



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 – 7th February 2022

Site – Metal processing facility J38

Project Reference – ArbTS_1171.2_Metal processing facility J38

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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 Metal processing facility J38 , 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 6th September 2021.
- 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 survey.

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)	1	1	0	0	0	2
B (Moderate - Desirable for retention)	20	7	0	0	0	27
C (Low - Optional for retention)	15	15	0	0	0	30
U (Poor - Unsuitable for retention)	1	0	0	0	0	1
Total A,B,C,U	37	23	0	0	0	60

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

5.2.2 Individual Tree Loss –

- o T433 – Turkey oak – Low quality (C category)
- o T431 – Sycamore – Moderate quality (B category)
- o T430 – Sycamore – Moderate quality (B category)
- o T429 – Sycamore – Low quality (C category)
- o T428 – Sycamore – Moderate quality (B category)
- o T401 – Sycamore – Moderate quality (B category)
- o T421 – Sycamore – Moderate quality (B category)
- o T407 – Sycamore – Moderate quality (B category)
- o T408 – Sycamore – Low quality (C category)
- o T1 – Hawthorn – Low quality (C category)
- o T409 – Sycamore – Moderate quality (B category)
- o T412 – Sycamore – Moderate quality (B category)
- o T404 – Sycamore – Low quality (C category)
- o T403 – Sycamore – Low quality (C category)

5.2.3 Grouped Tree Loss –

- o Tree Group – G431 – 2 Sycamore – Moderate quality (B category)
- o Tree Group – G17 – 2 Hawthorn – Low quality (C category)
- o Tree Group – G431 – 2 Sycamore – Low (C category)
- o Tree Group – Part of G5 – 8 Sycamore – Low quality (C category)
- o Tree Group – G402 – 2 Sycamore – Low quality (C category)
- o Tree Group – G2 – 4 Hawthorn / Goat Willow – Low quality (C category)

5.2.4 Overall Tree Loss –

A number of trees are identified to be removed to facilitate the construction of the proposed development design (14 individual trees, 6 small tree groups (20 trees) = 34 trees in total). 24 of these individual surveyed trees identified for removal are low quality trees (C Category). These trees should not present a constraint on developing the site. The removal of the moderate quality trees (B Category = 10 Trees) can be readily mitigated for on this site by suitable compensatory tree planting.

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 small areas of RPA, airspade trench excavation for pipes and the installation of a no dig cellular confinement system (Cellweb) for footpath construction. These methods will ensure that no significant long term adverse

impact will occur to any of the retained trees root system or associated soil structure.

- 5.4.1 AIA – Conclusion – Overall AIA (including landscape mitigation) – LOW - The site has a number of Arboricultural constraints that needed to be considered in the development design phase. A number of trees are identified to be removed to facilitate the construction of the proposed development design (14 individual trees, 6 small tree groups (20 trees) = 34 trees in total). 24 of these individual surveyed trees identified for removal are low quality trees (C Category). These trees should not present a constraint on developing the site. The removal of the moderate quality trees (B Category = 10 Trees) can be readily mitigated for on this site by suitable compensatory tree planting.
- 5.4.2 This proposed development design has aimed to retain a high proportion of the higher value trees (A + B Category) that form part of the site.
- 5.4.3 The proposal will 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.
- 5.4.4 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 overleaf 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 – 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/ . Local Planning Authority to be consulted on utility service design details and if satisfied to be approved in writing prior to installation during the construction phase.
	1.3– Tree surgery work to be carried out on the Tree Protection Plan (Appendix - 4) of this report and to the <i>British Standard:3998:2010: Recommendation for tree works..</i>
	1.4 – Tree protective fencing installed in the position and form as detailed 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.
	1.5– No DIG Cellweb permanent ground protection installed as designed by manufacturer, detailed on the Tree Protection Plan (Appendix 4). Installation to be carried out by an experienced and qualified contractor and additionally supervised by the appointed Arboriculturist.
	1.6 – Site storage area containers etc. installed as designed and supervised by site supervisor and the appointed Arboriculturist.
	1.7 – 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 3500kg) 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 – Additional Tree Protection as designed by the appointed Arboriculturist, Installed to protect newly excavated ground.
	2.5 – Construction phase begins with regular site inspection visits from the appointed Arboriculturist (Once every two 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.
	2.6- Tree Safe Construction (Throughout Site) – areas outside of the construction exclusion zones as shown on the tree protection plan must adhere to the following: • Building materials and fuels such as oil, bitumen or cement should not be stacked or discharged within 20 metres of the 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.
	2.7 – Unforeseen issues which require the alteration of the Tree Protection Plan/Methods, required tree surgery work or immediate remedial work will be submitted to the Local Planning Authority for approval in writing.
3.) Post Construction (<i>Once all construction work has been completed, this includes all utility services</i>)	3.1 – Tree Protection fencing Removed.
	3.2 – Hard and soft landscaping commence - All landscape team members to be briefed regarding tree protections by an Arboriculturist. (Including installation of central footpath within tree area to be a no dig construction using a cellular confinement system (Cellweb) and airspade trench excavation for pipe installation).
	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/>

