



ArbTS - Arboricultural Technician Services Ltd

(Tree Consultancy Services)

Stephen Lucocq *BSc (Hons), Tech Cert (ArborA), M.Arbor.A*
Professional Member of the Arboricultural Association

Web site: www.ArbTS.co.uk

Email: info@ArbTS.co.uk

Mobile: 07789 551 591

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 – 18th February 2021

Site – Land at Trefechan, Merthyr Tydfil

Project Reference – ArbTS_580.7_Land at Trefechan

Table of Contents

1.0	Introduction	3
2.0	The Tree Survey	3
3.0	The Trees	4
4.0	Tree Constraints Plan Information	4
5.0	Arboricultural Impact Assessment	5
6.0	Arboricultural Method Statement	6
7.0	Conclusion	8
8.0	Qualifications & Further Information	9
9.0	Bibliography & Web Information	10
10.0	Appendix	
1A	Tree Survey Data + 1B - Detailed Tree Survey Data Summary	
2	Tree Constraints Plan	
3	Tree Survey Key	
4	Tree Protection Plan	
5	Tree Photographs	

Copyright © 2021

ArbTS Ltd, 5 Weavers Road, Ystradgynlais, Powys, SA9 1PQ. All rights reserved.

No part of this report may be copied or reproduced by any means without prior written permission from ArbTS.

If you have received this report in error, please destroy all copies in your possession or control.

This report has been prepared for the exclusive use of the commissioning party and unless otherwise agreed in writing by ArbTS, no other party may use, make use of or rely on the contents of this report.

No liability is accepted by ArbTS for any use of this report, other than for the purposes for which it was originally prepared and provided.

Opinions and information provided in the report are on the basis of ArbTS using due skill, care and diligence in the preparation of the same and no warranty is provided as to their accuracy.

Surveys are undertaken on the understanding that nothing in the final report will be omitted, amended or misrepresented by the client or any other interested party.

This report and its contents remain the property of ArbTS until payment has been made in full.

It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to ArbTS has been made.

1.0 Introduction

- 1.1 The purpose of this report is to give an assessment to the quality of the trees at Land at Trefechan, Merthyr Tydfil, 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 as to 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 at Appendix 2.
- 1.3 Arboricultural constraints within the surveyed site relates primarily to the preservation of trees recommended for retention. Identified trees must be protected during the construction phase through the employment of 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 over looked during the construction process and can be damaged or altered by compaction causing major damage to the health of the tree. Generally the entire root system of the tree is within the top 600mm of soil where it can be easily damaged. A calculated area of ground around the tree should be protected for the duration of 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 12th February 2019.
- 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 the aid of an acoustic sounding hammer. No invasive decay detective instruments were used.
- 2.4 The survey was carried out in accordance to *British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations*. This standard gives a systematic, consistent and transparent evaluation method to 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 recommendation for the trees on or adjacent to this site. Details regarding these identified 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 practically possible. Where work

priority is stated to be M/H – medium/high or higher these operations should be undertaken before 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 is made during survey, no responsibility can be taken for resultant damage or injury occurred by a failing tree. The survey only gives a snap shot 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 to a full tree condition survey/tree risk assessment of the site and this report is only valid for 12 months from the date of the tree report.

3.0 The Trees

- 3.1 The full 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)	0	0	0	0	0	0
B (Moderate - Desirable for retention)	6	1	0	0	0	7
C (Low - Optional for retention)	15	6	0	0	2	23
U (Poor - Unsuitable for retention)	3	0	0	0	0	3
Total A,B,C,U	24	7	0	0	2	33

4.0 Tree Constraints Plan (TCP) Information

- 4.1 A Tree Constraints Plan (TCP) can be found at 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 and Hedgerow Loss- The following trees and hedgerows are required to be removed to facilitate the construction of the proposed development design.

5.2.2 Individual Tree Loss –

- Hawthorn Tree– T17 – Low quality (C category)
- Hawthorn Tree– T934 – Low quality (C category)
- Hawthorn Tree– T10 – Low quality (C category)
- Hawthorn Tree– T9 – Low quality (C category)
- Hawthorn Tree– T8 – Low quality (C category)
- Hawthorn Tree– T11 – Poor quality (U category)
- Hawthorn Tree– T2 – Poor quality (U category)

5.2.3 Grouped Tree Loss –

- G5 and G6 – A number of small trees of Low quality (C category) to be removed to construct a footpath through the tree groups.

