trees within the property have been surveyed using techniques demanded by BS:5837 2012, Trees in Relation to Construction.

A total of 44 individual trees, four grouped areas of trees and two hedgerows were surveyed. In general the tree stock on site is young to mature in age range.

Management recommendations have been made below where significant defects are suspected to be present.

All of the trees surveyed were in an acceptable or good condition at the time of the survey. No trees were deemed to be in a hazardous or unstable condition.

Individual notes on the tree's structural and physiological condition are found in the Notes section of the survey schedule.

The following content is for educational and informative purposes; so parts of it are reproduced with the kind permission of BSI Global.

BS5837 Scope

This standard recognizes that there can be problems of 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.

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 (.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.

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 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.

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.

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 masterplan proposals for the proposed 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 metres;
IV. stem diameter in millimetres at 1.5 m above adjacent ground level or immediately above the root flare for multi-stemmed trees;
V. branch spread in metres taken at the four cardinal compass points;
VI. height in metres of crown clearance above adjacent ground level;
VII. age class (young, middle aged, mature, over-mature, veteran);
VIII. physiological condition (e.g. good, fair, poor, dead);
IX. structural condition, e.g. collapsing, the presence of any decay and physical defect;
X. preliminary management recommendations, including further investigation of suspected defects that require more detailed assessment and potential for wildlife habitat; and
XI. category grading to be recorded in plan on the tree survey plan.

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 (PDF)

If you require clarification of information contained herein, please do not hesitate to contact me on 07703 676 216

Yours Sincerely,

Alan Thompson FdSc (Arb.), M Arbor A

Arboricultural Consultant

BS5837:2012 Tree Survey

Client: Fisher German LLP
Project: Land at Wrexham Road, Abermorddu, Flintshire.
Survey Date: 20/07/2016
Surveyor: Alan Thompson

Arbtech Consulting Ltd.

Unit 3
Well House Barns
Chester Road
Chester
CH4 0DH
Phone: 01244 66 11 70

Tree and Tag No / Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations / Survey Comment	Cat ERC
G1										Estimated Measurements	
A Group	4	1	130	N 2.5	0.5	Y	A: 7.6	Good	C: Good		C.1.2
- -				E 2.5	0.5		R: 1.55		S: Good	Linear boundary screening group is comprised of Hazel, Wild cherry, Rowan, Ash and Elder. Measurements given are estimated averages for the group.	>40 yrs
				S 2.5	0.5				B: Good		
				W 2.5	0.5						
G2										Estimated Measurements	
A Group	7.5	10	221 (Eq)	N 5	1	M	A: 22.2	Good	C: Good		B.1.2.3
- -				E 5	1		R: 2.65		S: Good	Group is comprised of approximately 25 mature Hazel coppices, intersperced with occasional Hawthorn, Holly and Elder. Measurements given are estimated averages for the group.	>40 yrs
				S 5	1				B: Good		
				W 5	1						
G3										Estimated Measurements	
A Group	10	1	400	N 4.5	3	M	A: 72.4	Good	C: Good		B.2
- -				E 4.5	3		R: 4.8		S: Good	Group is comprised of 12 Alder and Sycamore trees. Understory is comprised of Holly, Hawthorn, Hazel and Elder. Measurements given are estimated averages for the group.	>40 yrs
				S 4.5	3				B: Good		
				W 4.5	3						
G4										Estimated Measurements	
A Group	6	6	171 (Eq)	N 4	0.5	SM	A: 13.3	Good	C: Good		B.2
- -				E 4	0.5		R: 2.05		S: Good	Large group is comprised of Goat willow and Hazel intersperced with Hawthorn, Elder and Occasional Silver birch. Measurements given are estimated averages for the group.	>40 yrs
				S 4	0.5				B: Good		
				W 4	0.5						

