



ArbTS - Arboricultural Technician Services Ltd

(Tree Consultancy Services)

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Arboricultural Report

Including:

Tree Survey Data &

Tree Constraints Plan,

Arboricultural Impact Assessment,

Tree Protection Plan and Arboricultural Method Statement

To the British Standard 5837:2012
*(Trees in relation to design, demolition
and construction. Recommendations)*

Date – 23rd January 2024

Site – Welsh Water site at Trebanos

Project Reference – ArbTS_1810.1_Trebanos

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1.0 Introduction

- 1.1 The purpose of this report is to assess the quality of the trees at Welsh Water site at Trebanos, assess the arboricultural impact of the proposed development design and provide details regarding the protection of retained trees during construction work.
- 1.2 This report identifies the quality of the trees on this site as categorised by the *British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations*. The survey and findings, as reported here, represent an unbiased third-party opinion offering professional advice on the value of the trees on or adjacent to this site. To illustrate the constraints identified trees pose to the design of future development, a Tree Constraints Plan (TCP) has been drawn, as found in Appendix 2.
- 1.3 Arboricultural constraints within the surveyed site relate primarily to the preservation of trees recommended for retention. Identified trees must be protected during the construction phase by employing a combination of tree protection methods as illustrated in Appendix 4, Tree Protection Plan and detailed within Section 6 - Arboricultural Method Statement.
- 1.4 The trees' root system and the associated soil structure is often overlooked during the construction process and can be damaged or altered by compaction, causing significant damage to the health of the tree. Generally, the tree's entire root system is within the top 600mm of soil, where it can be easily damaged. A calculated ground area around the tree should be protected during the onsite construction phase. In this report, it is referred to as the Root Protection Area (RPA).

2.0 The Tree Survey

- 2.1 The tree survey was conducted by *Stephen Lucocq BSc (Hons), Tech Cert (ArborA), M.Arbor.A* on 11th January 2024.
- 2.2 Trees over 75mm were tagged where appropriate with numbered metal identification tags at around 2.0 metres above ground level.
- 2.3 All observations were made from the ground with an acoustic-sounding hammer. No invasive decay detective instruments were used.
- 2.4 The survey was carried out per *British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations*. This standard gives a systematic, consistent, transparent evaluation method for tree surveying.
- 2.5 The tree survey was conducted with the aid of a topographical survey.
- 2.6 **Preliminary management recommendations:** The survey has identified preliminary management recommendations for the trees on or adjacent to this site. Details regarding these specified operations are given in this report (See Appendix 1 - Tree Survey Data). Where work priority is stated to be H – High due to safety reasons, these operations should be carried out as soon as possible. Where work priority is

said to be M/H – medium/high or higher, these operations should be undertaken before the commencement of any works on site.

- 2.7 **Limitations of the tree survey:** Whilst every effort is made to ensure an accurate assessment of the tree's condition during the survey, no responsibility can be taken for resultant damage or injury that occurred by a failing tree. The survey only gives a snapshot of what is visible and is not obscured on the day of the survey. The survey identifies trees of varying quality and their above-ground/below-ground constraints. This survey does not constitute a full tree condition survey/tree risk assessment of the site, and this report is only valid for 24 months from the date of the tree survey.

3.0 The Trees

- 3.1 The complete tree survey data can be found in Appendix 1A Tree Survey Data
- 3.2 Tree Survey Summary Table (See Appendix 3 for BS5837 category definitions).
(A more detailed Tree Survey Data Summary can be found in Appendix 1B)

BS5837:2012 Quality Category	Total Number of Individual Trees Surveyed	Total Number of Tree Groups Surveyed	Total Number of Tree Areas Surveyed	Total Number of Woodland Areas Surveyed	Total Number of Hedgerows Surveyed	Total
A (High - Most desirable for retention)	1	0	0	0	0	1
B (Moderate - Desirable for retention)	2	3	1	0	0	6
C (Low - Optional for retention)	12	16	1	0	0	29
U (Poor - Unsuitable for retention)	1	1	0	0	0	2
Total A,B,C,U	16	20	2	0	0	38

4.0 Tree Constraints Plan (TCP) Information

- 4.1 A Tree Constraints Plan (TCP) can be found in Appendix 2 of this report. An introduction to TCP can also be found at the start of this Appendix Section. For further information and details regarding TCP, please see the *British Standard 5837:2012, Trees in relation to design, demolition and construction – Recommendations*.

5.0 Arboricultural Impact Assessment (AIA)

5.1 The following Arboricultural Impact Assessment has been made for the proposed development design.

5.2.1 Tree Loss – AIA – MODERATE - The following trees are required to be removed to facilitate the construction of the proposed development design.

