

Trees and Construction

BS5837 Tree Survey Assessment

Site: Site off Gatewen Road, Wrexham, LL11 6UY

Ref: 18164/S3/A1

Client: Wrexham Glydwr University



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- June 2018 -

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Revision	Description	Date
/	/	/

1. INTRODUCTION

- 1.1 **Instruction:** This advice has been prepared for Wrexham Glydwr University (hereafter; client) and is in respect of the tree related planning considerations at the site off Gatewen Road, Wrexham, LL11 6UY (hereafter; site).

As the proposal relates to development works at site, the advice herein is produced in accordance with the British Standard 5837 : 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter; BS5837).

- 1.2 **BS5837:** The scope of BS5837 is to provide guidance on how trees and other vegetation can be integrated into construction and development design schemes. The overall aim is to ensure the protection of amenity by trees which are appropriate for retention.
- 1.3 **Scope of this advice:** This advice has been produced in accordance with BS5837 and is intended to demonstrate the site's realistic arboricultural constraints and assist with the design process. The objective is to systematically assess the site and provide suitable recommendations regarding the proposal's potential impact on trees and vice versa.
- 1.4 Following instruction the consultant surveyed the site on the 17th May 2018 where a site walkover and BS5837 tree survey were carried out; all trees on site and around the application boundary were surveyed from ground level and plotted as either an individual or a tree group.
- 1.5 This advice is subject to caveat at Appendix I, outlines relevant terms and definitions at Appendix II and constitutes the findings of the preliminary site assessment and associated arboricultural recommendations.
- 1.6 The survey data and site observations use the supplied topographical survey to illustrate the surveyed trees in plan format as a 'Tree Constraints Plan' (hereafter; TCP); the TCP and the tree survey data table are at Appendix III.

2. SITE INFORMATION & TREE ASSESSMENT

- 2.1 The site currently comprises an open field bound by Gatewen Village and residential properties to the north and east, Gatewen Road to the south and footpath to the west.
- 2.2 **Proposal:** It is understood that a proposed scheme involves the construction of residential properties at site which will include a general scheme of landscape improvement, parking provision and access improvement onto and around the site.
- 2.3 The site requires consideration from an arboricultural perspective due to the presence of trees on and around the site; these trees are deemed to be within impacting distance of the potential construction area.
- 2.4 The trees -
- 2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'A - high', 'B - moderate' and 'C - low' being attributed to trees/tree groups as well as those categorised as 'U' for those of curtailed life expectancy not to constrain the site's development.
- 2.4.2 The BS5837 tree survey is a means of objective assessment and reflects the trees' condition, quality contribution, remaining life expectancy and spatial considerations (stem, crown and roots). On this basis and in order to consider the trees' accurate constraints, the survey data is used to illustrate the trees as the TCP; this has the crown extents for north, east, south and west, the stem diameter measurement, and the calculated root protection areas (hereafter; RPAs). Hereafter, the trees are therefore reviewed and considered on their own merits and in line with the guidance of BS5837.

3. FINDINGS & RECOMMENDATIONS

3.1 The following information, as with the prior contents of this report, should be read with the appended tree data table and tree constraints plan (18164/S3/TCP/01).

NOTE: In reference to the proposed scheme, comments are made where relevant as 'NOTE'.

3.2 General Considerations for Tree Retention / Removal

3.2.1 Due to the poor condition and signs of overall tree decline of the 'U' category trees T21, T22, T31 and T32, it is recommended that these trees should be removed as part of H&S tree management irrespective of the proposed scheme.

3.2.2 Further to the above, based on the defects and restricted rooting environment of the 'U' category tree T24, it is also recommended that this tree be removed in conjunction with the scheme.

3.2.3 There are smaller scale trees and trees with defects or limitations on the current amenity contribution or useful remaining life expectancy, these are categorised as 'C - low'.

These 'C' category trees should not constrain nor significantly guide a scheme, although protection may be preferable to retain landscape maturity. For any proposed tree removals, mitigation tree planting is recommended as part of a landscape scheme and can suitably replace and enhance the initial loss of copy cover.

NOTE: The proposed scheme appears to be designed in consideration of trees, as such, the proposed scheme appears to be clear of the 'C' category trees but may encroach some boundary trees. Hence, in order to accurately assess tree impacts/implications the finalised scheme will be required (in CAD dwg format) to enable review as an arboricultural impact assessment (AIA).

3.2.3 The moderate quality 'B' category trees are noted as such due to their fair future potential and/or fair current amenity contribution. These should be retained and protected where possible as part of the site's development. Their protection is best achieved by avoidance where their crowns and RPAs are accommodated in the design and layout.