5.2.4 Hedgerow Loss –

- Leyland Cypress Hedgerow – H1 – Low quality (C category)
- Leyland Cypress Hedgerow – H2 – Low quality (C category)

5.2.5 Overall Tree Loss –

A small number of trees and hedgerows are identified to be removed to facilitate the construction of the proposed development design. All of these surveyed trees and hedgerows identified for removal are low or poor quality. These trees should not present a constraint on developing the site.

5.3 Root Protection Area (RPA) – 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 that no significant long term adverse impact will occur to any of the retained trees.

5.4 Tree surgery work – Some minor branch reduction/branch lifting pruning work will be required to facilitate this proposed scheme as that detailed on the tree protection plan (Appendix 4). This work is to be carried out to the *British Standard 3998:2010 tree work recommendations*. Adhering to this standard will ensure no adverse impact onto the long term health or visual amenity of these trees will occur.

- 5.5.1 **AIA – Conclusion** - The site has a number of Arboricultural constraints that needed to be considered in the development design phase. A small number of trees and hedgerows are identified to be removed to facilitate the construction of the proposed development design. All of these trees and hedgerows are low or poor quality that should not present a constraint on developing the site.
- 5.5.2 This proposed development design retains all moderate value trees (B Category) that form part of the site whilst sustainably using it for residential development.
- 5.5.3 The proposal would not cause a long term adverse impact onto 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 to the tree protection scheme as detailed in section 6 will ensure that no significant long term adverse Arboricultural impact occurs onto the health of any retained trees on or adjacent to this site or to 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 below provides a detail sequence of events that must occur in order to ensure the protection of the retained trees during all stages of the construction process. These methods must be clearly communicated to the entire construction team prior to commencement of any work on site.

Stage	Arboricultural Method Statement (In sequence of events)
1.) Preconstruction <i>(Prior to any construction work on site including demolition work, site material storage etc.)</i>	1.1 – Design areas for construction site storage by site supervisor and the appointed Arboriculturist.
	1.2 – Tree surgery work to be carried out as detailed on the Tree Protection Plan (Appendix - 4) of this report and to the <i>British Standard:3998:2010: Recommendation for tree works</i> .
	1.3 – Tree protective fencing installed in the position and form as detailed on the Tree Protection Plan (Appendix - 4). Installation to be supervised by the appointed Arboriculturist. All weather tree construction exclusion zone posters to be secured to fencing at regular intervals.

	1.4 – Site storage area containers etc. installed as designed and supervised by site supervisor and the appointed Arboriculturist.
	1.5 – 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 – Site supervisor to be briefed by the appointed Arboriculturist regarding the Tree Protection Plan/Methods and a laminated copy of the plan/methods 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 made to 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 of noncompliance with these tree protection methods.
	2.2 – All contractors to be briefed by 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 of noncompliance with these tree protection methods.
	2.3 – Excavation under Arboricultural Supervision to be carried out in areas highlighted on the Tree Protection Plan (Appendix - 4). This work to be carried out with the use of hand tools, 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. Excavator will only work from existing hard surfacing prior to its removal. Any roots discovered less than 25mm in diameter to be pruned cleanly with securer or pruning saw. Careful excavation working method as follows: • Digging started from outside of the Root Protection Area towards the retained tree. • No roots found to be ripped, pulled or crushed during excavation • Any exposed roots 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 engineer methods will be sort to retain these roots.
	2.4 – Construction phase begins with site inspection visits from the appointed Arboriculturist (Once every 3 months for the full duration) to ensure all tree protection methods are being adhered to. Arboriculturist to document findings from the site visits including any issues identified, how to resolve and photographic evidence. Document report to be sent to all parties within 1 week after the site visit.
	2.5 - 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 trees 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 that are to be retained and be 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.
	2.6 – 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 to be briefed regarding tree protections by an Arboriculturist. Arboricultural supervision of footpath construction within Construction Exclusion Zones to be carried out.
	3.3 – Any required remedial tree action 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 as found within this report the proposed development can be constructed without any significant long-term adverse impact onto the retained trees or the amenity of the area.