5.2.2 Individual Tree Loss –

- Tree T1 – Ash – Low quality (**C** category)
- Tree T7 – Sycamore – Moderate quality (**B** category)
- Tree T11 – Oak – Moderate quality (**B** category)
- Tree T13 – Cypress – Low quality (**C** category)
- Tree T12 – Sycamore – Low quality (**C** category)
- Tree T4 – Ash – Low quality (**C** category)
- Tree T8 – Ash – Low quality (**C** category)
- Tree T10 – Sycamore – Low quality (**C** category)

5.2.3 Grouped / Area Tree Loss –

- Tree Group G15 – Small group of small ash – Low quality (**C** category)
- Tree Group G1 – Group of 3 large trees (2 sycamore and 1 ash) – Moderate quality (**B** category)
- Tree Group G17 – Group of 2 mature trees – Moderate quality (**B** category)
- Tree Group G8 – Group of sprawling scrub regeneration (780m2) – Low quality (**C** category)
- Tree Group G7 – Small group of small trees – Low quality (**C** category)
- Tree Group G2 – Group of trees (mainly conifers) – Low quality (**C** category)
- Tree Group G3 – Part of a Group of trees (mainly goat willow) – Low quality (**C** category)
- Tree Group G6 – Small group of goat willow – Low quality (**C** category)
- Tree Area A1 – Part of area of trees (2300m2) – Low quality (**C** category)

5.2.4 Overall Tree Loss –

A number of trees are identified to be removed to facilitate the construction of the proposed development design (8 individual trees, 8 tree groups and 1 part of an area of trees). Most of these trees identified for removal are low-quality trees (**C** Category). These trees should not present a constraint on developing the site. The removal of the moderate quality trees (**B** Category = 7 Trees) will require mitigation by suitable compensatory tree planting and surrounding practical woodland management (i.e. invasive species removal etc.).

5.3 Root Protection Area (RPA) –AIA – LOW - RPA potential damage can all be managed through the installation of tree protective fencing, arboricultural watching brief for excavation works within RPA etc., as designed by an Arboriculturist will ensure no significant long-term adverse impact will occur to any of the retained trees.

- 5.4 Tree surgery work – AIA – LOW - Some minor branch reduction/branch lifting pruning work will be required to facilitate this proposed scheme, as detailed in the tree protection plan (Appendix 4). This work will be carried out to the *British Standard 3998:2010 tree work recommendations*. Adhering to this standard will ensure no adverse impact on these trees' long-term health or visual amenity.
- 5.5.1 Conclusion – (including proportional landscape mitigation) - AIA - LOW - The site has several Arboricultural constraints that must be considered in the development design phase. A number of trees are identified to be removed to facilitate the construction of the proposed development design (8 individual trees, 8 tree groups and 1 part of an area of trees). Most of these trees identified for removal are low-quality trees (**C** Category). These trees should not present a constraint on developing the site. The removal of the moderate quality trees (**B** Category = 7 Trees) will require mitigation by suitable compensatory tree planting and surrounding practical woodland management (i.e. invasive species removal etc.).
- 5.5.2 This proposed development design has aimed to retain a high proportion of the higher-value trees (A + B Category) that form a part of the site.
- 5.5.3 The proposal will not cause a long-term adverse impact on the local amenity of the area through tree loss. Mitigative tree, hedgerow and shrub planting will be required for the loss of the trees on this site through a combination of different diverse tree/shrub species and varied nursery-aged stock.
- 5.5.4 The construction of the proposed development, whilst complying with the tree protection scheme as detailed in section 6, will ensure that no significant long-term adverse Arboricultural impact occurs on the health of any retained trees on or adjacent to this site or the long-term amenity of the area.

6.0 Arboricultural Method Statement

- 6.1 The Tree Protection Plan to facilitate the construction of the development design can be found in Appendix 4 of this report. The Tree Protection Plan must comply with all of the following:
- Be regarded as sacrosanct and follow the sequence of events as detailed in the table below
 - Be installed before commencement of any demolishing or construction works on site
 - Must not be removed or altered without prior approval of the local planning authority
- 6.2 The following table overleaf provides a detailed sequence of events that must occur to protect the retained trees during all stages of the construction process. These methods must be communicated to the entire construction team before any work on site.