Whilst the retention and protection of 'B' category trees is preferable, the removal of some trees may also be mitigated. This will require higher grade larger nursery planting stock than that to mitigate the removal of 'C' category trees, however, this will be necessary to provide an instant impact and enhance the site in the long term; replacement tree planting would require adequately allocated amenity space within a well delivered landscape scheme.

NOTE: As above, the proposed scheme appears to be designed in consideration of trees, as such, the proposed scheme appears to be clear of the 'B' category trees but may encroach some boundary trees. Hence, in order to accurately assess tree impacts/ implications the finalised scheme will be required (in CAD dwg format) to enable review as an arboricultural impact assessment (AIA).

3.2.5 Based on the individual prominence, lack of significant defects, good current contribution and/or fair future potential of T47, this is categorised as 'A - high'. It is recommended that this tree be retained, protected and be clear of the proposal. This is best achieved by avoidance where there crowns and RPAs are accommodated in the design and layout.

NOTE: The proposed scheme is clear of the 'A' category tree T47. Therefore, T47 can be retained and protected during the site's development.

3.3 Tree Protection

3.3.1 The design and layout of the site is to incorporate the essential components of retained trees (crown and rooting area) and provide a suitable level of clearance to allow for their long term safe retention, i.e. RPA protection and crown clearance as well as for any new tree(s) being planted.

3.3.2 Depending on the level of tree retention/removal, the protection methods for the retained trees is likely to vary. However, it is likely that a combination of construction restrictions be used with protective barrier fencing (to protect RPAs).

The process of site operations will be an important aspect to confirm by way of a construction layout plan, i.e. showing storage areas, parking, delivery area, access routes etc., all outside of RPAs or with a provision for ground protection. As a basis for tree protection the following points will need to be considered:

- Removal of all agreed trees and any agreed pruning works prior to works commencing by a suitably qualified arboricultural contractor;
- Induction of construction personnel regarding the exclusion of works (including access and storage) from the retained trees' RPAs;
- Secure temporary barrier fencing around the site to exclude the retained tree's crowns and RPAs from the working site;
- The storage of materials clear of all retained trees and conditions to ensure no contamination/run-off into soils in proximity to trees or on higher ground; and
- For the removal of existing structures and/or hard surfaces from RPAs the works to be undertaken separate to construction, manually and sensitively.

3.4 General Overview

- 3.4.1 The considerations for trees which are to be retained as part of the proposal need to be addressed in order to ensure their protection. This is to account for the potential impact on retained trees and their growing environment from the proposed development and vice versa (these follow).

Tree Works

Any trees which are to be removed should be well indicated to ensure that the retained trees are suitably protected. Hence, all trees which are to be removed are to be marked by a suitably qualified person [spraying the stems with a cross] prior to tree works.

Tree Crowns

Consideration is required for both existing and newly planted trees whereby the proposed construction should take account of trees reaching their full growth potential. It is always prudent to provide adequate clearance from a tree's current crown for future growth, i.e. to allow a tree adequate space to reach maturity without conflicts with new structures.

Root Protection Areas (RPA)

It is *sometimes* possible to undertake construction activities within the rooting areas of retained trees which requires greater attention to tree protection, foundation designs, phasing of works etc. If it is proposed to undertake works within these areas, more specific advice should be sought from a qualified arboriculturalist with a view to assessing the feasibility of said proposal and forming a suitable method statement.

Demolition/Excavation Works

Any removal of existing built structures (including stairways, small outbuildings, retaining walls etc.) or hard surfacing will need to be undertaken with great care where this occurs within or near to the anticipated rooting areas of retained trees.

Said works should adhere to the RPA restrictions, be undertaken manually with hand held non mechanical tools and ensure that existing ground levels are retained.

Hard Landscape Works

As with previously mentioned arboricultural restrictions to demolition/construction, the proposed works should avoid retained trees' RPAs. However, where ground works are proposed within RPAs, construction methods [for hard surfacing, walls etc.] should retain the existing ground levels, be undertaken sensitively and using a no dig design.

Conversion of soft surfaced areas within RPAs to hard surfaced walkways, parking areas etc., will need to utilise a no-dig product to ensure no negative impact on the tree roots and/or growing conditions.

- 3.4.2 For any proportion of tree removal, new tree planting is to be integrated into a landscape scheme. The new trees should be of a suitable volume, species, scale, in suitably prepared planting locations with adequate space for future growth and development and enhance the site's long term amenity contribution.

Planting Species and Volume

New tree planting should incorporate a range of species, select mixed characteristics and take account of the availability of space, i.e. concentrate on selecting suitable scale species based on the ultimate growth extents.

Depending on the volume and quality of trees to be removed, new tree planting should directly proportionate; a 1:1 removal to replacement ratio is considered suitable.