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

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
H1										Estimated Measurements	
A Hedgerow - *Unknown*	2	1	80	N 0.7 E 0.7 S 0.7 W 0.7	0.2 0.2 0.2 0.2	M	A: 2.9 R: 0.96	Good	C: Good S: Good B: Good	Fragmented, partially lapsed Hawthorn hedgerow. Measurements given are estimated averages for the group.	**C.1.2** 20 to 40 yrs
H2										Estimated Measurements	
A Hedgerow - *Unknown*	2	1	80	N 0.7 E 0.7 S 0.7 W 0.7	0.1 0.1 0.1 0.1	M	A: 2.9 R: 0.96	Good	C: Good S: Good B: Good	Well maintained hedgerow. Predominantly Hazel interspersed with Hawthorn and Holly. Measurements given are estimated averages for the group.	**C.1.2** >40 yrs
T1											
Goat Willow *Salix caprea*	5	6	171 (Eq)	N 3 E 3 S 3 W 3	0.5 0.5 0.5 0.5		A: 13.3 R: 2.05	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T2											
Goat Willow *Salix caprea*	4.5	7	132 (Eq)	N 2 E 2 S 2 W 2	0.5 0.5 0.5 0.5	Y	A: 7.9 R: 1.58	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T3											
Common Alder *Alnus glutinosa*	8.5	3	386 (Eq)	N 3 E 4 S 3 W 4	2 3 2 2	SM	A: 67.4 R: 4.63	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T4											
Common Alder *Alnus glutinosa*	7	2	163 (Eq)	N 4 E 3 S 1 W 3	1.5 2 5 1.5	Y	A: 12 R: 1.95	Good	C: Fair S: Good B: Good	Tree's crown is suppressed to the south by T3.	**C.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

Harptree House, Lighwood Green Avenue, Audlem, CW3 0EN

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T5											
Common Oak *Quercus robur*	3	1	90	N 0.5 E 1.5 S 2 W 1.5	1 1 1 1	Y	A: 3.7 R: 1.08	Fair	C: Fair S: Good B: Good	Tree of limited amenity value. Tree's crown is suppressed by T3.	**C.1** >40 yrs
T6											
Common Alder *Alnus glutinosa*	3	6	49 (Eq)	N 1.5 E 1.5 S 1.5 W 1.5	0.5 0.5 0.5 0.5	Y	A: 1.1 R: 0.59	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T7											
Common Ash *Fraxinus excelsior*	6	1	240	N 3.5 E 3.5 S 3.5 W 3.5	2 2 2 2	Y	A: 26.1 R: 2.88	Good	C: Good S: Fair B: Good	Tree of limited amenity value. Tree's stem has grown through and included adjacent chainlink fencing.	**C.1** >40 yrs
T8											
Common Ash *Fraxinus excelsior*	10	1	250	N 3 E 3 S 3 W 1	2 2 2 4	Y	A: 28.3 R: 3	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T9											
Common Ash *Fraxinus excelsior*	8.5	1	240	N 3 E 1 S 3 W 3	2 4 2 2	Y	A: 26.1 R: 2.88	Good	C: Good S: Good B: Good	Tree of limited amenity.	**C.1** >40 yrs
T10											
Lombardy Poplar *Populus nigra 'Italica'*	22	1	550	N 3 E 3 S 3 W 3	3 3 3 3	M	A: 136.9 R: 6.6	Good	C: Good S: Good B: Good	Offsite tree on neighbouring land could not be fully inspected and the stem diameter measurement given is an estimate.	**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

Harptree House, Lighwood Green Avenue, Audlem, CW3 0EN

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T11										Estimated Measurements	
Hybrid Black Poplar *Populus x canadensis*	20	1	800	N 10 E 8 S 6 W 7	5 5 5 5	M	A: 289.6 R: 9.6	Fair	C: Good S: Fair B: Fair	Previous major limb loss has resulted in a large tear wound with decay in tree's stem (east) running from base to 2.5m. Tree's condition should be monitored on a biannual basis. Offsite tree on neighbouring land could not be fully inspected and the stem diameter measurement given is an estimate.	**B.1** 20 to 40 yrs
T12											
Western Balsam Poplar *Populus trichocarpa*	20	1	600	N 9 E 8 S 7 W 8	3 3 3 3	M	A: 162.9 R: 7.2	Good	C: Good S: Good B: Good	Offsite tree on neighbouring land could not be fully inspected and the stem diameter measurement given is an estimate.	**B.1** >40 yrs
T13											
Common Ash *Fraxinus excelsior*	14	1	580	N 7 E 7 S 7 W 7	3 4 3 3	M	A: 152.2 R: 6.96	Good	C: Good S: Good B: Good	Naturally occurring minor deadwood observed in tree's lower crown.	**B.1** >40 yrs
T14											
Common Oak *Quercus robur*	12.5	1	630	N 7.5 E 7.5 S 7.5 W 7.5	3 3 3 3	SM	A: 179.6 R: 7.56	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T15											
Common Ash *Fraxinus excelsior*	22	1	890	N 9.5 E 9 S 9 W 8.5	3 3 3 4	M	A: 358.4 R: 10.68	Fair	C: Good S: Ivy B: Fair	Veteran tree. Slight apical die back observed in tree's crown. Thick ivy is spreading throughout tree's stem into crown. Erosion of surrounding land with some root damage due to livestock.	**A.3** 20 to 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