Stage	Arboricultural Method Statement (In the sequence of events)
1.) Preconstruction (Prior to any on-site construction work, including demolition work, site material storage etc.)	1.1 – Design areas for construction site storage by the site supervisor and the appointed Arboriculturist.
	1.2 – Design position, form and construction methods of all utility services with Arboricultural consideration. All underground service designs MUST conform to the NJUG Volume 4 Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. The full document is available at http://www.njug.org.uk/ and BS5837:2012 . Local Planning Authority to be consulted on utility service design details and, if satisfied, to be approved in writing before installation during the construction phase.
	1.3 – Tree surgery work to be carried out is detailed in the Tree Protection Plan (Appendix 4) of this report and to the <i>British Standard:3998:2010: Recommendation for tree works</i> .
	1.4 – Tree protective fencing installed in the position and form as detailed in the Tree Protection Plan (Appendix - 4). Installation is to be supervised by the appointed Arboriculturist. All weather tree construction exclusion zone posters are to be secured to fencing at regular intervals.
	1.5 – Site storage area containers installed as designed and supervised by the site supervisor and the appointed Arboriculturist.
	1.6 – Appointed Arboriculturist to document all tree protection methods in situ and photographs taken for reference purposes. Copy of document report sent to all parties.
2.) Construction	2.1 – The site supervisor is to be briefed by the appointed Arboriculturist regarding the Tree Protection Plan/Methods, and a laminated copy of the plan/methods is to be secured onto the wall in the site supervisor's office. Contact details of the appointed Arboriculturist, Council's Tree Officer, to be included. Emphasis is to be made to the site supervisor on the importance of the Tree Protection Plan/Methods and possible planning enforcement action (Stop Notice), problems with discharging tree protection conditions and/or legal action for noncompliance with these tree protection methods.
	2.2 – All contractors are to be briefed by the site supervisor and/or the appointed Arboriculturist regarding the tree protection plan and methods before starting work on site. Emphasis made to contractors on the importance of the Tree Protection Plan/Methods and possible planning enforcement action (Stop Notice), problems with discharging tree protection conditions and/or legal action for noncompliance with these tree protection methods.
	2.3 – Excavation under Arboricultural Supervision to be carried out in areas highlighted in the Tree Protection Plan (Appendix - 4). This work is to be carried out with the use of hand tools, an air spade and possible use of a small excavator (no greater than 2500kg) with a toothless bucket under the constant supervision of the appointed Arboriculturist. The excavator will only work from existing hard surfacing before its removal. Any roots discovered less than 25mm in diameter should be pruned cleanly with a securer or pruning saw. The careful excavation working method is as follows: • Digging started outside the Root Protection Area towards the retained tree. • No roots found to be ripped, pulled or crushed during excavation • Any exposed roots are to be covered with wet Hessian material • Any roots less than 25mm in diameter to be cut with a sharp knife/ secateurs covered with wet Hessian material • If any roots greater than 25mm in diameter are discovered, Arboriculturist to instruct further action. Innovative engineering methods will be sort to retain these roots.
	2.4 – Additional Tree Protection , as designed by the appointed Arboriculturist, to be Installed to protect the newly excavated ground.
	2.5 – The construction phase begins

	2.6- Tree Safe Construction (Throughout site) – areas outside of the construction exclusion zones, as shown on the tree protection plan, must adhere to the following: • Building materials and fuels such as oil, bitumen or cement should not be stacked or discharged within 20 metres of the tree's stem. • Fires will not be lit beneath any tree or in a place where flames could extend to within 10 metres of the tree. • Trees to be retained and protected should not be used as anchorage for services or equipment. • The use of cranes and large machinery on site should be planned and care taken not to damage the trees during the process.
	2.7 – Unforeseen issues which require the alteration of the Tree Protection Plan/Methods, required tree surgery work or immediate remedial work will be submitted to the Local Planning Authority for approval in writing.
3.) Post Construction (<i>Once all construction work has been completed, this includes all utility services</i>)	3.1 – Tree Protection fencing Removed.
	3.2 – Hard and soft landscaping commence - All landscape team members are to be briefed regarding tree protections by an Arboriculturist.
	3.3 – Any required remedial tree action is taken , such as Leaf Mulch Application, soil de-compaction methods, contamination clean up etc., to be carried out.

7.0 Conclusion

- 7.1 Adhering to the tree protection details in this report, the proposed development can be constructed without any significant long-term adverse impact on the retained trees or the area's amenity.

8.0 Further Information & Qualifications

Stephen Lucocq has been involved in Arboriculture within South Wales for over twenty years. He has worked as an Arborist for many of these years and has an excellent working knowledge of the practical side of the profession. He has always taken an active interest in all areas of Arboriculture and kept up to date with current research and developments.

Qualifications

- First Class BSc (Hons) Degree – Combined Studies - Biology and IT
- Arboricultural Association Technicians Certificate – Level 4 - (Merit)
- PTI - Professional Tree Inspection (Lantra Awards)
- 2D Computer-Aided Design (City and Guilds - Level 3)
- Quantified Tree Risk Assessment (QTRA) – Mike Ellison
- Visual Tree Assessment (VTA) – Mike Ellison
- Arboriculture and Bats (Lantra)
- Industrial Rope Access Trade Association (IRATA)
- Practical Arboriculture Qualifications (NPTC)

Membership

- Arboricultural Association Professional Member (M.Arbor.A)

9.0 Web Information & Bibliography

Web Information

- Arboricultural Association
<http://www.trees.org.uk/>
- Cellular Confinement System
GeoWeb - [GreenFix](#)
CellWeb - [Geosynthetics](#) [Cellweb](#)
- Underground Utilises Installation
<http://www.njug.org.uk/>