Planting Specification

A detailed specification should be included within a landscape scheme (could form part of planning conditions). This should outline the proposed tree species, stock selection, location, planting process and ongoing maintenance (watering, mulch and pruning).

Planting Location

The new planting sites should take account of the future growth potential of the chosen species and should allow for the amenity space to be utilised, minimise the potential conflict with structures and facilitate the contribution to amenity from the site.

Based on the residential use of the site, good tree planting space is anticipated. It is necessary however to consider and avoid future canopy / shade conflicts.

3.5 Additional Details

- 3.5.1 The surveyed trees have been subject to a detailed inspection and the arboricultural considerations detailed within this advice. The advice herein is intended to guide a suitable design in consideration for the site's valuable amenity assets.
- 3.5.2 Further to the above, the finer details of layout, design detail to accommodate trees and any proposed new tree planting are to be illustrated within a landscape plan. This is to include the exact details of hard and soft landscape works, RPA sections (where surface works are proposed) and details of new tree planting location, species, stock selection, installation and maintenance; to be undertaken by the appointed landscape architect with the full support of the arboricultural consultant (where required).

3.5.3 Hence, further to the supply of the finalised site plan for the planning application, this will be reviewed as an arboricultural impact assessment (AIA) to inform AMS 'consideration'. Where this advice is accounted for, this will enable the arboricultural constraints to be managed effectively, i.e., phased works, tree protection fences etc.

This concludes our advice.

Caveat

Any and all information supplied to Indigo Surveys Ltd by/on behalf of the client is assumed to be accurate unless otherwise informed. | This advice is limited to the observations made on the date of inspection as detailed herein and any deletion, editing or alteration will result in the advice being null and void in its entirety. | This advice in its entirety may be deemed null and void if remedial works are undertaken on any area of the site, on or after the date of the survey. | No liability is assumed by the author or by Indigo Surveys Ltd for any misuse, misinterpretation or misrepresentation of this advice. | This advice is not valid in adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events. | No responsibility is assumed either by the author of this advice or by Indigo Surveys Ltd for any legal matters that may arise as a consequence. | Neither the author nor Indigo Surveys Ltd will be required to attend court or give testimony as part of this agreement. | The responsibility for any works undertaken on the basis of the recommendations of this advice does not form part of this agreement.

Appendix II

Terms and Definitions

“Arboriculturist” - person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

“Competent Person” - person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

“Topographical survey” - an accurately measured land survey undertaken to show all relevant existing site features. *A method of carrying out topographical surveys is given in RICS specification* Surveys of land buildings and utility services at scales of 1:500 and larger.

“BS5837 Tree survey” - should be undertaken by an arboriculturist to record information about the trees on or adjacent to a site. The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development.

“Tree categorisation method” - trees should be categorised in accordance with the BS5837 cascade chart by an arboriculturist. This is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

“Root protection area (RPA)” - layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority, shown as an arboricultural constraint in m². The radius is calculated using the BS5837 calculation method. An arboriculturist may change the shape of an RPA but not reduce its area.

“Arboricultural implications assessment” - 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” - methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.

“Tree protection plan” - a scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

Appendix III

Data Table: As appended (BS5837 Tree Survey Key & Table)

Tree Constraints Plan: As appended (18164/S3/TCP/01)

TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

FIELD KEY:

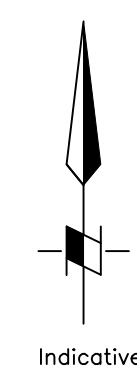
TPO/CA	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;
TREE REF. #	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);
SPECIES	-	Genus, species and/or common name;
AGE	-	Age classification (NP - new planting, Y - young, SM - semi mature, EM - early mature, M - mature, LM - late mature, OM - over mature);
HEIGHT (in m)	-	Approximate height of tree in metres;
CANOPY (in m) N - S - E - W	-	Approximate branch spread in metres of the four principal compass points;
STEM (in mm)	-	Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;
RPA (in m)	-	Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);
CLEARANCE (in m)	-	Crown clearance in metres above the adjacent ground level;
1ST BRANCH (in m)	-	Clearance in metres to first significant branch and direction of growth (where relevant);
VITALITY	-	Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);
ESTIMATED REMAINING CONTRIBUTION	-	Approximate number of years the tree will continue to make a contribution without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;
NOTES	-	Structural and physiological condition observations;
BS CAT.	-	BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate Standard retention category U : in such a condition that any existing value would be lost within 10 years;
	-	Standard retention category A : high quality and value, in such a condition as to be able to make substantial contribution of 40+ years;
	-	Standard retention category B : moderate quality and value, in such a condition as to make a significant contribution of 20+ years;
	-	Standard retention category C : low quality and value, currently in adequate condition to remain until new planting could be established
	-	Standard retention sub-category, mainly due to: 1 - Arboricultural values, 2 - Landscape values, 3 - Cultural values, including conservation;
MANAGEMENT	-	Preliminary management recommendations (as appropriate);
* * *	-	Within the survey schedule denotes an estimate

TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'																
CLIENT: Wrexham Glydwr University			PROJECT REF: 18164/S3			SITE: Site off Gatewen Road, Wrexham, LL11 6UY										
CONTACT: /			SURVEY DATE: 17th May 2018			ARB CONSULTANT: Tony Banner TechCert (ArborA) TechArborA										
TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
G1	Hawthorn, Sycamore & Ash group	M	4 - 8	/	/	/	/	200	2.4	0	/	Normal	20 - 40	Growing on embankment at boundary, mainly hawthorn with occasional sycamore/ash sapling.	C 2	
G2	Mixed group (Sycamore, Hawthorn, Ash, Oak)	M	4 - 16	/	/	/	/	350	4.2	0	/	Normal	40 +	Growing towards boundary and on embankment around offsite footpath on old railway line, mature stemulti-stem on embankment with hawthorn hedge line as understorey.	B 2	
T1	Sycamore; Acer, Aceraceae	M	16	3	3	7	3	494	5.9	1	2	Normal	20 - 40	In G2, one of the larger stemulti-stem in G2, multi-stem base.	B 2	
T2	Ash; Fraxinus, Oleaceae	M	14	2.5	3	5	3	335	4.0	0	/	Normal	20 - 40	Edge of G2, multi-stem base, sparse canopy in parts.	B 2	
T3	Sycamore; Acer, Aceraceae	EM	12	2	2.5	3.5	2	217	2.6	0	/	Normal	20 - 40	Edge of G2, multi-stem base.	C 2	
T4	Sycamore; Acer, Aceraceae	EM	11	2.5	4	4	2	270	3.2	0	/	Normal	10 - 20	Edge of G2, multi-stem base, conflicting stemulti-stem.	C 2	
T5	Oak; Quercus, Fagaceae	EM	11	3.5	3.5	5	3	450 *	5.4	1.5	/	Normal	40 +	In G2, single stem, good future potential.	B 2	
G3	Hawthorn group	M	8	/	/	/	/	250	3.0	0	/	Normal	20 - 40	Planted line at boundary with offsite footpath, managed on footpath side for clearance to footpath.	B 2	
G4	Sycamore, Hazel & Hawthorn group	M	4 - 12	/	/	/	/	150 - 300	3.6	0	/	Normal	20 - 40	Mixed group growing toward the boundary, 3 / 4 self-seeded sycamore with hazel/hawthorn understorey.	B 2	
T6	Sycamore; Acer, Aceraceae	M	11	3	3	3.5	3	265	3.2	1.5	/	Normal	10 - 20	In G4, multi-stem base, previously topped with leggy regrowth.	C 2	Monitor base and regrowth.
T7	Sycamore; Acer, Aceraceae	M	12	3.5	3.5	3.5	3.5	256	3.1	1.5	/	Normal	10 - 20	In G4, multi-stem base, previously topped with leggy regrowth.	C 2	Monitor base and regrowth.
T8	Sycamore; Acer, Aceraceae	M	11	3	3.5	3	3	342	4.1	0	/	Normal	10 - 20	In G4, multi-stem base, previously topped with leggy regrowth, next to pedestrian access.	C 2	Monitor base and regrowth.
T9	Sycamore; Acer, Aceraceae	M	12	4	4	3	3.5	347	4.2	0	/	Normal	10 - 20	In G4, multi-stem base, previously topped with leggy regrowth, next to pedestrian access, thick ivy.	C 2	Monitor base and regrowth, and sever ivy.
T10	Sycamore; Acer, Aceraceae	M	12	3.5	4	3.5	3	291	3.5	0	/	Normal	10 - 20	In G4, multi-stem base, previously topped with leggy regrowth, next to pedestrian access, thick ivy.	C 2	Monitor base and regrowth, and sever ivy.
G5	Hazel, Hawthorn & Blackthorn group	M	4 - 6	/	/	/	/	200	2.4	0	/	Normal	20 - 40	Field boundary group.	B 2	
T11	Hawthorn; Crataegus, Rosaceae	M	6	4.5	4.5	4.5	4.5	250 *	3.0	0	/	Normal	20 - 40	Growing at field boundary inset to site, self seeded elder and bramble, no access to stem.	B 3	
T12	Field Maple; Acer, Aceraceae	M	7	2	5	4	2.5	284	3.4	1.5	1.5	Normal	20 - 40	One of larger stemulti-stem in G6, co-dominant base, conflicts with barb wire fence.	B 2	
G6	Field Boundary Group (Hazel, Hawthorn, Field Maple & Holly)	M - OM	7	/	/	/	/	200	2.4	2	/	Normal	20 - 40	Field boundary group, many interesting old hazel coppices and over mature field maples.	B 2	
T13	Field Maple; Acer, Aceraceae	OM	8	4.5	4.5	4.5	4.5	400	4.8	0	/	Normal	10 - 20	Over mature field maple with mature sycamore twisted around stemulti-stem and girdling roots.	B 2	Attempt to fell sycamore for betterment of field maple.
T14	Hazel; Corylus, Betulaceae	M	7	4	4	4	4	250	3.0	1	/	Normal	20 - 40	Example of hazel coppice hazel in G6, growing at field boundary.	B 2	