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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	Crataegus monogyna (Hawthorn), Salix caprea (Goat Willow)	EM	1	150	C2	5(0)	5	5	5	5	F	F	10+	sprawling small group of small trees and scrub			1.8	10.18
G2	Crataegus monogyna (Hawthorn), Salix caprea (Goat Willow)	M	1	250	C2	4(0)	4	4	4	4	F	F	10+	sprawling small group of small trees and scrub, elapsed managed hedgerow			3	28.28
G3	Crataegus monogyna (Hawthorn), Salix caprea (Goat Willow), Acer pseudoplatanus (Sycamore)	EM	1	250	C2	5(0)	5	5	5	5	F	F	10+	sprawling small group of small trees and scrub, mainly goat willow, elapsed managed hedgerow			3	28.28
G4	Crataegus monogyna (Hawthorn), Salix caprea (Goat Willow), Acer pseudoplatanus (Sycamore), Prunus spinosa (Blackthorn)	EM	1	250	C2	6(0)	5	5	5	5	F	F	10+	sprawling small group of small trees and scrub, elapsed managed hedgerow, individual trees of note added separately in group			3	28.28
G5	Acer pseudoplatanus (Sycamore)	M	1	550	C2	17(4)	5	5	5	5	F	F	20+	high C category. a tree group of mainly sycamore trees of low or poor quality, trees of note individually included in the survey, mainly upright sycamore trees grown closely together as a group, many of which have varying degrees of sparse foliage cover some of which have significant structural issues, as a tree group of fair form, as a collective whole of trees of slightly higher value when viewed in the wider landscape			6.6	136.9
G6	Acer pseudoplatanus (Sycamore)	M	1	650	B2	20(2)	6	6	6	6	G/F	G/F	20+	group of four larger sycamore forming a rough whole, upright in form, leaf cover normal			7.8	191.2
G7	Acer pseudoplatanus (Sycamore)	M	1	600	C2	20(2)	5	5	5	5	F	F	10+	high C category. group of four upright tree forming a upright whole, upper foliage leaf cover slightly sparse, some areas of decay and surrounding reactive growth noted			7.2	162.9