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- British Standards 3998 (2010) Recommendations for Tree Work UK; British Standards Intuition
- British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition
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- Shigo, A.L (1991) Modern Arboriculture USA; Shigo and Trees, Association
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- Strouts, R.G (2000) Diagnosis of ill-health in trees Edinburgh; Forestry Commission
- Weber, K & Mattheck, C (2003) Manual of wood decay UK; Arboricultural Association

10.0 Appendix 1A -Tree Survey Data

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
A1	Salix caprea (Goat Willow), Alnus glutinosa (Common Alder), Quercus robur (Common Oak), Fraxinus excelsior (Ash), Betula pendula (Silver Birch), Acer pseudoplatanus (Sycamore)	M	1	350	C2	10(0)	4	4	4	4	F	F	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	sprawling area of scrub and small tree regeneration, mainly goat willow with thick bramble ground cover		4.2	55.42
A2	Acer pseudoplatanus (Sycamore), Alnus glutinosa (Common Alder), Fraxinus excelsior (Ash)	M	1	550	B2	15(3)	6	6	6	6	G/F	N/A	20+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	trees and scrub along river, noted inspected in detail, some ash noted in poor condition noted		6.6	136.9
G1	Acer pseudoplatanus (Sycamore), Fraxinus excelsior (Ash)	M	1	650	B2	14(0)	9	9	9	9	G/F	N/A	20+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.	group of three trees forming a whole of fair to good form, two trees located behind Boundary fencing, early signs of ash dieback disease, consists of two sycamores and one ash		7.8	191.2
G2	Cypress spp (Cypress spp), Quercus robur (Common Oak), Salix caprea (Goat Willow)	M	1	350	C2	12(3)	3	3	3	3	F	N/A	10+		group of trees, noted inspected in detail		4.2	55.42
G3	Salix caprea (Goat Willow)	M	1	400	C2	13(0)	5	5	5	5	G/F	N/A	20+		mixed species woodland, not inspected in detail, mainly sprawling goat willow regeneration		4.8	72.39
G4	X Cupressocyparis leylandii (Leyland Cyp)	M	1	400	C2	13(0)	5	5	5	5	G/F	N/A	10+	Surrounding terrain prevented close inspection of the tree therefore all observations and measurements are estimated.			4.8	72.39
G5	X Cupressocyparis leylandii (Leyland Cyp)	M	1	300	C2	12(0)	5	5	5	5	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	group of conifers, not inspected in detail		3.6	40.72
G6	Salix caprea (Goat Willow)	M	1	300	C2	8(2)	4.5	4.5	4.5	4.5	F	F/P	10+		small group of goat willow, some stem damage noted, fast growing species prone to stem damage		3.6	40.72
G7	Salix caprea (Goat Willow), Betula pendula (Silver Birch)	EM	1	250	C2	8(0)	4	4	4	4	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	small group of small trees and scrub		3	28.28

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
G8	Fraxinus excelsior (Ash), Salix caprea (Goat Willow), Crataegus monogyna (Hawthorn)	EM	1	250	C2	8(0)	4	4	4	4	F/P	F	10+	group of sprawling scrub and some upright trees, some ash showing significant signs of ash dieback			3	28.28
G9	Fraxinus excelsior (Ash)	EM	1	300	C2	13(4)	6	6	2	6	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	multistemmed ash		3.6	40.72
G10	X Cupressocyparis leylandii (Leyland Cyp)	M	1	450	C2	16(0)	6	6	6	6	G/F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	group of conifers		5.4	91.62
G11	mixed species	M	1	350	B2	11(0)	6	6	6	6	F	N/A	20+	trees group along side access rack, not inspected in detail, sprawling scrub tree regeneration			4.2	55.42
G12	Salix caprea (Goat Willow)	M	1	350	C2	7(2)	5	5	5	5	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	multistemmed, fast growing species prone to stem and branch failure		4.2	55.42
G13	Salix caprea (Goat Willow), Acer pseudoplatanus (Sycamore)	M	1	250	C2	8(3)	4	4	4	4	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.			3	28.28
G14	Acer pseudoplatanus (Sycamore)	EM	1	350	C2	11(3)	4	4	4	4	G/F	N/A	10+	group of two multistemmed sycamore			4.2	55.42
G15	Fraxinus excelsior (Ash)	SM	1	100	C2	7(1)	2	2	2	2	F	F	10+	group of small ash tree			1.2	4.52
G16	Fraxinus excelsior (Ash), Acer pseudoplatanus (Sycamore)	SM	1	150	C2	6(1)	2	2	2	2	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	group of small trees mainly ash		1.8	10.18
G17	Acer pseudoplatanus (Sycamore)	M	1	500	B2	11(5)	7	7	7	7	G/F	N/A	20+	group of two trees forming a rough whole, couldn't gain access to the trees			6	113.1
G18	Populus hybrid (poplar hybrid)	OM	1	900	U	18(5)	6	6	6	6	F	F/P	<10	fast growing species prone to stem and branch failure has been past pruned, limited future			10.8	366.5
G19	X Cupressocyparis leylandii (Leyland Cyp)	M	1	300	C2	7(0)	4	4	4	4	G/F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	group of conifers		3.6	40.72