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CONTACT: /			SURVEY DATE: 17th May 2018			ARB CONSULTANT: Tony Banner TechCert (ArborA) TechArborA										
TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
G7	Field Boundary Group (Hazel, Elder & Holly)	M	7	/	/	/	/	200	2.4	0	/	Normal	20 - 40	Field boundary group.	B 2	
G8	Blackthorn Group	M	4	/	/	/	/	100	1.2	0	/	Normal	10 - 20	Inset to G7 but forming partial understorey.	C 2	
T15	Sycamore; Acer, Aceraceae	M	10	5	5	5	5	524	6.3	/	/	Normal	10 - 20	In boundary group, multi-stem base with tight unions, conflicting with hawthorn stem multi-stem at base.	C 2	Monitor basal unions.
T16	Goat Willow; Salix, Salicaceae	M	10	4.5	4.5	4.5	4.5	433	5.2	1.5	/	Normal	10 - 20	Outside fence line, multi-stem below 1.0m with tight unions.	C 2	
G9	Field Boundary Group (Ash, Sycamore, Rowan, Hawthorn, Hornbeam & Cherry)	M	12	/	/	/	/	350	4.2	/	/	Normal	20 - 40	Field boundary group next to footpath on embankment, ivy throughout, saplings and mature stem multi-stem.	B 2	
T17	Ash; Fraxinus, Oleaceae	M	12	3.5	5	8	4	500	6.0	/	/	Normal	10 - 20	In G9, thick ivy, possibly more than one tree, gaping crown - evident of some subsiding stem multi-stem due to ivy cover/weight or splitting at base.	C 3	Sever ivy and reassess tree's condition, and monitor base union.
T18	Ash; Fraxinus, Oleaceae	M	12	5	4	9	6.5	880	10.6	/	/	Normal	20 - 40	Part of collective canopy group inset to boundary, growing on mound, fire damaged base and lower stem, sparse canopy, dieback and deadwood noted, self-seeded sycamore conflicting at base.	B 2	Monitor tree's condition.
T19	Sycamore; Acer, Aceraceae	M	14	3.5	3.5	3.5	3.5	350	4.2	/	/	Normal	10 - 20	Part of collective canopy group growing on mound inset to boundary, next to deep brick lined pit.	B 2	
T20	Sycamore; Acer, Aceraceae	M	14	3.5	4	3.5	3.5	420 ivy	5.0	/	/	Normal	10 - 20	Part of collective canopy group growing on mound inset to boundary, very close to deep brick lined pit - restricting rooting on pit side of tree, thick ivy.	C 2	Sever ivy and reassess tree's condition.
T21	Sycamore; Acer, Aceraceae	M	12	3	3	5	3	300	3.6	/	/	Poor	< 10	Part of collective canopy group growing on mound inset to boundary, fire damage and decay from base to 4.0m.	U	Fell tree.
T22	Sycamore; Acer, Aceraceae	M	8	0	0	0	0	280	3.4	/	/	Dead	< 10	Part of collective canopy group growing on mound inset to boundary, standing dead tree.	U	Fell tree.
T23	Sycamore; Acer, Aceraceae	M	12	2	6	4	4.5	827	9.9	1.5	/	Normal	20 - 40	Part of collective canopy group growing on mound inset to boundary, multi-stem base, partially included wound on stem, exposed roots and compacted soils.	B 2	
T24	Hawthorn; Crataegus, Rosaceae	M	5	2	2	2	2	290	3.5	1.5	/	Poor	< 10	Part of collective canopy group growing on mound inset to boundary, under T23, very close to brick lined pit.	U	Consider removal as preventative H&S measure.
T25	Ash; Fraxinus, Oleaceae	M	14	10	1.5	2	6	340	4.1	3.5		Normal	20 - 40	Part of collective canopy group growing on mound inset to boundary, exposed roots, leans north, self seeded hawthorn conflicting with base.	B 2	
T26	Hawthorn; Crataegus, Rosaceae	M	6	3	2	2	3	261	3.1	1	1	Normal	20 - 40	Part of collective canopy group growing on mound inset to boundary, close to brick lined pit, co-dominant base.	B 2	Monitor tree's condition.