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)
G8	Acer pseudoplatanus (Sycamore), Crataegus monogyna (Hawthorn), Salix caprea (Goat Willow), Ilex aquifolium (Holly), Fraxinus excelsior (Ash)	EM	1	450	B2	12(0)	5	5	5	5	G/F	G/F	20+	thick boundary group of trees along the adj road mainly sycamore, gap at southern end of group with small amount of ash with varying degrees of ash dieback disease			5.4	91.62
G9	Crataegus monogyna (Hawthorn), Acer campestre (Field Maple), Betula pendula (Silver Birch), Fraxinus excelsior (Ash)	EM	1	300	C2	8(4)	4	4	4	4	F	F	10+	scattered group of trees, some recent thinning work carried out			3.6	40.72
G10	Acer pseudoplatanus (Sycamore), Crataegus monogyna (Hawthorn)	EM	1	150	C2	6(0)	3	3	3	3	F	F	10+	elapsd managed hedgerow			1.8	10.18
G11	Acer pseudoplatanus (Sycamore)	M	1	400	B2	11(3)	5	5	5	5	G/F	F	20+	low B category. row of sycamore trees forming a whole			4.8	72.39
G12	Crataegus monogyna (Hawthorn), Corylus avellana (Hazel), Sambucus nigra (Elder), Prunus spinosa (Blackthorn)	EM	1	150	C2	6(0)	3	3	3	3	F	F	10+	elapsd managed hedgerow			1.8	10.18
G13	Acer pseudoplatanus (Sycamore)	M	1	400	B2	11(3)	5	5	5	5	G/F	F	20+	low B category. short row of sycamore trees forming a whole			4.8	72.39
G14	Acer pseudoplatanus (Sycamore), Fagus sylvatica (Beech), Fraxinus excelsior (Ash), Tilia X europaea (Common Lime), Crataegus monogyna (Hawthorn)	M	1	800	A2	20(3)	9	9	9	9	G/F	G/F	20+	low A category. Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated. boundary row of mainly larger mature trees, located behind old retaining wall, some ash showing slightly sparse leaf cover, as a group prominent to the surrounding area			9.6	289.6
G15	Acer pseudoplatanus (Sycamore)	M	1	500	C2	13(3)	6	6	6	6	G/F	F	20+	high C category. two suppressed offsite sycamore tree located behind boundary stone wall			6	113.1
G16	Acer pseudoplatanus (Sycamore)	M	1	540	B2	12(2)	7	7	7	7	G/F	G/F	20+	group of two sycamore forming a whole, as a whole of fair to good form			6.48	131.9

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)
G17	Crataegus monogyna (Hawthorn)	M	1	150	C2	5(0)	2	2	2	2	F	F	10+	group of two small hawthorn			1.8	10.18
G18	Acer pseudoplatanus (Sycamore)	M	1	600	B2	14(3)	6	6	6	6	G/F	F	20+	low B category. group of three larger sycamore forming a rough whole, some surrounding small sycamores noted, all three with bark included unions			7.2	162.9
G19	Fraxinus excelsior (Ash)	OM	1	850	C2	16(1)	10	10	10	10	F	F	10+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated. two large ash tree growing from boundary wall, both with slightly sparse leaf cover			10.2	326.9
G263	Fraxinus excelsior (Ash)	EM	1	350	C2	14(6)	6	5	6	6	F	G/F	10+	group of two ash forming a whole, leaf cover very slightly sparse			4.2	55.42
G402	Acer pseudoplatanus (Sycamore)	M	1	350	C2	9(2)	5	5	5	5	F	G/F	10+	two trees forming a whole, growing on top of boundary wall remains, slightly sparse foliage cover, tree group of fair to good form			4.2	55.42
G427	Acer pseudoplatanus (Sycamore)	M	1	450	C2	12(3)	6	5	6	6	F	F	10+	two trees forming a whole, southern tree in declining			5.4	91.62
G431	Acer pseudoplatanus (Sycamore)	M	1	450	B2	12(2)	5	6	2	6	G/F	F	20+	low B category. two trees forming a whole, forms group with adjacent trees			5.4	91.62
T1	Crataegus monogyna (Hawthorn)	M	1	300	C2	4(0)	2	5	2	1	G/F	F/P	10+	Suppressed growth from surrounding trees. partly collapsed hawthorn, smaller hawthorn noted to the south			3.6	40.72
T2	Acer pseudoplatanus (Sycamore)	EM	1	150	C2	7(3)	3	3	3	3	F	F	10+	small multistemmed tree			1.8	10.18
T3	Salix caprea (Goat Willow)	EM	1	150	C2	6(2)	3	3	3	3	F	F	10+				1.8	10.18
T3	Crataegus monogyna (Hawthorn)	M	3	260	C2	4(0)	3	1	2	3	F	F	10+				3.12	30.59
T398	Quercus robur (Common Oak)	EM	1	350	B2	9(2)	3	3	3	2	G/F	G/F	20+	small tree forming part of field boundary row of trees and elapsed managed hedgerow			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)
T399	Acer pseudoplatanus (Sycamore)	EM	2	424	B2	8(2)	4	4	5	4	G/F	G/F	20+	tree forming part of field boundary row of trees and elapsed managed hedgerow			5.09	81.4
T400	Acer pseudoplatanus (Sycamore)	M	2	583	B2	8(2)	6	5	6	5	G/F	G/F	20+	tree forming part of field boundary row of trees and elapsed managed hedgerow			7	154
T401	Acer pseudoplatanus (Sycamore)	M	5	615	B2	9(2)	5	5	5	5	G/F	G/F	20+	low B category. tree forming part of field boundary row of trees and elapsed managed hedgerow, multistemmed tree of fair go good form			7.38	171.1
T403	Acer pseudoplatanus (Sycamore)	M	1	700	C2	20(2)	4	5	5	4	F	F	10+	upright in form, forms pair with adjacent tree, bark damage to trunk noted, decline in upper crown noted			8.4	221.7
T404	Acer pseudoplatanus (Sycamore)	M	1	500	C2	20(2)	4	5	5	4	F	F	10+	upright in form, forms pair with adjacent tree, bark damage to trunk noted, decline in upper crown noted			6	113.1
T405	Fagus sylvatica (Beech)	M	1	1100	A3	22(1)	5	11	12	7	G/F	F	20+	low A category. large old multistemmed beech tree, forms group with surrounding trees, growing from edge of old building remains			13.2	547.5
T406	Acer pseudoplatanus (Sycamore)	M	1	570	B2	21(2)	5	4	8	8	G/F	G/F	20+	upright in form, forms group with adjacent large beech tree, growing from edge of old building remains			6.84	147
T407	Acer pseudoplatanus (Sycamore)	M	1	730	B2	21(2)	5	5	6	7	G/F	G/F	20+	upright in form, tree of good form, growing close to edge of old building remains			8.76	241.1
T408	Acer pseudoplatanus (Sycamore)	EM	1	300	C1	7(2)	3	3	3	3	F	F	10+	small suppressed in form tree, damage to upper branches and no true leader, tree of fair to poor form			3.6	40.72

