



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 – 15th August 2023

Site – Gwent Police Operational Facility

Project Reference – ArbTS_1333.2_Gwent Police Operational Facility

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1.0 Introduction

- 1.1 The purpose of this report is to assess the quality of the trees at Gwent Police Operational Facility, 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 20th June 2022 and revisited on 25th July 2023.
- 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)	10	2	0	0	0	12
B (Moderate - Desirable for retention)	20	11	0	1	0	32
C (Low - Optional for retention)	13	5	0	0	1	19
U (Poor - Unsuitable for retention)	1	0	0	0	0	1
Total A,B,C,U	44	18	0	1	1	64

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

5.2.2 Individual Tree Loss –

- T35– Oak – High quality (**A** category)
- T1056 – Oak – Moderate quality (**B** category)
- T5082 – Sycamore – Low quality (**C** category)
- T7 – Sycamore – Moderate quality (**B** category)
- T8 – Sycamore – Low quality (**C** category)
- T33 – Horse Chestnut – Moderate quality (**B** category)
- T40 – Ash – Low quality (**C** category)
- T41 – Oak – Moderate quality (**B** category)
- T36 – Goat willow – Low quality (**C** category)

5.2.3 Grouped Tree Loss –

- Tree Group – G14 – 3 Trees - Birch/Hawthorn - Low quality (**C** category)
- Tree Group – G15 – 3 Trees - Birch - Low quality (**C** category)
- Tree Group – G16 – Sprawling scrubs and small trees - Low quality (**C** category)
- Tree Group – G7 – Horse chestnut - 3 Trees - Moderate quality (**B** category)
- Tree Group – G8 – Mixed Species - 6 Trees - Moderate quality (**B** category)
- Tree Group – G10 – Norway Maples - 4 Trees - Low quality (**C** category)
- Tree Group – G9 – Horse chestnut - 5 Trees - Moderate quality (**B** category)
- Part of Tree Group – G11 – Norway Maple - 2 Trees - Moderate quality (**B** category)
- Tree Group – G11 – Oak - 3 Trees - Moderate quality (**B** category)

5.2.4 Overall Tree Loss –

Several trees are identified to be removed to facilitate the construction of the proposed development design (9 individual trees, 8 tree groups (Total of 27 trees) and part of 1 tree group (2 Trees), giving a total of **38 trees** to be removed. Of the 38 trees, 14 are assessed as **C** low quality. These trees should not present a constraint on developing the site. The removal of the moderate to high-quality trees (24 Trees = **1 A** (High) and **23 B** (Moderate) quality) will require mitigation by suitable proportional 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 and the installation of a NO DIG Cellweb product etc., as designed by an Arboriculturist, will ensure no significant long-term adverse impact will occur to any of the retained trees.