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TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
T27	Sycamore; Acer, Aceraceae	M	14	4.5	4.5	4.5	4.5	590	7.1	2	2.5	Normal	20 - 40	Part of collective canopy group growing on mound inset to boundary, close to brick lined pit, co-dominant base.	B 2	Monitor tree's condition.
T28	Sycamore; Acer, Aceraceae	M	14	3.5	3.5	3.5	3.5	360	4.3	2	4	Normal	20 - 40	Part of collective canopy group growing on mound inset to boundary.	B 2	Monitor tree's condition.
T29	Sycamore; Acer, Aceraceae	M	14	5	4	4	4	640	7.7	2	2	Normal	20 - 40	Part of collective canopy group growing on mound inset to boundary, close to brick lined pit.	B 2	Monitor tree's condition.
T30	Sycamore; Acer, Aceraceae	EM	6	8	1.5	3	2	347	4.2	2.5	3.5	Normal	10 - 20	Part of collective canopy group growing on mound inset to boundary, crown suppressed by T31 with regrowth and lean north, co-dominant below 1m.	C 2	Monitor growth once T31 removed.
T31	Sycamore; Acer, Aceraceae	M	16	5	5	5	5	1039 *	12.5	/	/	Poor	< 10	Part of collective canopy group growing on mound inset to boundary, dieback, major deadwood, tree in decline - most likely caused by surrounding soil contamination.	U	Fell tree.
T32	Sycamore; Acer, Aceraceae	M	8	4	4	4	4	400 *	4.8	/	/	Dead	< 10	Part of collective canopy group growing on mound inset to boundary, dead tree - most likely caused by surrounding soil contamination.	U	Fell tree.
T33	Hawthorn; Crataegus, Rosaceae	M	7.5	1.5	5.5	2.5	3	344	4.1	/	/	Normal	20 - 40	Part of collective canopy group growing on mound inset to boundary, multi-stem base.	B 2	
T34	Ash; Fraxinus, Oleaceae	EM	10	3	3	3	3	260	3.1	2	/	Normal	10 - 20	Part of collective canopy group growing on mound inset to boundary, dead branch attached at base, stem damage (part included), sparse crown.	C 2	
G10	Ash, Hawthorn & Elder group	M	4 - 12	/	/	/	/	200	2.4	/	/	Normal	10 - 20	Mainly hawthorn and elder with occasional mature stem.	C 2	
T35	Ash; Fraxinus, Oleaceae	M	10	4	4	4	4	400	4.8	/	/	Normal	10 - 20	In G10, self seeded tree on half demolished wall, exposed damage roots.	C 3	
T36	Sycamore; Acer, Aceraceae	M	12	5	4	4.5	7.5	940	11.3	/	/	Normal	20 - 40	In G10, multi-stem crown at 3m, conflicting with hawthorn base.	B 2	
T37	Sycamore; Acer, Aceraceae	M	12	3	3	3.5	5	552	6.6	2	/	Normal	20 - 40	In G9 on embankment outside fence line, multi-stem base.	B 2	
T38	Sycamore; Acer, Aceraceae	M	12	3	3	3.5	6	711	8.5	2	/	Normal	20 - 40	In G9, multi-stem base.	B 2	
T39	Ash; Fraxinus, Oleaceae	M	14	4	3	2.5	4.5	510	6.1	2	/	Fair	20 - 40	In G9, multi-stem base, ivy into crown, sparse crown in parts.	B 2	
T40	Ash; Fraxinus, Oleaceae	M	14	3.5	3.5	3.5	5	380	4.6	2	/	Fair	20 - 40	In G9, multi-stem base, ivy into crown.	B 2	
T41	Sycamore; Acer, Aceraceae	M	14	4.5	4.5	3.5	5	544 ivy	6.5	2	/	Normal	20 - 40	In G9, ivy.	B 2	
T42	Sycamore; Acer, Aceraceae	M	14	4	2.5	3.5	6	654 ivy	7.8	/	/	Normal	20 - 40	In G9, multi-stem base, ivy.	B 2	
T43	Sycamore; Acer, Aceraceae	M	14	3.5	2.5	5.5	7	686 ivy	8.2	/	/	Normal	20 - 40	In G9, multi-stem base, ivy.	B 2	
T44	Sycamore; Acer, Aceraceae	M	14	4	4.5	5	5.5	571	6.9	/	/	Normal	20 - 40	In G9, multi-stem base.	B 2	
T45	Sycamore; Acer, Aceraceae	M	14	4	4	6	2	400 ivy	4.8	/	/	Normal	20 - 40	Part of collective canopy group, thick ivy limits visual tree assessment.	B 2	Sever ivy and reassess tree's condition.