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
G20	Acer pseudoplatanus (Sycamore)	SM	1	100	C2	7(1)	1	1	1	1	F	N/A	10+				1.2	4.52
T1	Quercus robur (Common Oak)	M	1	900	A1	8(3)	7	7	6	6	G/F	G/F	40+	small compact oak of good form			10.8	366.5
T2	Fraxinus excelsior (Ash)	M	1	500	C2	11(1)	6	6	5	5	F	F	10+	Ivy on tree. Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	ash with slight signs of ash dieback disease		6	113.1
T3	Salix caprea (Goat Willow)	M	1	200	C2	4(0)	4	4	4	4	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	small multistemmed scrub		2.4	18.1
T4	Fraxinus excelsior (Ash)	M	1	350	C2	10(2)	4	5	2	4	F/P	N/A	10+	Ivy on tree. Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	ash with signs of ash dieback disease		4.2	55.42
T5	Prunus avium (Wild Cherry)	EM	1	250	C2	7(2)	3	3	1	3	G/F	N/A	10+	Ivy on tree.			3	28.28
T6	Prunus avium (Wild Cherry)	EM	1	300	C2	8(2)	4	4	2	2	F	F	10+				3.6	40.72
T7	Acer pseudoplatanus (Sycamore)	M	1	500	B2	14(3)	6	6	6	6	G/F	N/A	20+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	upright mature tree, position estimated		6	113.1
T8	Fraxinus excelsior (Ash)	SM	1	150	C2	7(1)	2	2	2	2	F	F	10+		small ash tree		1.8	10.18
T9	Fraxinus excelsior (Ash)	M	1	300	U	7(2)	3	3	3	3	P	P	<10		fell	H/M	3.6	40.72
T10	Acer pseudoplatanus (Sycamore)	SM	1	150	C2	7(1)	2	2	2	2	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	small tree		1.8	10.18
T11	Quercus robur (Common Oak)	M	1	750	B2	11(4)	7	8	7	7	G/F	N/A	20+	high B category.	oak of some age, trunk damage likely from animals on western side of trunk, couldn't gain access to the tree		9	254.5
T12	Acer pseudoplatanus (Sycamore)	EM	2	200	C2	8(4)	4	4	4	4	F	N/A	10+				3.4	36.32
T13	Cypress spp (Cypress spp)	M	1	400	C2	11(1)	2	2	2	2	G/F	N/A	10+				4.8	72.39
T14	X Cupressocyparis leylandii (Leyland Cyp)	EM	1	250	C2	6(1)	3	3	3	3	F	N/A	10+				3	28.28
T15	Salix caprea (Goat Willow)	M	1	300	C2	7(4)	4	5	4	4	F	N/A	10+		small tree, fast growing, prone to stem and branch failure		3.6	40.72
T16	Crataegus monogyna (Hawthorn)	M	1	250	C2	6(3)	3	3	1	3	F	N/A	10+				3	28.28

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 38		
Type	Count	% of Total
T	16	42.1
G	20	52.6
A	2	5.3
Tree Species	Count	% of Total
Quercus robur (Common Oak)	2	5.3
Salix caprea (Goat Willow)	5	13.2
X Cupressocyparis leylandii (Leyland Cyp)	5	13.2
Fraxinus excelsior (Ash)	6	15.8
Prunus avium (Wild Cherry)	2	5.3
mixed species	1	2.6
Acer pseudoplatanus (Sycamore)	6	15.8
Populus hybrid (poplar hybrid)	1	2.6
Cypress spp (Cypress spp)	1	2.6
Crataegus monogyna (Hawthorn)	1	2.6
Average Stem Diameter	Count	% of Total
<150	2	5.3
<250	4	10.5
<500	24	63.2
<750	5	13.2
<1000	3	7.9
Cat	Count	% of Total
A1	1	2.6
B2	6	15.8
C2	29	76.3
U	2	5.3
Age	Count	% of Total
SM	5	13.2
EM	8	21.1
M	24	63.2

OM	1	2.6
Height	Count	% of Total
<5	1	2.6
<10	19	50
<15	15	39.5
<20	3	7.9
Phy Cond	Count	% of Total
G/F	13	34.2
F	22	57.9
F/P	2	5.3
P	1	2.6
Stuc Cond	Count	% of Total
G/F	1	2.6
F	6	15.8
F/P	2	5.3
P	1	2.6
N/A	28	73.7

10.0 Appendix 2 - Tree Constraints Plan

An introduction to the Tree Constraints Plan (TCP)

Trees identified to be retained should be treated as constraints to the design of future development. A Tree Constraints Plan has been drawn and can be found over leaf.