- 5.4 Future Tree Pressures – AIA - LOW - Overall, the design has considered the size and value of the trees on this site to minimise any future pressures to heavily prune or fell the higher-value retained trees.
- 5.5.1 Conclusion - AIA (Including Landscape Tree Planting Mitigation) - LOW/MODERATE - The site has several Arboricultural constraints that must be considered in the development design phase. Several trees are identified to be removed to facilitate the construction of the proposed development design (9 individual trees, 8 tree groups (Total of 27 trees) and part of 1 tree group (2 Trees). Giving a total of **38 trees** to be removed. Of the 38 trees, 14 are assessed as **C** low quality. These trees should not present a constraint on developing the site. The removal of the moderate to high-quality trees (24 Trees = 1 **A** (High) and 23 **B** (Moderate) quality) will require mitigation by suitable proportional compensatory tree planting and surrounding practical woodland management (i.e. invasive species removal etc.).
- 5.5.2 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.
- 5.5.3 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)
<p>1.) Preconstruction (Prior to any on-site construction work, including demolition work, site material storage etc.)</p>	<p>1.1 – Design areas for construction site storage by the site supervisor and the appointed Arboriculturist.</p>
	<p>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.</p>
	<p>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>. Where required, all trees close to the development (Parking Areas, Foot Paths etc.) will be aerial inspected by an arborist, and any large deadwood over 25mm diameter is to be removed/reduced as required. Any major significant defects are to be documented and photographed, appointed Arboriculturist and Local Planning Authority Tree Officer are to be consulted for recommended management options and subsequent agreed work carried out.</p>
	<p>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.</p>
	<p>1.5 – No DIG Cellweb permanent ground protection installed as designed by the manufacturer, detailed in the Tree Protection Plan (Appendix 4). Installation is to be carried out by an experienced and qualified contractor and additionally supervised by the appointed Arboriculturist.</p>
	<p>1.6 – Site storage area containers installed as designed and supervised by the site supervisor and the appointed Arboriculturist.</p>
	<p>1.7 – Onsite meeting with all parties, client, Local Planning Authority tree officer, agent, developer, site supervisor and the appointed Arboriculturist to ensure all tree protection methods are in place as detailed on the Tree Protection Plan (Appendix - 4). Any issues that arise from the site meeting are addressed if required.</p>
	<p>1.8 – Appointed Arboriculturist to document all tree protection methods in situ and photographs taken for reference purposes. Copy of document report sent to all parties.</p>
<p>2.) Construction</p>	<p>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.</p>
	<p>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.</p>

	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>2.4 – Additional Tree Protection, as designed by the appointed Arboriculturist, to be Installed to protect the newly excavated ground.</p> <p>2.5 – The construction phase begins with regular site inspection visits from the appointed Arboriculturist (Once every yearly quarter for the entire 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.</p> <p>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:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>
<p>3.) Post Construction (<i>Once all construction work has been completed, this includes all utility services</i>)</p>	<p>3.1 – Tree Protection fencing Removed.</p> <p>3.2 – Hard and soft landscaping commence - All landscape team members are to be briefed regarding tree protections by an Arboriculturist.</p> <p>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.</p>

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.

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 Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition
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- 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	Tilia X europaea (Common Lime)	M	1	450	A2	14(4)	5.5	5.5	5.5	5.5	G/F	G/F	40+	group of 6 lime of landscape value, third lime from north in row however is sparse in leaf cover			5.4	91.62
G2	Tilia X europaea (Common Lime)	EM	1	350	B2	12(4)	4	4	4	4	G/F	G/F	40+	high B category. group of 5 lime of fair to good form			4.2	55.42
G3	Acer pseudoplatanus (Sycamore),Acer platanoides (Norway Maple)	EM	1	350	B2	10(3)	4	4	4	4	G/F	G/F	40+	group of 4 sycamore of fair to good form, first northern norway maple tree slightly sparse in leaf cover			4.2	55.42
G4	Acer platanoides (Norway Maple),Acer platanoides (Norway Maple Crimson King)	EM	1	350	B2	10(3)	4	4	4	4	G/F	G/F	40+	group of 3 norway maple of fair form, first two Norway maple smaller and purpled leaved			4.2	55.42
G5	Acer platanoides (Norway Maple),Acer pseudoplatanus (Sycamore)	EM	1	350	B2	10(3)	4	4	4	4	G/F	G/F	40+	group of 4 acer of fair form, middle two Norway maple smaller in sizes with variegated leaves and some upper crown dieback noted			4.2	55.42
G6	Tilia X europaea (Common Lime)	M	1	600	A2	13(1)	6	6	6	6	G/F	G/F	40+	group of 4 lime of good form and health as a whole, Just entering maturity in age			7.2	162.9
G7	Aesculus hippocastanum (Horse Chestnut)	M	1	580	B2	11(1)	6	6	6	6	F	G/F	20+	high B category. group of 3 horse chestnut trees forming a whole of good form, some bark flake noted on the western tree in the group with sparse upper crown noted			6.96	152.2
G8	Acer pseudoplatanus (Sycamore),Betula pendula (Silver Birch),Acer platanoides (Norway Maple)	M	1	450	B2	15(1)	5	5	5	5	G/F	G/F	20+	high B category. group of mixed species tree of landscape value			5.4	91.62
G9	Aesculus hippocastanum (Horse Chestnut)	M	1	450	B2	12(1)	6	6	6	6	G/F	G/F	20+	row of trees forming a whole of good form, some bark flake and helix ribs noted on trunks, leaf miner evident typical for species			5.4	91.62
G10	Acer platanoides (Norway Maple)	M	1	200	C2	7(1)	3	3	3	3	F	F	10+	high C category. row of 4 norway maple trees			2.4	18.1
G11	Acer platanoides (Norway Maple),Aesculus hippocastanum (Horse Chestnut)	M	1	430	B2	14(2)	5	5	5	5	G/F	G/F	20+	group of two horse chestnut and one Norway maple			5.16	83.66
G12	Aesculus hippocastanum (Horse Chestnut)	M	1	500	B2	11(1)	5	5	5	5	G/F	G/F	20+	group of 2 horse chestnut grown together as a group			6	113.1
G13	Platanus X hispanica (London Plane),Salix fragilis (Crack Willow),Acer saccharinum (Silver Maple)	M	1	550	B2	15(0)	7	7	7	7	G/F	N/A	20+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.			6.6	136.9