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 a good 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/>

Bibliography

- 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
- Coombes, A.J (1992) Trees London; Dorling Kindersley
- Lonsdale, D (1999) Principle of Tree Hazard Assessment and Management Edinburgh; Forestry Commission
- Mattheck, C (2007) Field Guide for Visual Tree Assessment Germany; Karlsruhe Research Centre
- Shigo, A.L (1991) Modern Arboriculture USA; Shigo and Trees, Association
- Sterry, P (2007) Collins Complete British Trees London; Collins
- 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)
G1	Acer pseudoplatanus (Sycamore), Corylus avellana (Hazel), Fraxinus excelsior (Ash), Crataegus monogyna (Hawthorn)	EM	1	200	C2	8(0)	3	3	3	3	F	F	10+	group of multistemmed scrub and some small trees of poor to fair form			2.4	18.1
G2	Fraxinus excelsior (Ash)	SM	1	150	C2	7(2)	2	2	2	2	F	F	10+	scattered row of mainly small semi mature ash			1.8	10.18
G3	Fraxinus excelsior (Ash)	SM	1	100	C2	7(2)	1	1	1	1	F	F	10+	low C category. very scattered row of mainly small thin young and semi mature ash			1.2	4.52
G4	Crataegus monogyna (Hawthorn)	M	1	250	C3	5(1)	3	3	3	3	G/F	F	20+	group of four hawthorn of fair form as a whole			3	28.28
G5	Fraxinus excelsior (Ash), Crataegus monogyna (Hawthorn)	SM	1	200	C2	9(0)	3	3	3	3	F	F	10+	ground of mainly ash regeneration around old building ruins and some small low quality hawthorn			2.4	18.1
G6	Fraxinus excelsior (Ash)	M	1	550	B2	14(3)	7	7	7	7	G/F	F	20+	low B category. group of ash trees forming a whole of fair form, hawthorn along access track noted			6.6	136.9
G7	Crataegus monogyna (Hawthorn)	M	1	250	C3	5(1)	3	3	3	3	G/F	G/F	20+	high C category. group of three hawthorn of fair to good form as a whole			3	28.28
H1	X Cupressocyparis leylandii (Leyland Cyp)	EM	1	250	C2	4(0)	2.5	2.5	2.5	2.5	F	F	10+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated. small section of high hedgerow			3	28.28
H2	X Cupressocyparis leylandii (Leyland Cyp)	EM	1	200	C2	5(0)	2.5	2.5	2.5	2.5	F	F	10+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated. small section of high hedgerow, western end dead			2.4	18.1
T1	Picea abies (Norway Spruce)	EM	1	350	C2	10(0)	5	5	5	5	G/F	N/A	10+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated. short broad tree of low value			4.2	55.42