- **Tree Quality** - The TCP highlights the above and below-ground constraints each tree poses to design future development schemes. Further, the BS5837 tree quality category (A - High, B - Moderate, C - Low and U- Unsuitable for retention) are coloured coded as solid circles at the centre of the tree's position.
- **Root Protection Area** – The magenta circle on the TCP sets out the root protection area (RPA). No construction work in this area, ground-level alteration or site traffic (machinery or persons) should occur. This prevents damage to tree roots and soil compaction. (Where possible, an Arboriculturist can design suitable tree protection methods to facilitate construction work/site traffic within these areas).
- **Tree Canopy** - The green circle/oval on the TCP sets out the above-ground constraints of tree canopy spread. Within this area, no construction work or site traffic (machinery or persons) should occur if the tree is to be retained. This prevents damage to the tree branches and trunk. (Where possible, an Arboriculturist can design suitable tree protection methods to facilitate construction work/site traffic within these areas).
- **Tree Shading** – Shade from the retained trees should be considered in the development design. Depending on the tree's height and width, the shade cast will be from a North West to East pattern through the central part of the day.
- **Tree Future growth** - Within future development design, consideration should also be given to the ultimate height and extent of the canopy spread of all trees within site identified to be retained.

Tree Constraints Plan

Site - Trebanos
Project Ref - 1810.1
Scale 1:1500 @ A2
www.ArbTS.co.uk

KEY BS 5837:2012 Tree Quality (Colour Coded)
(Individual Trees)

- Category A (High)**
(*Highly desirable for retention*)
- Category B (Moderate)**
(*Desirable for retention*)
- Category C (Low)**
(*Optional for retention*)
- Category U (Poor)**
(*Unsuitable for retention*)

Tree Key - Individual Trees

- Branch Spread (Measured on the North, East, South and West side of Tree)
- Tree Species (Common Tree Name Shown)
- Tree ID# (1 - Individual Tree)

Root Protection Area (RPA) (A 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.)

Tree Key - Group/Area/Woodland/Hedgerow

- Tree ID# (G-Tree Group, A-Tree Area, W-Woodland, H-Hedgerow)
- Tree Species (Common Tree Name Shown)

BS 5837:2012 Tree Quality (Colour Coded as for individual trees)

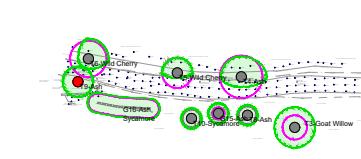
Average Branch Spread

Shade Pattern - shade pattern not shown on plan (early morning shade starting South West through to evening shade to the East)

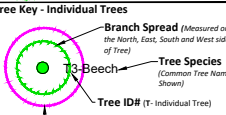
Definitions of BS5837:2012 Categories for Trees, Woodlands and Hedgerows (Colour Coded):

- A** - Those of high quality with an estimated remaining life expectancy of at least 40 years. (*Highly desirable for retention*)
- B** - Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (*Desirable for retention*)
- C** - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. (*Optional for retention*)
- 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. (*Unsuitable for retention unless provides high conservation value*)

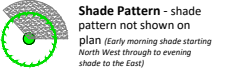
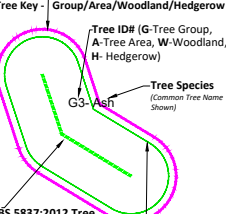
Please Note:
Barriers and Ground Protection must be designed by an arboriculturist, installed before materials or machinery is brought onto site and before any demolition, development or stripping of soil commences. Once erected, barriers and ground protection should be regarded as sacrosanct, and should not be removed or altered without prior recommendation by an Arboriculturist and approval of the Local Planning Authority (LPA).



- Category A (High)
(*Highly desirable for retention*)
- Category B (Moderate)
(*Desirable for retention*)
- Category C (Low)
(*Optional for retention*)
- Category U (Poor)
(*Unsuitable for retention*)



Root Protection Area (RPA) (A 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.)



Definitions of BS5837:2012 Categories for Trees, Woodlands and Hedgerows (Colour Coded):

- A - Those of high quality with an estimated remaining life expectancy of at least 40 years. (*Highly desirable for retention*)
- B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (*Desirable for retention*)
- C - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. (*Optional for retention*)
- 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. (*Unsuitable for retention unless provides high conservation value*)

Please Note:
Barriers and Ground Protection must be designed by an arboriculturist, installed before materials or machinery is brought onto site and before any demolition, development or stripping of soil commences. Once erected, barriers and ground protection should be regarded as sacrosanct, and should not be removed or altered without prior recommendation by an Arboriculturist and approval of the Local Planning Authority (LPA).