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)
G14	Betula pendula (Silver Birch),Crataegus monogyna (Hawthorn)	M	1	400	C2	12(3)	4	4	4	4	F	F	10+	small group of untidy birch and hawthorn			4.8	72.39
G15	Betula pendula (Silver Birch)	EM	1	250	C2	11(2)	3	3	3	3	F	F	10+	Suppressed growth from large adjacent tree.	spindly and upright in form		3	28.28
G16	Corylus avellana (Hazel),Ilex aquifolium (Holly),Crataegus monogyna (Hawthorn),Quercus robur (Common Oak),Acer pseudoplatanus (Sycamore),Taxus baccata (Yew)	M	1	400	C2	15(2)	6	6	6	6	G/F	F	20+	high C category.	group of overgrown hazel under storey, elapsed managed row of western multistemmed yew hedgerow that has developed into multistemmed upright tree growth, multistemmed southern sycamore and spindly upright trees also noted		4.8	72.39
G17	Quercus robur (Common Oak)	M	1	575	B2	15(2)	6	6	6	6	G/F	G/F	20+	group of 3 oak grown together as a group, slightly suppressed in western crown form			6.9	149.6
G19	Fraxinus excelsior (Ash)	EM	1	350	C2	12(5)	5	5	5	5	F	F	10+	group of ash with early signs of ash dieback disease, some ash recently removed from the group			4.2	55.42
H1	Crataegus monogyna (Hawthorn),Acer pseudoplatanus (Sycamore),Acer platanoides (Norway Maple)	M	1	150	C2	2(0)	1.25	1.25	1.25	1.25	G/F	G/F	20+	mainly a hawthorn hedgerow of good thick form			1.8	10.18
T2	Taxus baccata (Yew)	M	1	500	A1	8(1)	4	4	4	4	G	G	40+	multistemmed yew tree of good form and health located adjacent to existing car parking area			6	113.1
T3	Tilia X europaea (Common Lime)	EM	1	300	B2	12(0)	4	4	1	4	G/F	G/F	20+	low B category. Suppressed growth from large adjacent tree.	from part of larger adjacent lime tree group		3.6	40.72
T4	Tilia X europaea (Common Lime)	M	1	700	A2	14(1)	6	7	7	9	G	G	40+	larger dominant lime tree in group, some surface root damage noted from grass cutting			8.4	221.7
T5	Acer campestre (Field Maple)	SM	1	150	C2	5(1)	2	2	2	2	G/F	G/F	10+				1.8	10.18
T6	Acer campestre (Field Maple)	SM	1	150	C2	5(1)	2	2	2	2	G/F	G/F	10+				1.8	10.18
T7	Acer platanoides (Norway Maple)	M	1	500	B2	14(2)	5	3	6	5.5	G/F	G/F	20+	low B category.	multistemmed Norway maple, located close to metal ground hog, branches touching side of building		6	113.1
T8	Acer platanoides (Norway Maple)	M	1	350	C2	14(2)	5	3	2	4	F	F	10+	Slightly sparse foliage cover. Suppressed growth from surrounding trees.	branches touching side of building		4.2	55.42
T9	Fraxinus excelsior (Ash)	M	1	350	C2	12(3)	3	4	5	5	F	F	10+	ash with early signs of ash dieback			4.2	55.42
T10	Prunus avium (Wild Cherry)	M	1	380	C2	7(1)	4	4	4	4	G/F	G/F	10+	high C category.			4.56	65.33
T11	Prunus avium (Wild Cherry)	M	1	380	C2	6(1)	4	4	4	1	F	F	10+	Suppressed growth from surrounding trees.			4.56	65.33