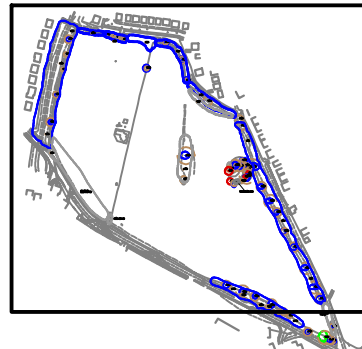
TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'																
CLIENT: Wrexham Glydwr University				PROJECT REF: 18164/S3					SITE: Site off Gatewen Road, Wrexham, LL11 6UY							
CONTACT: /				SURVEY DATE: 17th May 2018					ARB CONSULTANT: Tony Banner TechCert (ArborA) TechArborA							
TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
T46	Sycamore; Acer, Aceraceae	M	14	4.5	4.5	3.5	3.5	500 ivy	6.0	/	/	Normal	20 - 40	Part of collective canopy group, thick ivy limits visual tree assessment.	B 2	Sever ivy and reassess tree's condition.
T47	Sycamore; Acer, Aceraceae	M	14	8	5	2.5	8	738	8.9	2	/	Normal	20 - 40	Part of collective canopy group, co-dominant below 1.5m.	A 2	
T48	Sycamore; Acer, Aceraceae	M	14	3.5	4.5	4.5	4	460	5.5	1.5	/	Normal	20 - 40	Growing on embankment at boundary with road, previously raised over road with regrowth noted.	B 3	
T49	Hazel; Corylus, Betulaceae	M	6	2.5	2.5	2.5	2.5	320	3.8	1	/	Normal	20 - 40	Old coppice.	B 2	
G11	Field Boundary Group (Ash, Sycamore & Hawthorn)	M	10 - 16	/	/	/	/	100 - 500	6.0	1.5	/	Normal	20 - 40	Growing along boundary with road, barb wire and fence conflicts throughout, multi-stem throughout, ivy in parts.	B 2	Sever ivy and monitor trees' condition throughout group.
T50	Sycamore; Acer, Aceraceae	M	16	6	3	5	3	706	8.5	2.5	/	Normal	20 - 40	One of largest in G11, multi-stem base, outside fence atop of embankment.	B 2	
T51	Sycamore; Acer, Aceraceae	M	14	5.5	2	3.5	2	283	3.4	2	/	Normal	10 - 20	In G11, co-dominant base, barb wire.	C 2	
T52	Ash; Fraxinus, Oleaceae	M	14	3.5	3	4	2.5	411	4.9	3.5	/	Fair	10 - 20	In G11, co-dominant below 1.0m, barb wire.	C 2	
T53	Ash; Fraxinus, Oleaceae	M	14	4.5	3	4.5	2.5	511	6.1	2.5	/	Fair	20 - 40	In G11, multi-stem base, barb wire.	B 2	
T54	Ash; Fraxinus, Oleaceae	M	14	4	4	4	4	744	8.9	2	/	Fair	20 - 40	In G11, impact damage lower stem to 1.5m.	B 2	
T55	Ash; Fraxinus, Oleaceae	M	14	4	4	4	4	544	6.5	/	/	Normal	10 - 20	In G11, multi-stem base with acute unions, sparse crown.	B 2	Monitor tree's condition.
T56	Ash; Fraxinus, Oleaceae	M	14	2	4.5	3	3	250 ivy	3.0	2	/	Fair	10 - 20	In G11 on roadside of group outside fence line, ivy into crown leaning towards road.	C 2	Sever ivy and reassess tree's condition.
T57	Ash; Fraxinus, Oleaceae	M	14	2	4.5	3	3.5	250 ivy	3.0	2	/	Fair	10 - 20	In G11 on roadside of group outside fence line, ivy into crown leaning towards road.	C 2	Sever ivy and reassess tree's condition.
T58	Ash; Fraxinus, Oleaceae	M	14	1.5	4.5	3	3.5	250 ivy	3.0	2	/	Fair	10 - 20	In G11 on roadside of group outside fence line, ivy into crown leaning towards road.	C 2	Sever ivy and reassess tree's condition.
T59	Ash; Fraxinus, Oleaceae	M	14	1.5	4.5	3	3.5	250 ivy	3.0	2	/	Fair	10 - 20	In G11 on roadside of group outside fence line, ivy into crown leaning towards road.	C 2	Sever ivy and reassess tree's condition.