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)
T2	Crataegus monogyna (Hawthorn)	M	1	200	U	4(1)	2	1	2	2	D	D	<10	Dead.					2.4	18.1
T4	Fraxinus excelsior (Ash)	EM	1	320	C2	7(1)	4	4	3	3	F	F	10+		multistemmed from 1.5metres				3.84	46.33
T5	Crataegus monogyna (Hawthorn)	M	1	250	C3	6(1)	3	3	3	3	G/F	G/F	20+	high C category.	small open grown hawthorn of fair form				3	28.28
T6	Crataegus monogyna (Hawthorn)	M	1	200	C3	6(1)	2	3	2	2	F	F	10+		small open grown hawthorn of fair form				2.4	18.1
T7	Crataegus monogyna (Hawthorn)	M	1	150	C3	3(1)	2	2	2	2	F	F	10+		very small open grown hawthorn of fair to poor form				1.8	10.18
T8	Crataegus monogyna (Hawthorn)	M	1	200	C3	3(1)	4	1	2	3	F	F	10+		small open grown hawthorn of fair to poor form, collapsed northern stem				2.4	18.1
T9	Crataegus monogyna (Hawthorn)	M	1	200	C3	5(1)	3	3	2	2	F	F	10+		small open grown hawthorn of fair form				2.4	18.1
T10	Crataegus monogyna (Hawthorn)	M	1	200	C3	5(1)	3	3	3	2	G/F	G/F	20+	high C category.	thick crown, small open grown hawthorn of fair to good form				2.4	18.1
T11	Crataegus monogyna (Hawthorn)	M	1	200	U	5(1)	0	1	3	1	F/P	F/P	<10		collapsed northern stem, tree of poor condition		coppice to high trunk	H/M	2.4	18.1
T12	Crataegus monogyna (Hawthorn)	M	1	200	C3	3(1)	3	3	2	2	F	F	10+		small open grown hawthorn of fair to poor form, collapsed stems				2.4	18.1
T13	Crataegus monogyna (Hawthorn)	M	1	200	U	4(1)	3	3	3	3	F	F/P	<10		small open grown hawthorn of fair to poor form, collapsed stems				2.4	18.1
T14	Crataegus monogyna (Hawthorn)	M	1	100	C3	4(1)	2	1	1	1	F	F	10+		small open grown hawthorn of fair to poor form				1.2	4.52
T15	Crataegus monogyna (Hawthorn)	M	1	150	C3	4(1)	2	3	2	3	F	F	10+		small open grown hawthorn of fair form				1.8	10.18
T16	Crataegus monogyna (Hawthorn)	M	1	150	C3	4(1)	2	2	2	2	F	F	10+		small open grown hawthorn of fair form				1.8	10.18
T17	Crataegus monogyna (Hawthorn)	M	1	250	C3	6(1)	4	4	3	4	G/F	G/F	20+	high C category.	thick small open grown hawthorn of fair form				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)
T931	Acer pseudoplatanus (Sycamore)	M	1	590	B2	14(3)	8	2	7	7	G/F	G/F	20+	forms pair with adjacent tree, as a pair of fair to good form			7.08	157.5
T932	Acer pseudoplatanus (Sycamore)	M	1	700	B2	14(3)	7.5	7.5	7	3	G/F	F	20+	forms pair with adjacent tree, twin stems from ground level, old cavity on northern side of buttress with surrounding callus growth, as a pair of fair to good form			8.4	221.7
T933	Crataegus monogyna (Hawthorn)	M	1	400	B3	6(1)	4	3.5	3.5	3.5	G/F	G/F	20+	low B category. small open grown hawthorn of fair to good form			4.8	72.39
T934	Crataegus monogyna (Hawthorn)	M	1	200	C3	6(1)	2	3	3	2	G/F	G/F	20+	high C category. small open grown hawthorn of fair form			2.4	18.1
T935	Crataegus monogyna (Hawthorn)	M	1	200	C3	5(1)	3	3	3	4	G/F	G/F	20+	high C category. small open grown hawthorn of fair form			2.4	18.1
T936	Acer pseudoplatanus (Sycamore)	M	1	870	B2	16(8)	4	10	7.5	5	F	F	20+	low B category. Suppressed growth from surrounding trees. a large tree, lower western stem poorly pruned, ground levels to the east increased with high gabion baskets for adjacent housing development, forms group with two other large sycamore trees			10.4	342.5
T937	Acer pseudoplatanus (Sycamore)	M	1	1000	B2	15(2)	5	6	10	12	F	F	20+	low B category. Suppressed growth from surrounding trees. a very large tree, ground levels to the east increased with high gabion baskets for adjacent housing development, forms group with two other large sycamore trees, cavity with surrounding reactive growth noted on northern buttress			12	452.5
T938	Fraxinus excelsior (Ash)	M	2	530	B2	11(2)	5	6	5	6	G/F	G/F	20+	tree of fair to good form, twin stem from 500mm above ground level			6.36	127.1

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 33		
Type	Count	% of Total
T	24	72.7
G	7	21.2
H	2	6.1
Tree Species	Count	% of Total
Acer pseudoplatanus (Sycamore)	4	12.1
X Cupressocyparis leylandii (Leyland Cyp)	2	6.1
Crataegus monogyna (Hawthorn)	19	57.6
Picea abies (Norway Spruce)	1	3
Fraxinus excelsior (Ash)	5	15.2
Age	Count	% of Total
SM	3	9.1
EM	5	15.2
M	25	75.8
Cat	Count	% of Total
B2	6	18.2
B3	1	3
C2	8	24.2
C3	15	45.5
U	3	9.1
Average Stem Diameter	Count	% of Total
<150	2	6.1
<250	17	51.5
<500	8	24.2
<750	4	12.1
<1000	1	3
<2000	1	3
Height	Count	% of Total
<5	9	27.3
<10	17	51.5

<15	5	15.2
<20	2	6.1
Phy Cond	Count	% of Total
G/F	13	39.4
F	18	54.5
F/P	1	3
D	1	3
Stuc Cond	Count	% of Total
G/F	9	27.3
F	20	60.6
F/P	2	6.1
D	1	3
N/A	1	3
Est. Remain Contrib	Count	% of Total
<10	3	9.1
10+	16	48.5
20+	14	42.4
RPR	Count	% of Total
<5	27	81.8
<10	4	12.1
<15	2	6.1
RPA	Count	% of Total
<5	2	6.1
<15	4	12.1
<20	13	39.4
<30	5	15.2
other	9	27.3

10.0 Appendix 2 - Tree Constraints Plan

An introduction to the Tree Constraints Plan (TCP)

Trees that have been 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 constraint each tree poses to the design of future development schemes. Further to this 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 trees position.
- **Root Protection Area** – As shown as cyan circle on the TCP sets out root protection area (RPA). Within this area no construction work, alteration in ground levels 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. The shade cast, depending on the trees height and width, will be from a North West to East pattern through the main 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 the site identified to be retained.