Harptree House, Lighwood Green Avenue, Audlem, CW3 0EN

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T16											
Common Ash *Fraxinus excelsior*	22	1	1100	N 11 E 11.5 S 10 W 10.5	3.5 3.5 3.5 3.5	M	A: 547.5 R: 13.2	Good	C: Good S: Good B: Good	Boundary tree could not be fully inspected and the stem diameter measurement given is an estimate. Inonotus hispidus fruiting body observed in major limb in tree's crown (south) at 7m.	A.1 >40 yrs
T17											
Common Ash *Fraxinus excelsior*	20	1	950	N 10 E 10 S 6.6 W 9	4 3 6 3	M	A: 408.3 R: 11.4	Fair	C: Good S: Poor B: Fair	Tree's stem has previously failed at point of tight stem union due to included bark. Resulted in major tear wound with major decay running from base to 3.7m. Tree is laying down good amount of reactionary cambium growth around tear wound. Tree's condition should be monitored on a biannual	A.3 >40 yrs
T18											
Sycamore *Acer pseudoplatanus*	15	2	648 (Eq)	N 8.5 E 7.5 S 7.5 W 7.5	4 5 5 4	SM	A: 190.1 R: 7.77	Good	C: Good S: Good B: Fair	Tight stem union observed at tree's base.	B.1 >40 yrs
T19											
Sycamore *Acer pseudoplatanus*	14.5	1	450	N 7 E 7 S 7 W 7	5 4 5 4	SM	A: 91.6 R: 5.39	Good	C: Good S: Good B: Good		B.1 >40 yrs
T20											
Common Ash *Fraxinus excelsior*	12	4	440 (Eq)	N 6 E 5 S 5 W 5	5 4 5 4	SM	A: 87.6 R: 5.28	Good	C: Good S: Good B: Good		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

Harptree House, Lighwood Green Avenue, Audlem, CW3 0EN

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T21											
Sycamore *Acer pseudoplatanus*	15.5	1	480	N 6 E 5.5 S 5.5 W 4	4 4 4 8	SM	A: 104.2 R: 5.75	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T22											
Sycamore *Acer pseudoplatanus*	15	1	570	N 6 E 4 S 6 W 6	4 8 4 5	SM	A: 147 R: 6.84	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T23											
Common Alder *Alnus glutinosa*	12.5	2	411 (Eq)	N 5.5 E 5.5 S 5 W 4	4 4 4 4	M	A: 76.5 R: 4.93	Good	C: Good S: Good B: Good		**B.1** 20 to 40 yrs
T24											
Common Alder *Alnus glutinosa*	12	1	430	N 3.5 E 8 S 3.5 W 1	2 2 2 10	M	A: 83.7 R: 5.16	Poor	C: Fair S: Fair B: Poor	Tree has partially collapsed and has come to rest on T23. Tree is recommended for removal.	**C.1** 10 to 20 yrs
T25											
Common Ash *Fraxinus excelsior*	13	1	260	N 4.5 E 4.5 S 4.5 W 4.5	8 7 8 8	Y	A: 30.6 R: 3.12	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T26											
Common Alder *Alnus glutinosa*	13	1	240	N 4 E 4 S 4 W 4	5 4 5 5	SM	A: 26.1 R: 2.88	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** 20 to 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

Harptree House, Lighwood Green Avenue, Audlem, CW3 0EN

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T27											
Common Oak *Quercus robur*	21	1	1110	N 12 E 10 S 12.5 W 14	2 5 7 2	M	A: 557.5 R: 13.32	Good	C: Good S: Good B: Good	Naturally occurring (shaded out) deadwood observed in tree's crown.	A.1 >40 yrs
T28											
Sycamore *Acer pseudoplatanus*	16	1	840	N 7 E 9 S 9 W 9.5	4 2 2 2	M	A: 319.2 R: 10.07	Good	C: Good S: Good B: Good		B.1 >40 yrs
T29											
Sycamore *Acer pseudoplatanus*	14.5	2	601 (Eq)	N 8 E 8 S 5 W 8	3 3 8 3	M	A: 163.7 R: 7.21	Good	C: Good S: Good B: Good	Thick Ivy is spreading throughout tree's stem into crown.	B.1 >40 yrs
T30											
Common Ash *Fraxinus excelsior*	5.5	4	154 (Eq)	N 2.5 E 2.5 S 2.5 W 2.5	1.5 1.5 1.5 1.5	Y	A: 10.7 R: 1.84	Good	C: Good S: Good B: Good	Tree of limited amenity value.	C.1 >40 yrs
T31											
Sycamore *Acer pseudoplatanus*	19	1	880	N 10 E 10 S 10 W 10	3 3 3 2	M	A: 350.4 R: 10.56	Good	C: Good S: Good B: Good		B.1 >40 yrs
T32											
Sycamore *Acer pseudoplatanus*	11	2	601 (Eq)	N 7.5 E 7 S 7 W 6	4 4 4 4	SM	A: 163.5 R: 7.21	Good	C: Good S: Good B: Good	Thick Ivy is spreading throughout tree's stem into crown.	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