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations		Work Priority	RPR (m)	RPA (m2)
T409	Acer pseudoplatanus (Sycamore)	OM	1	500	B3	6(2)	3	3	3	2	F	F/P	20+	low B category. old sycamore retrenched in form leaving one strip of functional growth with much advanced surrounding standing dead and decaying wood, tree of ecological interest, stem diameter measuring 1000mm rpa reduced by 50 percent due to small compact remaining living crown				6	113.1
T410	Acer pseudoplatanus (Sycamore)	OM	1	250	C3	6(2)	3	3	3	2	F/P	F/P	10+	sycamore retrenched in form leaving one strip of functional growth with much advanced surrounding stranding dead and decaying wood, tree of ecological interest, stem diameter measuring 500mm rpa reduced by 50 percent due to small compact remaining living crown, upper crown declining				3	28.28
T411	Acer pseudoplatanus (Sycamore)	M	1	600	C2	16(2)	3	6	4	3	F	F	10+	high C category. end tree in row with grow mainly to the east, tree of fair form and health, slightly sparse leaf cover				7.2	162.9
T412	Acer pseudoplatanus (Sycamore)	M	1	530	B2	12(2.5)	5	5	6	5	G/F	G/F	20+	short domed tree of fair to good form and health, some bark damaged noted				6.36	127.1
T413	Acer pseudoplatanus (Sycamore)	M	1	300	C3	5(2)	3	2	0	3	F	F/P	10+	Suppressed growth from surrounding trees. outer section of trunk alive				3.6	40.72
T414	Acer pseudoplatanus (Sycamore)	M	1	500	B2	21(2)	4	5	3	0	G/F	F	20+	upright in form, forms group with adjacent large beech tree, growing from edge of old wall, small suppressed slender low quality adjacent sycamore tree noted				6	113.1
T415	Acer pseudoplatanus (Sycamore)	M	1	690	B2	21(2)	9	11	3	2	G/F	F	20+	wide in form, forms group with adjacent large beech tree, growing close edge of old wall				8.28	215.4
T416	Acer pseudoplatanus (Sycamore)	M	1	690	B2	21(2)	9	8	5	6	G/F	F	20+	wide in form, forms group with adjacent large beech tree, multileader				8.28	215.4