Tree Constraints Plan

Site - Land at Trefechan

Project Ref - 580.7

Scale 1:750 @ A2

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

-
- 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# (T- Individual Tree)

T3-Beech

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

DE 5837:2013 Type

Quality (Colour Coded as for individual trees)

Average Branch Spread

Shade Pattern - shade pattern not shown on plan (Early morning shade starting Sixth West through to evening)

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*)

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 soils 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).

KEY: 85/5837-2012 Tree Quality (Colour Coded)

Category A (High)

Category B (Moderate)

Category C (Low)

Category U (Poor)

(*)Highly desirable for retention

(*)Desirable for retention

(*)Optional for retention

(*)Unsuitable for retention

Tree Key - Individual Trees

Branch Spread (Measured on the Branch Line, South and West side of Tree)

Tree Species (Common Tree Name Shown)

Tree ID# (if 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)

85/5837-2012 Tree Quality (Colour Coded as for Individual Trees)

Average Branch Spread

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

Definitions of 85/5837-2012 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, U provides the basis of 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 a 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 indicting 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 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 centre of the tree or RPA is an area in metres squared. Where required this area may be changed in shape but not reduced in area whilst providing adequate protection of the tree's rooting system.

10.0 Appendix 4 – Tree Protection Plan

Tree Protective Fencing (High Risk)

- Trees for removal to be identified from the drawing and marked by an alternative.
- No vehicles to enter the grass verge or root protection zone during the construction period.
- Fencing to be installed prior to any construction works (including demolition, material delivery, works compound installation).
- The location of the tree protective fencing is indicated only and must not be directly measured from the plan. Its true location must be ascertained accurately on site and where applicable be measured from the tree centre by the stated dimension value.
- Fencing to remain in place until all construction works have ceased.

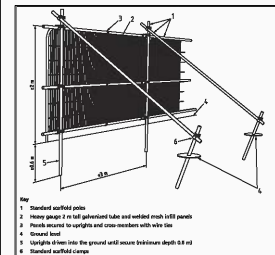
BS5837: 2012 Recommendations (extract)

6.2.2.1 - Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained benefits. Barriers should be maintained to ensure that they remain rigid and upright.

6.2.2.2 - The default specification should consist of a vertical and horizontal scaffold framework, well secured to windward, as illustrated in Figure 1. The vertical scaffold framework should be at least 1.8m high and be secured accurately on site and where applicable be measured from the tree centre by the stated dimension value.

Fencing Specification

The fencing will comprise of standard G37Hanes styled steel well secured to windward, as illustrated in Figure 1. The vertical scaffold framework should be at least 1.8m high and be secured accurately on site and where applicable be measured from the tree centre by the stated dimension value.



Why is Fencing Erected Around Trees?

- The major reason for damage to trees on construction sites is due to soil compaction.
- Roots take the spaces between soil particles to obtain Oxygen, Water and Nutrients.
- Heavy plant and machinery compresses (compacts) the soil, reducing the air spaces and preventing root function.
- A compacted soil structure will stop compaction.
- Consequently the tree suffers and will show signs of stress, 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 fencing should be installed prior to any construction works.
- Protective Fencing is a condition of planning approval. If it is removed or repositioned the construction firm is in breach of a condition and may be subjected to legal action.

Tree Protective Fencing (Low Risk)

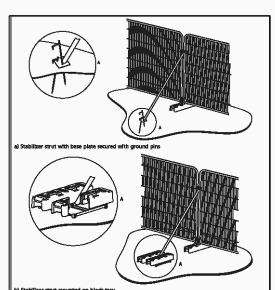
- Trees for removal to be identified from the drawing and marked by an alternative.
- No vehicles to enter the grass verge or root protection zone during the construction period.
- Fencing to be installed prior to any construction works (including demolition, material delivery, works compound installation).
- The location of the tree protective fencing is indicated only and must not be directly measured from the plan. Its true location must be ascertained accurately on site and where applicable be measured from the tree centre by the stated dimension value.
- Fencing to remain in place until all construction works have ceased.