Harptree House, Lighwood Green Avenue, Audlem, CW3 0EN

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T33											
Sycamore *Acer pseudoplatanus*	15.5	1	490	N 6 E 6.5 S 5 W 6.5	3 4 3 2	SM	A: 108.6 R: 5.87	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T34											
Common Oak *Quercus robur*	14	1	570	N 7 E 8 S 7 W 7.5	4 4 4 4	SM	A: 147 R: 6.84	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T35											
Sycamore *Acer pseudoplatanus*	13.5	1	590	N 7 E 7 S 7 W 6.5	2 2 2 4	M	A: 157.5 R: 7.08	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T36											
Common Ash *Fraxinus excelsior*	20	1	1140	N 11 E 12 S 12 W 12	4 1 3 3	M	A: 588 R: 13.68	Good	C: Good S: Good B: Good		**A.1** >40 yrs
T37											
Common Alder *Alnus glutinosa*	5.5	2	210 (Eq)	N 2.5 E 2.5 S 2.5 W 2.5	1.5 1.5 1.5 1.5	Y	A: 20 R: 2.52	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T38											
Common Alder *Alnus glutinosa*	15.5	2	587 (Eq)	N 5 E 6.5 S 7 W 6.5	7 3 2 3	M	A: 155.9 R: 7.04	Good	C: Good S: Good B: Fair	Included bark observed at tree's base at point of tight stem union.	**B.1** 20 to 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

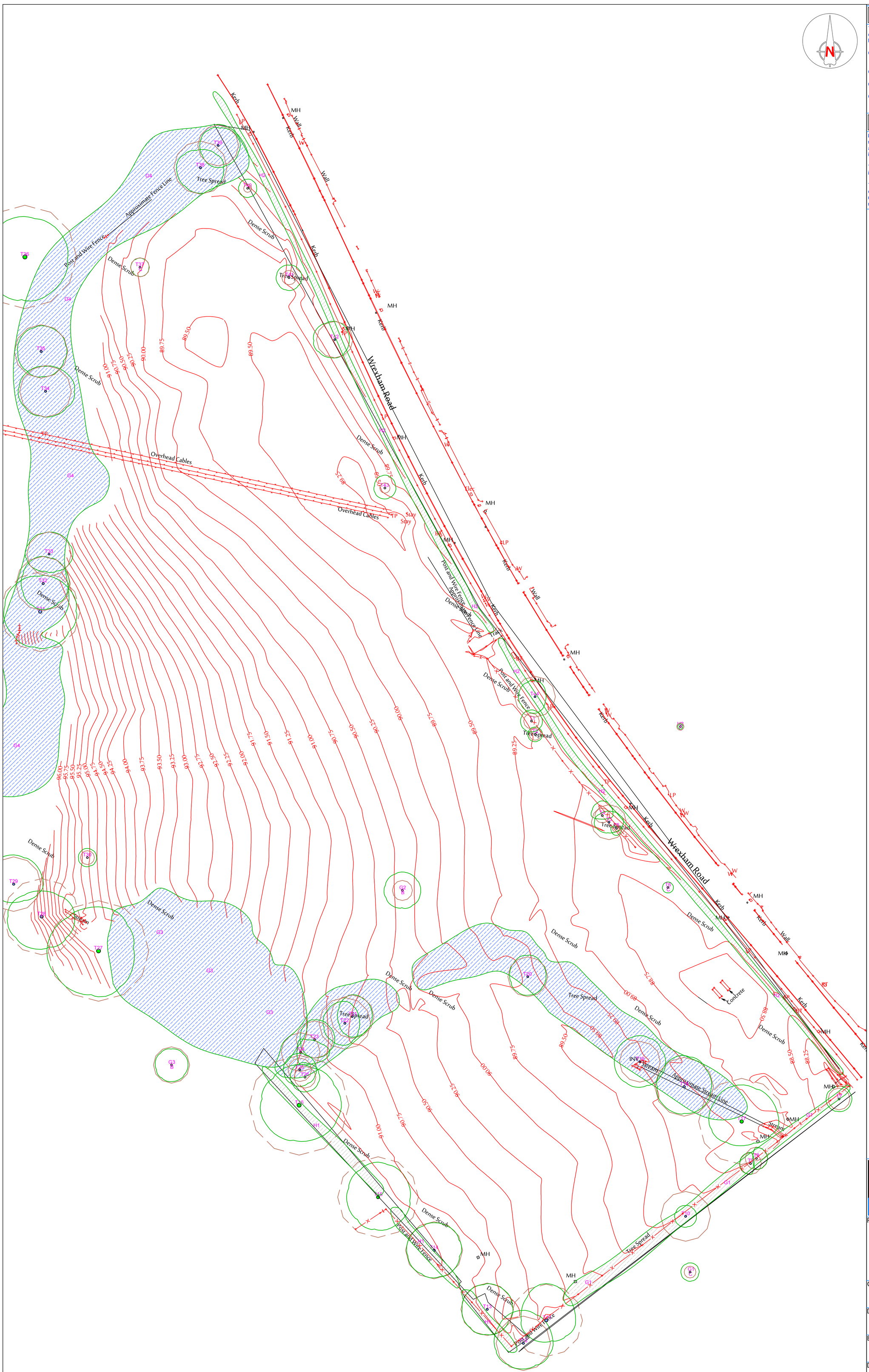
Harptree House, Lighwood Green Avenue, Audlem, CW3 0EN