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)
T417	Acer pseudoplatanus (Sycamore)	M	1	550	U	21(2)	3	5	5	4	F/P	F/P	<10	suppressed in form, Rigidoporus ulmarius fungus noted between many buttresses, out competed tree with a likely limited future			6.6	136.9
T418	Acer pseudoplatanus (Sycamore)	M	1	690	B2	21(2)	8	6	8	6	G/F	F	20+	wide in form, forms group with adjacent large beech tree, multileader			8.28	215.4
T419	Acer pseudoplatanus (Sycamore)	M	1	570	B2	18(5)	9	6	4	6	G/F	G/F	20+	large edge tree to surrounding tree group			6.84	147
T420	Acer pseudoplatanus (Sycamore)	M	1	580	B2	18(2)	7	7	7	8	G/F	G/F	20+	large edge tree to surrounding tree group			6.96	152.2
T421	Acer pseudoplatanus (Sycamore)	M	1	580	B2	18(2)	4	7	7	7	G/F	G/F	20+	large edge tree to surrounding tree group, some bark flake noted, hung up spruce tree noted	remove hung up spruce tree from crown	H/M	6.96	152.2
T422	Acer pseudoplatanus (Sycamore)	M	1	780	B2	18(2)	6	5	6	8	F	G/F	20+	low B category. large edge tree to surrounding tree group, growing on top of old stone wall, some cavity with surrounding reactive growth on stem noted, slightly sparse leaf cover			9.36	275.3
T423	Fagus sylvatica (Beech)	M	1	750	B2	16(5)	5	7	7	5	F	F	20+	low B category. mature beech tree heavily covered in ivy, some browning of foliage noted			9	254.5
T424	Acer pseudoplatanus (Sycamore)	M	1	720	C2	17(3)	5	5	8	7	F	F	10+	boundary edge tree, bark included union and trunk damage noted some internal decay of buttress with surrounding reactive growth			8.64	234.6
T425	Acer pseudoplatanus (Sycamore)	M	1	640	C2	17(3)	5	5	8	4	F	F	10+	high C category. boundary edge tree, slightly sparse leaf cover, grown with southern lean some bark damage noted			7.68	185.3
T426	Fraxinus excelsior (Ash)	EM	1	400	C2	12(3)	5	5	5	5	F	G/F	10+	ash tree of fair to good form, slightly sparse leaf cover, twin leader			4.8	72.39

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)
T428	Acer pseudoplatanus (Sycamore)	M	1	500	B2	12(3)	6	5	6	6	G/F	F	20+	low B category.	trees of fair to good form, some trunk bark loss with surrounding callus growth, thick ivy cover				6	113.1
T429	Acer pseudoplatanus (Sycamore)	EM	1	350	C2	12(4)	3	5	4	3	F	F	10+	Slightly sparse foliage cover. Suppressed growth from surrounding trees.	twin stems				4.2	55.42
T430	Acer pseudoplatanus (Sycamore)	M	1	500	B2	12(3)	6	6	5	6	G/F	G/F	20+	low B category.	trees of fair to good form				6	113.1
T431	Acer pseudoplatanus (Sycamore)	M	1	450	B2	12(2)	3	6	3	7	G/F	F	20+	low B category.	forms group with adjacent trees				5.4	91.62
T433	Quercus cerris (Turkey Oak)	EM	1	250	C2	11(5)	4	4	0	2	F	F	10+	Suppressed growth from surrounding trees.					3	28.28

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 60		
Tree Species	Count	% of Total
Quercus robur (Common Oak)	1	1.7
Acer pseudoplatanus (Sycamore)	40	66.7
Fagus sylvatica (Beech)	2	3.3
Crataegus monogyna (Hawthorn)	3	5
Salix caprea (Goat Willow)	1	1.7
Fraxinus excelsior (Ash)	3	5
Quercus cerris (Turkey Oak)	1	1.7
Type	Count	% of Total
T	37	61.7
G	23	38.3
Cat	Count	% of Total
A2	1	1.7
A3	1	1.7
B2	26	43.3
B3	1	1.7
C1	1	1.7
C2	27	45
C3	2	3.3
U	1	1.7
Age	Count	% of Total
EM	16	26.7
M	41	68.3
OM	3	5
Average Stem Diameter	Count	% of Total
<250	6	10
<500	22	36.7
<750	27	45
<1000	4	6.7
<2000	1	1.7

Height	Count	% of Total
<5	3	5
<10	18	30
<15	16	26.7
<20	10	16.7
<25	13	21.7
Phy Cond	Count	% of Total
G/F	28	46.7
F	30	50
F/P	2	3.3
Stuc Cond	Count	% of Total
G/F	19	31.7
F	36	60
F/P	5	8.3
Est. Remain Contrib	Count	% of Total
<10	1	1.7
10+	28	46.7
20+	31	51.7
RPR	Count	% of Total
<5	23	38.3
<10	35	58.3
<15	2	3.3
RPA	Count	% of Total
<15	6	10
<30	5	8.3
other	49	81.7

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.