10.0 Appendix 3 - Tree Survey Data Key

- **Tree ID #** - Identifies the location of individual trees (T-ID Number), Groups of trees (G-ID Number), Area of trees (A-ID Number), Hedgerow (H-ID Number), Woodland (W-ID Number), Row of trees (R-ID Number) and tree Stumps (S-ID Number) on the accompanying plan. *(Please note: A group of trees here refers to two or more standing trees that form a visual whole, whereas an area of trees refers to dispersed individual trees standing within the site)*
- **Tree Species** - Scientific names and common tree name in brackets are generally shown.
- **Age**
 - o (Y) Young – Less than 1/3 of life completed
 - o (SM) Middle Aged - 1/3 - 2/3 of life completed
 - o (EM) Early Mature – Just entering Maturity
 - o (M) Mature – more than 2/3 of life completed
 - o (OM) Over Mature - more than 3/3 of life completed and declining
 - o (V) Veteran - (v) Veteran – Veteran trees have no precise definition but are trees considered to be of biological aesthetic or ecological value because of their age
- **Stems** – Number of tree stems used to calculate the RPR/RPA
- **Stem Diam** (mm) - Diameter of tree stem measured in millimetres for single stem trees or average stem diameter calculated for multi-stemmed trees as detailed in section 4.6 & Annex C of the British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations. The height above ground level where the stem measurement was taken will be shown if not measured at 1.5 metres above ground level. *(Please note: that the stem diameter of certain trees will have to be estimated due to difficulties in taking measurements or for trees with a large number of stems)*
- **Cat** – Tree Quality Category - British Standard 5837:2012 A, B, C, U + 1, 2, 3

Based on BS5837:2012, categories A, B, C, and U provide the basis for prioritising trees for retention:

- o A – Those of high quality with an estimated remaining life expectancy of at least 40 years. (*Most desirable for retention*)
- o B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (*Desirable for retention*)
- o C – Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. (*Optional for retention*)
- o 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. (*Unsuitable for retention unless provides high conservation value*)

Retention Criteria Subcategories: Used for identifying subcategories

E.g. A2 = A high-quality tree with high landscape qualities (further details can be found in British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition)

- o 1 – Mainly Arboricultural qualities
 - o 2 – Mainly landscape qualities
 - o 3 – Mainly cultural values, including conservation
- **Height + (Lower Branch Height)** - Tree height in metres and in brackets height in metres of the crown (tree branches) clearance at its lowest point above adjacent ground levels.
- **Nrth, Est, Sth, Wst** - Crown Spread (Metres) -Tree branch spread in metres measured in four directions (North, East, South, West) from the trunk.
- **Phys Cond** - Physiological Condition Indicating the health of the tree -
 - o (G) Good
 - o (F) Fair
 - o (P) Poor
 - o (D) Dead
- **Struc Cond** – Structural Condition indicating the structural integrity of the tree -
 - o (G) Good – No, or remediable physical defects or decay
 - o (F) Fair - Physical non-remediable defects or decay present, not presenting imminent danger but should be monitored
 - o (P) Poor - physical non-remediable defects or decay present, tree liable to imminent collapse or loss of major limbs.
 - o (D) Dead
- **Est. Remain Contrib - (<10, 10+, 20+, 40+)**

The trees estimated remaining contribution in years, recorded as:

 - o <10 – less than 10 years
 - o 10+ – at least 10 years
 - o 20+ – at least 20 years
 - o 40+ – at least 40 years
- **Comments** – Additional Comments, if required
- **Preliminary Management Recommendations** – Work Recommendations, including further investigation of suspected defects that require more detailed assessment and pose potential for wildlife habitat.

- **Work Priority** - Work Priority -This gives a work priority rating of preliminary management for each tree.
 - o H - High – Urgent work to be carried out as soon as practicable due to safety reasons (Within 14 days).
 - o H/M – High - Medium – Work to be carried out within 6 months/or before the construction phase begins
 - o M - Medium – Work to be carried out in 12 months
 - o L - Low – After consideration/Re-inspect in 18-24 months
 - o Blank – No work required.
- **RPR** – Root protection radius / **RPA** - Root Protection Area - Is a 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. RPR is a circular area measured as a radius in metres from the tree's centre, or RPA is an area in metres squared. This area may be changed in shape but not reduced in size, providing adequate protection for the tree's rooting system.