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)
T12	Prunus avium (Wild Cherry)	M	1	150	U	6(1)	3	3	2	1	F/P	F/P	<10	Low vitality. Declining.			1.8	10.18
T13	Amelanchier lamarckii (Snowy Mespil)	EM	1	150	C2	4(1)	2	2	2.5	2.5	G/F	G/F	10+				1.8	10.18
T14	Fagus sylvatica 'Purpurea' (Copper Beech)	M	1	550	B2	12(2)	6	7	7	7	G	F	20+	Suppressed growth from large adjacent tree.	crown unbalanced with no true central leader, tree of landscape interest		6.6	136.9
T15	Betula pendula (Silver Birch)	M	1	480	B2	15(3)	6	5	4	4	G/F	F	20+	Suppressed growth from surrounding trees.	crown unbalance with northern lean, tree of landscape interest		5.76	104.2
T16	Fagus sylvatica 'Purpurea' (Copper Beech)	M	1	800	A2	16(2)	8	6	8	8	G	G/F	20+	low A category.	larger tree of landscape interest		9.6	289.6
T17	Betula pendula (Silver Birch)	M	1	440	B2	14(3)	3	4	5	5	G/F	F	20+	Suppressed growth from surrounding trees.	crown unbalance with northern lean, tree of landscape interest		5.28	87.59
T18	Betula pendula (Silver Birch)	M	1	350	B2	14(3)	3	4	5	5	G/F	F	20+	Slightly sparse foliage cover. Suppressed growth from surrounding trees.	crown unbalance with northern lean, tree of landscape interest		4.2	55.42
T19	Quercus robur (Common Oak)	M	1	950	A2	18(2)	6	8	10	8	G/F	G/F	40+		native oak tree located close to existing building, good leaf cover, some lower branches pruned, wide forming crown		11.4	408.3
T20	Quercus robur (Common Oak)	M	1	480	B2	10(4)	5	2	3	6	G/F	F	20+	Suppressed growth from large adjacent tree.			5.76	104.2
T21	Quercus robur (Common Oak)	M	1	900	A2	18(5)	8	7	10	12	G/F	G/F	40+		native oak tree located close to existing car park area, good leaf cover, some lower branches pruned, wide forming crown		10.8	366.5
T22	Quercus robur (Common Oak)	EM	1	430	B2	12(2)	6	6	4	3	G/F	G/F	20+		oak tree of fair form, forms part of oak tree group		5.16	83.66
T23	Fraxinus excelsior (Ash)	M	1	300	C2	12(3)	4	1	1	5	F	F	10+		ash with early signs of ash dieback		3.6	40.72
T24	Quercus robur (Common Oak)	EM	1	430	B2	12(2)	4	2	5	7	G/F	G/F	20+		oak tree of fair form, forms part of oak tree group		5.16	83.66
T25	Quercus robur (Common Oak)	EM	1	550	B2	12(2)	6	4	5	9	G/F	G/F	20+		oak tree of fair form, forms part of oak tree group, small oak tree located to south east of trunk		6.6	136.9
T26	Quercus robur (Common Oak)	M	1	940	A2	18(5)	13	7	9	10	G/F	G/F	40+		native oak tree located close to existing car park area, good leaf cover, some lower branches pruned, wide forming crown		11.3	399.8
T27	Quercus robur (Common Oak)	M	1	800	B2	18(5)	11	4	7	7	G/F	G/F	40+	high B category. Unbalanced crown shape.	native oak tree located close to existing car park area, good leaf cover		9.6	289.6
T28	Fagus sylvatica (Beech)	M	1	750	B2	15(0)	8	1	6	7	G/F	G/F	20+		forms pair with adjacent beech tree, ivy cover, twin stem,		9	254.5