KEY

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.
- Tree Condition Category
- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'

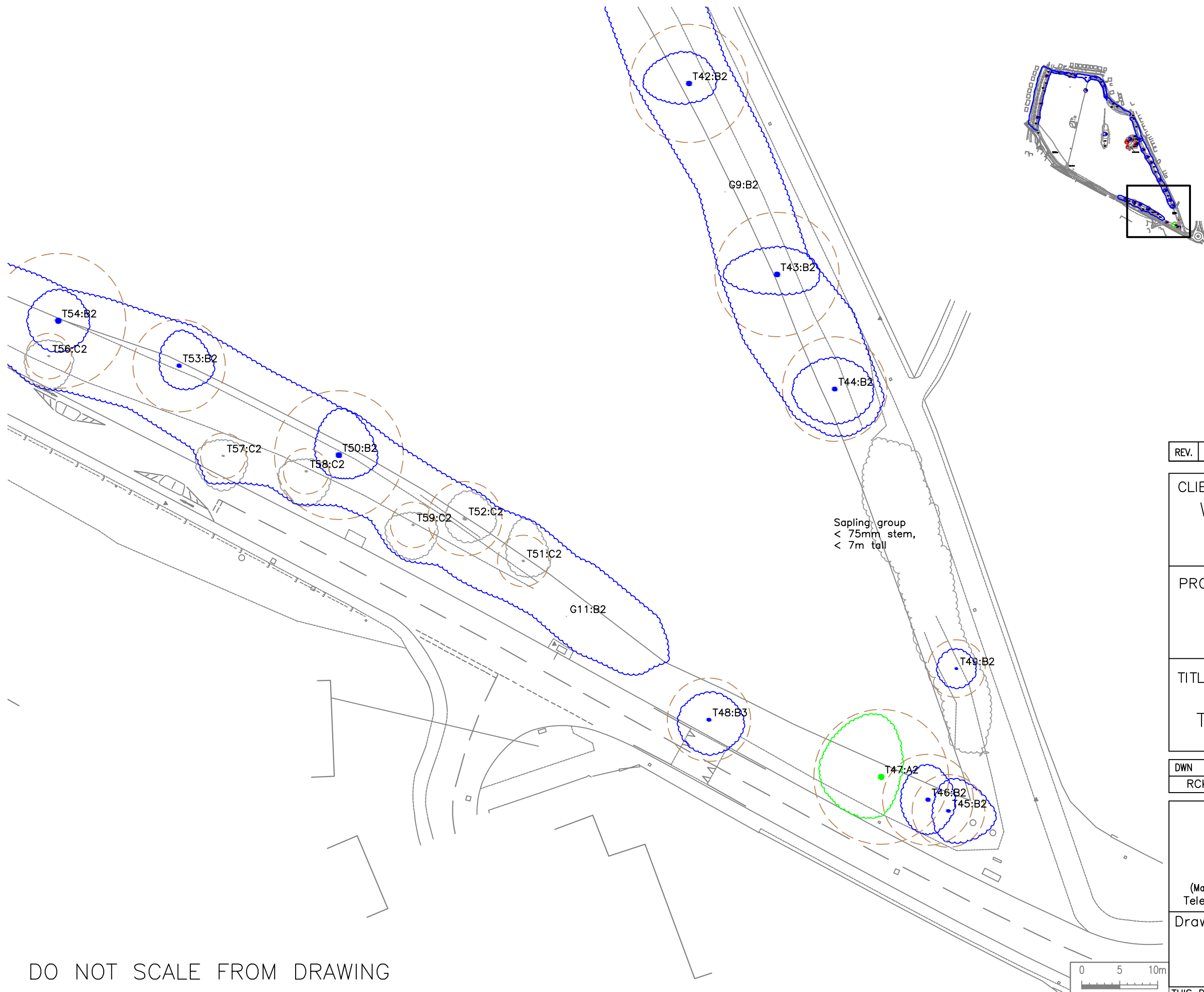


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REV.	DESCRIPTION	DWN	CHKD	DATE		
CLIENT Wrexham Glydwr University						
PROJECT 18164/S3 Site off Gatewen Road, Wrexham, LL11 6UY						
TITLE Tree Constraints Plan 1of2						
DWN	DATE	CHKD	DATE	APPD	DATE	SCALE
RCK	01/06/2018	TB	01/06/2018			1:500
 Indigo ^{ltd} SURVEYS						
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KEY

Tree Crown Spread

Root Protection Area (RPA)

Tree Stem

T1Tree No.

Tree Condition Category

A

B

C

U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'

REV.	DESCRIPTION	DWN	CHK'D	DATE
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CLIENT
Wrexham Glydwr University

PROJECT
18164/S3
Site off Gatewen Road,
Wrexham, LL11 6UY

TITLE
Tree Constraints Plan 2of2

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	01/06/2018	TB	04/06/2018			1:500

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A3
REV.

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