



ArbTS - Arboricultural Technician Services

(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 – 12th July 2020

Site – Dragon Park, Merthyr Tydfil

Project Reference – ArbTS_755.2_Dragon Park

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1.0 Introduction

- 1.1 The purpose of this report is to give an assessment to the quality of the trees at Dragon Park, 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 19th August 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)	3	4	0	0	0	7
C (Low - Optional for retention)	2	3	1	0	0	6
U (Poor - Unsuitable for retention)	0	0	0	0	0	0
Total A,B,C,U	5	7	1	0	0	13

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 Loss - The following trees are required to be removed to facilitate the construction of the proposed development design.

5.2.2 Individual Tree Loss –

- o T254 – Silver Birch – Low C quality

5.2.3 Grouped/Area Tree Loss –

- o Tree Group – G4 – Low quality (C category) 166m2 of untidy sprawling scrub
- o Small internal part of Tree Group – G2 – Moderate quality (B category) 45m2

5.2.4 Overall Tree Loss –

A small number of trees are identified to be removed to facilitate the construction of the proposed development design. Most of the 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 small area of internal moderate quality trees (45 m2 of Tree Group G2) will not cause an adverse impact onto the amenity of the area or the health of the remaining boundary trees.

5.3 Root Protection Area (RPA) – Some minor conflict between the surrounding slopes for the proposed channel construction and the southern area of boundary tree group G2 is noted. This conflict is minor, with only the lower parts of the tree bank requiring some minor increase in ground levels. Other RPA potential damage can all be managed through the installation of temporary tree protective fencing will ensure that no significant long term adverse impact will occur to any of the retained trees.

5.4.1 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 are identified to be removed to facilitate the construction of the proposed development design. Most of these trees are low quality that should not present a constraint on developing the site.

5.4.2 This proposed development design has aimed to retain a very high proportion of the Moderate value trees (B Category). Of note is the retention of the long western boundary tree group G1, G2 and G3.

5.4.3 The proposal will not cause a long term adverse impact onto the local amenity of the area through tree loss.

5.4.4 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 (Prior to any construction work on site including demolition work, site material storage etc.)	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 within section 5.2.2, 5.2.3 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 – Construction phase begins

	2.4 - 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.
	2.5 – 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.
	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 nearly 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)
A1	Salix caprea (Goat Willow), Alnus glutinosa (Common Alder)	SM	1	150	C2	5(0)	3	3	3	3	F	F	10+	sprawling area of mainly goat willow regeneration			1.8	10.18
G1	Acer campestre (Field Maple), Fagus sylvatica (Beech), Larix decidua (European Larch), Alnus glutinosa (Common Alder), Quercus robur (Common Oak)	EM	1	350	B2	12(2)	4	4	4	4	G/F	G/F	20+	boundary group of trees of fair to good form as a whole, screens the adjacent factory building, group of trees that appear to have received little recent management, tree group of same age and have grown together as a group			4.2	55.42
G2	Fagus sylvatica (Beech), Acer campestre (Field Maple), Crataegus monogyna (Hawthorn), Ilex aquifolium (Holly), Pinus sylvestris (Scots Pine), Prunus spinosa (Blackthorn), Fraxinus excelsior (Ash), Larix decidua (European Larch)	EM	1	350	B2	11(4)	5	5	5	5	G/F	F	20+	boundary group of trees of fair form, mainly consisting of tightly grown upright beech trees with surrounding lower hedgerow scrub, western lower sides of tree groups pruned back from road side pavement			4.2	55.42
G3	Fraxinus excelsior (Ash), Corylus avellana (Hazel), Alnus glutinosa (Common Alder), Crataegus monogyna (Hawthorn), Fruit tree spp (Fruit tree spp), Betula pendula (Silver Birch), Quercus robur (Common Oak), Salix caprea (Goat Willow)	SM	1	200	B2	9(3)	3	3	3	3	G/F	F	20+	low B category. boundary row of mainly small trees and scrub, western lower sides of tree groups pruned back from road side pavement			2.4	18.1
G4	Corylus avellana (Hazel), Fraxinus excelsior (Ash), Alnus glutinosa (Common Alder), Salix caprea (Goat Willow)	SM	1	100	C2	5(0)	2	2	2	2	F	F	10+	small untidy sprawling group of trees and shrub			1.2	4.52