Tree and Tag No Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T39											
Common Alder *Alnus glutinosa*	15	1	450	N 5 E 6 S 6 W 5	4 3 2 4	M	A: 91.6 R: 5.39	Good	C: Good S: Good B: Good		**B.1** >40 yrs
T40											
Common Hawthorn *Crataegus monogyna*	4	3	88 (Eq)	N 2.5 E 2.5 S 2.5 W 2.5	1.5 1.5 1.5 1.5	Y	A: 3.5 R: 1.05	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T41											
Goat Willow *Salix caprea*	4.5	7	159 (Eq)	N 3.5 E 3.5 S 3.5 W 3.5	1 1 1 1	Y	A: 11.4 R: 1.9	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T42											
English Elm *Ulmus procera*	10	3	402 (Eq)	N 5 E 4 S 5 W 6	3 4 3 2	SM	A: 73 R: 4.82	Good	C: Good S: Ivy B: Good	Thick Ivy is spreading throughout tree's stem into crown.	**B.1** 20 to 40 yrs
T43											
Goat Willow *Salix caprea*	3	2	113 (Eq)	N 3.5 E 3 S 3 W 3	0.5 0.5 0.5 0.5	Y	A: 5.8 R: 1.35	Good	C: Good S: Good B: Good	Tree of limited amenity value.	**C.1** >40 yrs
T44											
Common Oak *Quercus robur*	8.5	1	450	N 4.5 E 3 S 4.5 W 4.5	4 4 3 4	SM	A: 91.6 R: 5.39	Fair	C: Fair S: Ivy B: Good	Thick Ivy is spreading throughout tree's stem into crown. Slight apical die back observed in tree's crown.	**B.2** 20 to 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



Tree Categories

Trees are categorised in accordance with the cascade chart in Table 1 of the British Standard BS 5837:2005 'Trees in relation to 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.

ARBTECH
Consulting Limited

Project:
Land at Wrexham Road,
Abermorddu,
Wrexham,
Flintshire

Client:
Fisher German LLP

Drawing:
Tree Constraints Plan

Based on:
Abermorddu 2D

Drawing No:	Rev:
Arbtech TCP 01	

Date:	Scale:	Drawn:
Jul 2016	1:500 @ A1	AST

Key:

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

Note: The proposal which this arboricultural impact assessment is based upon shows the internal road layout (including splays), and the developable areas (hatched) of the site.
The footprints of the dwellings are not shown. It has been confirmed that all of the dwelling footprints will be located entirely outside of the root protection areas of all retained trees.
All required tree works and tree removals are listed in the tree works schedule in the right hand column.
The only incursion into any root protection areas will be for boundary/garden fencing. Excavation for the fenceposts within root protection areas will be carried out manually under arboricultural supervision.