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)	
T29	Fagus sylvatica (Beech)	M	1	650	B2	15(0)	8	7	7	3	G/F	G/F	20+	forms pair with adjacent beech tree, ivy cover, twin stem,			7.8	191.2	
T30	Acer platanoides (Norway Maple)	EM	1	250	B2	11(2)	3	3.5	3	4	G/F	G/F	20+	low B category.			3	28.28	
T31	Acer pseudoplatanus (Sycamore)	M	1	300	C2	8(0)	3	4	3	4	F	F	10+	multistemmed pollard tree, rpa reduced by 50 percent(600mm approx.)			3.6	40.72	
T32	Aesculus hippocastanum (Horse Chestnut)	M	1	450	B2	6(2)	6	5	6	5	G/F	G/F	20+	short broad tree, bark flake noted and helix rib noted on trunk			5.4	91.62	
T33	Aesculus hippocastanum (Horse Chestnut)	M	1	450	B2	9(2)	5	5	4	5	G/F	G/F	20+	short broad tree, bark flake noted and helix rib noted on trunk			5.4	91.62	
T35	Quercus robur (Common Oak)	M	1	740	A2	14(1)	7.5	7.5	7	7.5	G/F	G/F	40+	open grown oak of good form			8.88	247.8	
T36	Salix caprea (Goat Willow)	M	2	300	C2	7(0)	4	3	4	3	G/F	F	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.			5.09	81.4	
T37	Quercus robur (Common Oak)	M	1	425	B2	10(1)	5	5	6	6	G/F	G/F	20+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.			5.1	81.72	
T38	Salix caprea (Goat Willow)	M	3	300	C2	7(0)	4	3	5	5	G/F	F	10+				6.24	122.3	
T40	Fraxinus excelsior (Ash)	M	1	400	C2	14(2)	4	3	5	7	F	F	10+	Suppressed growth from surrounding trees.	early signs of ash dieback disease			4.8	72.39
T41	Quercus robur (Common Oak)	M	1	500	B2	13(2)	5	4	4	7	G/F	G/F	20+	Suppressed growth from surrounding trees.			6	113.1	
T1056	Quercus robur (Common Oak)	M	1	690	B2	16(4)	10	6	7	6	G/F	G/F	40+	native oak tree located within car parking area, wildlife holes noted in trunk (bees using hole on southern trunk)			8.28	215.4	
T5768	Tilia X europaea (Common Lime)	M	1	580	A2	12(4)	8	7	7	7	G/F	G/F	20+				6.96	152.2	
T5771	Tilia X europaea (Common Lime)	EM	1	320	B2	12(4)	4	3	4	4	G/F	G/F	20+	high B category.			3.84	46.33	
T5799	Quercus robur (Common Oak)	M	1	1100	A3	18(2)	9	10	8	9	G/F	F	40+	large old native oak tree located close to carparking area, areas of internal buttress dysfunction noted with surrounding reactive growth noted, good leaf cover			13.2	547.5	