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)
G5	Betula pendula (Silver Birch),Fraxinus excelsior (Ash),Sorbus intermedia (Swedish Whitebeam),Salix fragilis (Crack Willow),Corylus avellana (Hazel),Prunus spinosa (Blackthorn),Ulmus glabra (Wych Elm),Crataegus monogyna (Hawthorn),Alnus glutinosa (Common Alder)	SM	1	150	C2	8(0)	2	2	2	2	F	F	10+		scattered boundary group of mainly poor to fair quality trees				1.8	10.18
G6	Betula pendula (Silver Birch),Pinus sylvestris (Scots Pine)	EM	1	350	C2	12(3)	3.5	3.5	3.5	3.5	G/F	F	10+		small group of trees located within raised planted area surrounded by small retaining wall, upright and slightly slender in form				4.2	55.42
G7	Pinus sylvestris (Scots Pine),Betula pendula (Silver Birch),Alnus glutinosa (Common Alder)	EM	1	450	B2	14(3)	5	5	5	5	G/F	F	20+	low B category. Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	small group of trees of fair to good form				5.4	91.62
T1	Alnus glutinosa (Common Alder)	EM	1	350	C2	9(4)	4	4	4	4	F	F	10+		twin stem, tree of poor to fair form				4.2	55.42
T253	Betula pendula (Silver Birch)	M	1	450	B2	12(4)	4	5	5	4	G/F	G/F	20+	low C category.	tree of fair to good form, forms pair with adjacent silver birch tree				5.4	91.62
T254	Betula pendula (Silver Birch)	EM	1	300	C2	9(3)	3	3	3	3	G/F	F	10+		tree of fair form growing close to small retaining wall, limited future for tree				3.6	40.72
T255	Pinus sylvestris (Scots Pine)	EM	1	470	B2	13(2)	3	3	3	2	G/F	G/F	20+		tree of fair to good form				5.64	99.95

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)
T256	Pinus sylvestris (Scots Pine)	EM	1	375	B2	13(2)	2	2	2	2	G/F	G/F	20+	low B category.	tree of fair form				4.5	63.63

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 13		
Type	Count	% of Total
T	5	38.5
G	7	53.8
A	1	7.7
Tree Species	Count	% of Total
Betula pendula (Silver Birch)	2	15.4
Pinus sylvestris (Scots Pine)	2	15.4
Alnus glutinosa (Common Alder)	1	7.7
Age	Count	% of Total
SM	4	30.8
EM	8	61.5
M	1	7.7
Cat	Count	% of Total
B2	7	53.8
C2	6	46.2
Average Stem Diameter	Count	% of Total
<150	1	7.7
<250	3	23.1
<500	9	69.2
Height	Count	% of Total
<10	6	46.2
<15	7	53.8
Phy Cond	Count	% of Total
G/F	9	69.2
F	4	30.8
Stuc Cond	Count	% of Total
G/F	4	30.8

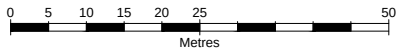
F	9	69.2
Est. Remain Contrib	Count	% of Total
10+	6	46.2
20+	7	53.8
RPR	Count	% of Total
<5	10	76.9
<10	3	23.1
RPA	Count	% of Total
<5	1	7.7
<15	2	15.4
<20	1	7.7
other	9	69.2

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.



KEY 15/07/2012 Tree Quality Colour coded

Category A (High)
("Highly desirable for retention")

Category B (Moderate)
("Desirable for retention")

Category C (Low)
("Considerable retention")

Category U (Poor)
("Unsuitable for retention")

Tree Key - Individual Trees

Branch Spread (measured at 1.3m above ground level)

Tree Species

Tree DBH (measured at 1.3m above ground level)

Road Protection Area (RPA) (A light grey shaded area indicating the minimum area around a tree deemed to contain sufficient roots and canopy volume to maintain the tree's stability, and where the protection of the tree and soil structure is treated as a priority)

Tree Key - Groups/Rows/Woodland/Hedges

Tree DBH (measured at 1.3m above ground level)

Tree Species

15/07/2012 Tree

Shade Pattern - shade pattern not shown on this plan

Definition of RPA and Categories for Trees, Woodlands and Hedges (Colour Code)