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.

Arboricultural Impacts

Impacts	Nos. of trees
Trees to be removed	12
Groups to be removed	3 partially
Trees that will require pruning	4
Groups that will require pruning	1

Tree Work Schedule

No.	Species	Works	Category
T1	Goat willow	Fell to ground level; remove stump	C1
T2	Goat willow	Fell to ground level; remove stump	C1
T3	Common alder	Fell to ground level; remove stump	B1
T4	Common alder	Fell to ground level; remove stump	C1
T5	Common oak	Fell to ground level; remove stump	C1
T16	Common ash	Prune to give 2m clearance from proposal	B1
T21	Sycamore	Fell to ground level; remove stump	B1
T22	Sycamore	Fell to ground level; remove stump	B1
T23	Common alder	Fell to ground level; remove stump	B1
T24	Common alder	Fell to ground level; remove stump	B1
T31	Sycamore	Prune to give 2m clearance from proposal	B1
T32	Sycamore	Prune to give 2m clearance from proposal	B1
T33	Sycamore	Prune to give 2m clearance from proposal	B1
T37	Common alder	Fell to ground level; remove stump	C1
T41	Goat willow	Fell to ground level; remove stump	C1
T43	Goat willow	Fell to ground level; remove stump	C1
H2	Various	Partial removal	C2
G2	Various	Partial removal	B123
G3	Various	Partial removal	B2
G4	Various	Crown raise/reduce over rear gardens of plots	B2

All tree work is to be undertaken in accordance with British Standard BS 3998:2010 Tree work - Recommendations.
All arising's are to be removed and the site is to be left as found.
Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber lorries, tractors, excavators or cranes shall be parked or driven beneath the crowns of any retained trees, to prevent subsequent compaction and root death.

No. of individual trees to be removed

U	A	B	C
0	0	4	8

No. of groups to be removed

U	A	B	C
0	0	2 partially	1 partially

Arboricultural Method Statement

All tree work is to be undertaken in accordance with British Standard Please refer to Arbtech Consulting Ltd. Tree Schedule, Arboricultural Method Statement and Tree Protection Plan, for full details of all surveyed trees and how all aspects of the development maybe implemented without detriment to retained trees.

Hillcrest Bungalow
WREXHAM ROAD
Abermorddu
Corner Ways
Stone Row
Abermorddu CP School
POS AND PLAY AREA
ATTENUATION AREA A
ATTENUATION AREA B
STRUCTURE 2
STRUCTURE 3
+91.500
+90.000
+91.000
+90.300
+ 90.300
+90.900
+93.100
+96.000
+90.600
+ 89.250
+ 89.200
+ 89.200
+ 90.640
+ 90.640
+91.700
+ 90.740
+ 90.000
+ 88.500
+ 88.500
+ 90.500
CS
CH
CF
0m 20m 40m 60m 80m 100m

ARCHITECTS KEY

POS AND PLAY AREA
STREAM WITH CLEAR ZONE
PEDESTRIAN WAY
ROAD OVER STREAM CONCRETE BOX CULVERT INDICATIVE SIZE 1000 X 500 MM
OVERHEAD POWER LINE
GREEN LINK
PLOT FRONTAGE
VEHICLE ENTRANCE
AREA REFERENCE
PLANTING AND ATTENUATION AREA SURFACE WATER
PROPOSED POND
PROPOSED GABION BANK REINFORCEMENT TO INCREASE BED OF STREAM TO 1.5M, 10M EITHER SIDE OF STRUCTURE
OTHER LAND IN OWNERSHIP SITE LIMITS
+ 89.200 PROPOSED LEVELS
DEVELOPABLE AREA
HIGHWAY & PEDESTRIAN

ARBTECH
Unit 3, Well House Barns, Chester, CH4 0DH
www.arbtech.co.uk, email@arbtech.co.uk, 01244 661170

Project:
Land at Wrexham Road,
Abermorduu,
Wrexham,
Flintshire.

Client:
Fisher German LLP.

Drawing:
Arboricultural Impact Assessment

Based on:
Proposed Site Layout 171017

Drawing No:	Rev:
Arbtech AIA 01	

Date:	Scale:	Drawn:
Nov 2017	1:400 @ A0	AST

Key:
Tree Nos.: T6 | Tree Canopies: | Trunks:
RPAs: | Category 'U' trees: | Category 'A' trees:
Category 'B' trees: | Category 'C' trees: | Trees to be removed: T1