BS5837: 2012 Recommendations (extract)

6.2.2.3 Where the site circumstances and associated risk of damaging locations into the RPA is not recoverable the actual level of protection, an alternative specification should be prepared by the project arboriculturist and, where relevant, agreed with the local planning authority.

Fencing Specification

For example: Double (or triple) mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and generally crowded plant. In such cases, the fence panels should be joined together using a minimum of two and longer clips, isolated so that they can only be removed from inside the fence. The distance between the fence panels should be at least 1m and should be uniform throughout the fence. The panels should be supported on the tree side by a suitable stake, which should normally be attached to a base plate secured into ground pins. Where the fencing is to be erected on retained level surfaces or in circumstances otherwise to suit ground pins, it is to be secured to underground services. The stakeless stiles should be inserted in a track way. (See Diagram below)



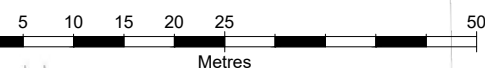
Why is Fencing Erected Around Trees?

- The major reason for damage to trees on construction sites is due to soil compaction.
- Roots take the spaces between soil particles to obtain Oxygen, Water and Nutrients.
- Heavy plant and machinery compresses (compacts) the soil, reducing the air spaces and preventing root function.
- A compacted soil structure will stop compaction.
- Consequently the tree suffers and will show signs of stress, 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 fencing should be installed prior to any construction works.
- Protective Fencing is a condition of planning approval. If it is removed or repositioned the construction firm is in breach of a condition and may be subjected to legal action.

1) TPP - Footpath to be constructed using minimal dig and permeable surfacing. Position and form of footpath to be supervised by Arboriculturist during the Landscaping Phase.

2) Tree Removal - Small trees to be removed to construct footpath.

6) Tree Surgery Works - Prune western branches by no greater than 2.0 metres to suitable pruning points



Key: Tree Protection Methods

- Temporary Tree Protective Fencing (High Risk) (Red line) (To be erected without prior approval from the Local Planning Authority)
- Temporary Tree Protective Fencing (Low Risk) (Orange line) (To be erected without prior approval from the Local Planning Authority)
- Construction Exclusion Zone (Blue hatched area) (No access, removal of any building material or equipment at any time for the entire construction period)
- Trees/Hedges/rows to be removed to facilitate construction work (See Section 5.2 for details)
- Trees surgery operations required - to BS5837:2012 (Green hatched area) (Tree works Recommendations)
- Excavation work to be carried out under the supervision of an Arboriculturist (Clean root pruning, use of hand tools, allspike and toothless bucket on small excavator (2500kg))
- Creation of footpaths in construction exclusion zones at the end of the construction phase (Landscape Phase). Minor excavation work to be carried out under the supervision of an Arboriculturist (Clean root pruning, use of hand tools, allspike and toothless bucket on small excavator (2500kg))

Please Note: Arboricultural Method Statement: MUST be followed in sequence, include site supervision by an Arboriculturist where specified and adhered to at all times. Details can be found in Section 6 of this report. Non-compliance with this method statement may result in planning enforcement action or prosecution.

Tree Protection Plan

Site - Land at Trefechan
Project Ref - 580.7
Scale 1:750 @ A2
KEY: BS 5837:2012 Tree Quality (Colour Coded)

- 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*)

- Branch Spread (Measured on the ground, not from the crown of the tree)
- Tree Species (Common Tree Name)
- Tree ID# (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/Hedge/row
- Tree ID# (G Tree Group, A Tree Area, W Woodland, H Hedge/row)
- Tree Species (Common Tree Name)
- BS 5837:2012 Tree Quality (Colour Coded in the field)
- Average Branch Spread

Shade Pattern - shade pattern not shown on plan (early morning shade starting from west through to evening shade to the east)

Definitions of BS5837:2012 Categories for Trees, Woodlands and Hedges/rows (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*)

10.0 Appendix 5 – Tree Photographs

Tree ID#T931 + T932



Tree ID#H1 + H2



Tree ID#T933



Tree ID#G2



Tree ID#G3



Tree ID#T937, T936 + G7



Tree ID#T T937, T936



Tree ID#G4



Tree ID#G5



Tree ID#G6