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)
T5800	Quercus robur (Common Oak)	M	1	950	A2	18(2)	8	6	11	10	G/F	G/F	40+	native oak tree located close to existing building, good leaf cover some lower branches pruned, wide forming crown, slightly unbalanced in form from removal of large adjacent beech tree			11.4	408.3
T5802	Acer platanoides (Norway Maple)	M	1	450	C2	13(3)	5	5	4	4	F	F	10+	Dieback in crown. open grown tree, some surface root damage from grass cutting noted, dieback in crown noted			5.4	91.62
W1	Betula pendula (Silver Birch), Fagus sylvatica (Beech), Acer platanoides (Norway Maple), Fraxinus excelsior (Ash), Quercus robur (Common Oak), Aesculus hippocastanum (Horse Chestnut), Acer pseudoplatanus (Sycamore), Ilex aquifolium (Holly)	M	1	500	B2	16(2)	6	6	6	6	G/F	G/F	40+	high B category. woodland group of trees of similar age, only walk through survey carried out, some footpath noted through woodland			6	113.1

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 64		
Type	Count	% of Total
T	44	68.8
G	18	28.1
W	1	1.6
H	1	1.6
Tree Species	Count	% of Total
Tilia X europaea (Common Lime)	7	10.9
Taxus baccata (Yew)	1	1.6
Acer platanoides (Norway Maple)	5	7.8
Aesculus hippocastanum (Horse Chestnut)	5	7.8
Acer campestre (Field Maple)	2	3.1
Fraxinus excelsior (Ash)	4	6.2
Prunus avium (Wild Cherry)	3	4.7
Amelanchier lamarckii (Snowy Mespil)	1	1.6
Fagus sylvatica 'Purpurea' (Copper Beech)	2	3.1
Betula pendula (Silver Birch)	4	6.2
Quercus robur (Common Oak)	15	23.4
Fagus sylvatica (Beech)	2	3.1
Acer pseudoplatanus (Sycamore)	1	1.6
Salix caprea (Goat Willow)	2	3.1
Average Stem Diameter	Count	% of Total
<250	6	9.4
<500	33	51.6
<750	17	26.6
<1000	7	10.9
<2000	1	1.6
Cat	Count	% of Total
A1	1	1.6
A2	10	15.6
A3	1	1.6
B2	32	50
C2	19	29.7

U	1	1.6
Age	Count	% of Total
SM	2	3.1
EM	13	20.3
M	49	76.6
Height	Count	% of Total
<5	2	3.1
<10	12	18.8
<15	34	53.1
<20	16	25
Phy Cond	Count	% of Total
G	4	6.2
G/F	47	73.4
F	12	18.8
F/P	1	1.6
Stuc Cond	Count	% of Total

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.

Legend

- Category A (High) - (Available for retention)
- Category B (Moderate) - (Available for retention)
- Category C (Low) - (Available for retention)
- Category U (Poor) - (Not available for retention)

Tree Key - Individual Trees

- Branch Spread - (Indicates the spread of the tree canopy)
- Root Protection Zone (RPZ) - (Indicates the area around the tree roots that must be protected)
- Tree Species - (Indicates the species of the tree)
- Tree Size - (Indicates the size of the tree)

Notes

1. Those of high quality with an estimated remaining life expectancy of 40+ years. (Highly desirable for retention)

2. Those of moderate quality with an estimated remaining life expectancy of 15-40 years. (Desirable for retention)

3. Those of low quality with an estimated remaining life expectancy of 10-15 years. (Not desirable for retention)

4. Those of poor quality with an estimated remaining life expectancy of less than 10 years. (Not suitable for retention unless special measures are taken)

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 signage of any commercial. 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

10.0 Appendix 5 – Tree Photographs

Tree ID#G1 + G12



Tree ID#T23, T24



Tree ID#G1 - declining central tree evident



Tree ID#T28 + T29



Tree ID#W1



Tree ID#T14, T12, T11



Tree ID#G13



Tree ID#G19



Tree ID#G19 + T38



Tree ID#T35 (A Cat Oak) + T36



Tree ID#G17 + T41 + T40



Tree ID#T33



Tree ID#T7, T8, G11



Tree ID#G9



Tree ID#G10



Tree ID#T5800 + T19



Tree ID#T19



Tree ID#G14



Tree ID#T10



Tree ID#T14 + T15