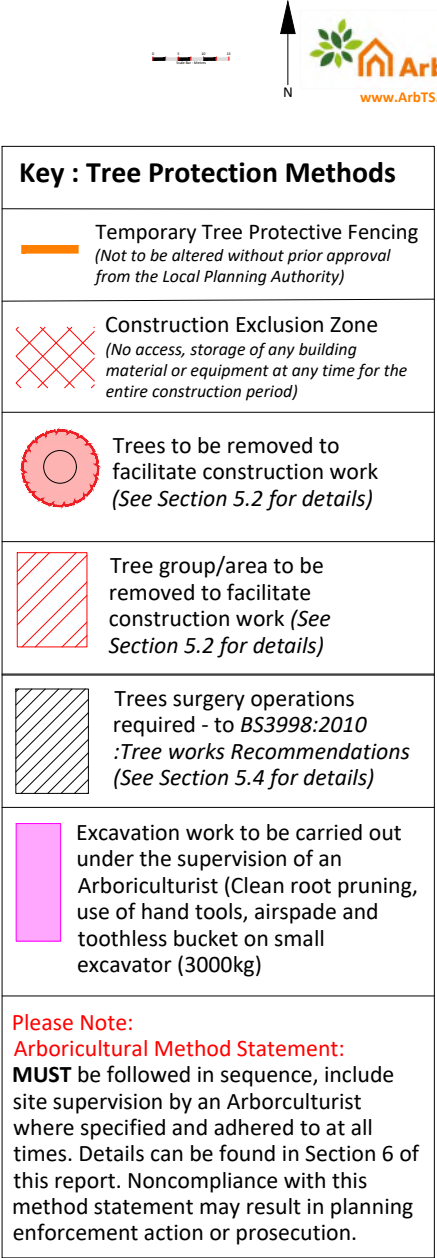
10.0 Appendix 4 – Tree Protection Plan

Tree Protective Fencing

- BS5837: 2012 Recommendations (extract)

Fencing Specification

- The major cause of damage to trees on construction sites is due to soil compaction.
- Roots use the spaces between soil particles to obtain Oxygen, Water and Nutrients.
- Heavy plant and machinery compresses (compacts) the soil, squashing out the air spaces and preventing root function.
- A compacted soil structure will stay compacted.
- Consequently the tree suffers and will show signs of branch die-back.
- Symptoms such as die-back may take several years to appear.
- Soil compaction over roots can be prevented by maintaining a fenced exclusion zone over the tree roots.
- The exclusion zone is calculated using British Standard 5837.
- Protective Fencing is installed around the calculated area.
- Protective Fencing is only a planning approval, if it is removed or repositioned the construction firm is in breach of a condition and may be subjected to legal action.



Project – Trebanos
Client Ref. – 18.01.1
Scale 1:1500 @ A2

KEY TREE RISK ASSESSMENT QUALITY (Colour Code)

- Category A (High)**
 ("Highly desirable for retention")
- Category B (Moderate)**
 ("Desirable for retention")
- Category C (Low)**
 ("Optimal for retention")
- Category D (Poor)**
 ("Unsuitable for retention")

Tree Key - Individual Trees

Root Protection Area (RPA) / LAI
 design tool indicating the minimum area of ground surface required to contain sufficient roots and rooting volume to maintain the tree's stability, and soil structure protected as its priority.

Tree Key - Group/Area/Woodland/Hedgerow

Key
 G-Trees (Green)
 W-Woods (Woodland)
 H-Hedges (Hedgerows)
 C-Conifers (Conifer trees)

Shade Pattern - shade pattern used to plan future planting/shading

Definitions of NISB87-2012 Categories for Quality Class and Hedgerow and Coniferous

- A - Those of high quality which have an estimated remaining life expectancy of at least 40 years
- B - Those of moderate remaining quality with an estimated remaining life expectancy of at least 20 years (young trees can be "retained")
- C - Those of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 100mm. ("Optional" retention*)
- D - Those in such a condition that they cannot realistically be retained as being trees in the context of the current land use they have been planted for
- E - Unsuitable for retention unless viewed as "conservation value"

Please Note:
 The proposed Ground Protection Method may be designed by an arboriculturist, installed before materials or machinery brought onto site, and before any demolition, development or stripping of soil commences. On erected, barriers and ground protection should be regarded as sacrosanct, and should not be moved or altered without prior recommendation by an Arboriculturist and approval of the Local Planning Authority (LPA).

10.0 Appendix 5 – Tree Photographs

Tree ID#T2



Tree ID#G1



Tree ID#G1



Tree ID#G8



Tree ID#T1



Tree ID#G7



Tree ID#T8 + G15



Tree ID#T4



Tree ID#T11



Tree ID#G2



Tree ID#G3



Tree ID#G4 + G5



Tree ID#G10



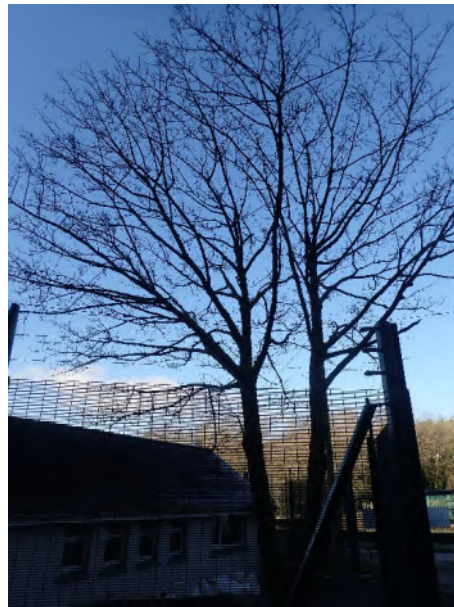
Tree ID#G18



Tree ID#G19



Tree ID#T12



Tree ID#T13



Tree ID#G14



Tree ID#G6



Tree ID#G11