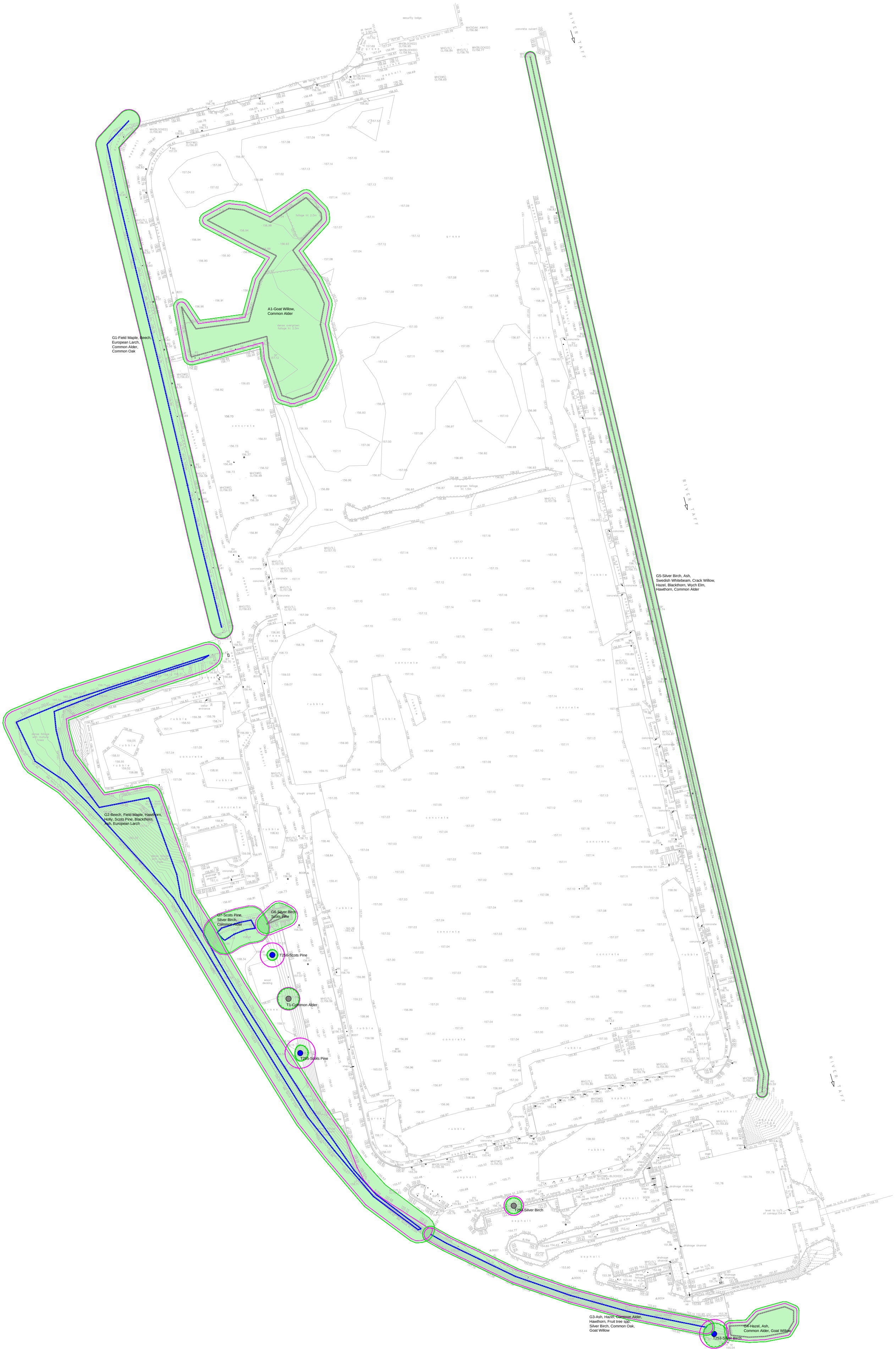
A - Those of high quality with an estimated remaining life expectancy of at least 40 years.
("Highly desirable for retention")

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 100mm.
("Considerable for retention")

U - Those in such a condition that they cannot reasonably be retained as living trees in the context of the current land use for longer than 10 years.
("Unsuitable for retention unless precludes 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 permanent, and should not be removed or altered without prior recommendation by an Arboriculturist and approval of the Local Planning Authority (LPA).







Tree Constraints Plan
Site: Dragon Park, Merthyr Tydfil
Project Ref: 775-2
Date: 15.08.2022
www.arb-its.co.uk

KEY

Category A (High)
("Highly Desirable for retention")

Category B (Moderate)
("Desirable for retention")

Category C (Low)
("Considerable for retention")

Category U (Poor)
("Unsuitable for retention")

Tree Key - Individual Trees

Shade Pattern (shown on map)

Tree Species

Tree DBH (in inches)

Root Protection Area (RPA) (A report should not indicate the minimum size, as it is not a fixed size, but a variable one, and should be determined by the arboriculturist, taking into account the tree's size, the protection of the site and the structure is located on a property.)

Tree Key - Group/Type/Measure/Height

Tree Key - Group/Type/Measure/Height

Tree Key - Group/Type/Measure/Height

Tree Key - Group/Type/Measure/Height

Shade Pattern - shade pattern not shown on map

Shade Pattern - shade pattern not shown on map

Shade Pattern - shade pattern not shown on map

Definition of RPA and Categories for Trees, Woodlands and Hedgerows (CEN 1705)

A - These are high quality with an estimated remaining life expectancy of at least 40 years. ("Highly Desirable for retention")

B - These are moderate quality with an estimated remaining life expectancy of at least 20 years. ("Desirable for retention")

C - These are low quality with an estimated remaining life expectancy of at least 10 years. ("Considerable for retention")

U - These are trees in such a position that they cannot reasonably be retained as long-term trees in the context of the current land use. ("Unsuitable for retention")

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 installed, barriers and ground protection should be regarded as permanent, and should not be removed or altered without prior recommendation by an Arboriculturist and approval of the Local Planning Authority (LPA).