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

- Trees for removal to be identified from the drawing and marked by an arboriculturist.
- No vehicles to enter the grass verge or root protection zone during tree removal or fencing installation/ removal.
- Fencing to be installed prior to any construction works (including demolition, materials delivery, works compound installation).

The location of the tree protective fencing is indicative only and must not be directly measured from this plan. Its true location must be surveyed accurately on site and where applicable be measured from the tree centre by the stated dimension value.

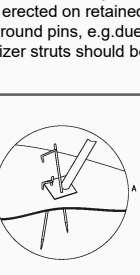
- Fencing to remain in place until all construction works have ceased.

B55837: 2012 Recommendations (extract)

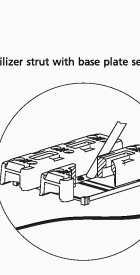
6.2.2.2 Where the site circumstances and associated risk of damaging infrastructure into the RPA do not necessitate the default level of protection, an alternative specification should be prepared by the project architect/ civil and, where relevant, agreed with the local planning authority/ council.

Fencing Specification

For example: 2metre tall welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, lorries and motor cycles. The panels should be at least 1.8m high. The panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins. Where the fencing is to be erected on retained hard surfacing it is otherwise unnecessary to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray. (See Diagram Below)



▲ Stabilizer strut with base plate secured with ground pins



▲ Stabilizer strut mounted on block tray

Why is Fencing Erected Around Trees?

- The major cause of damage to trees on construction sites is due to soil compaction.
- Roots use the spaces between soil particles to obtain Oxygen, Water and Nutrients.
- Heavy plant and machinery compress (compacts) the soil, squeezing out the air spaces and preventing root function.
- A compacted soil structure will stay compacted.
- Consequently the tree suffers and will show signs of branch die-back.
- Symptoms such as leaf loss may take several years to appear.
- Soil compaction over roots can be prevented by maintaining a free exclusion zone over the tree roots.
- The exclusion zone is calculated using the formula: $2.5 \times \text{DBH}$
- Protective Fencing is installed around the calculated area.
- 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.

Why Is Fencing Erected Around Trees?

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



Key : Tree Protection Methods

Temporary Tree Protective Fencing
 (Not to be altered without prior approval from the Local Planning Authority)



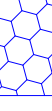
Construction Exclusion Zone
 (No access, storage of any building material or equipment or any time for the entire construction period - except for the final landscaping phase)



Trees to be removed to facilitate construction work
 (See Section 5.2 for details)



Footpath to be a no dig construction using a cellular confinement system (Cellweb)
 installed during the final landscaping phase



Permanent Ground Protection
 (Footpath to be a no dig construction using a cellular confinement system (Cellweb) - Prior to any major construction work on site).



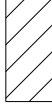
Excavation work to be carried out under the supervision of an Arboriculturist (Clean root use, use of hand tools, airspade and toothless bucket on small excavator (3500kg))



Installation of pipe during the landscaping phase. Arspade used to remove soil but retain roots. Pipe threaded through retained tree roots and back filled with expanded soil.



Trees surgery operations required - to BS3998:2010
 (Tree works Recommendations (See Section 5.4 for details))



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. Noncompliance with this method statement may result in planning enforcement action or prosecution.

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. Noncompliance with this method statement may result in planning enforcement action or prosecution.

10.0 Appendix 5 – Tree Photographs

Tree ID#G2, G3, G4



Tree ID#G3



Tree ID#G402



Tree ID#T401



Tree ID#G5 – Tree removal area for creating new access road



Tree ID#T403 + T404



Tree ID#T421 + T407



Tree ID#G5



Tree ID#T423



Tree ID#G7 + T425



Tree ID#T409



Tree ID#T1



Tree ID#G6 + T1



Tree ID#T405



Tree ID#T411



Tree ID#T417



Tree ID#T421 + T407



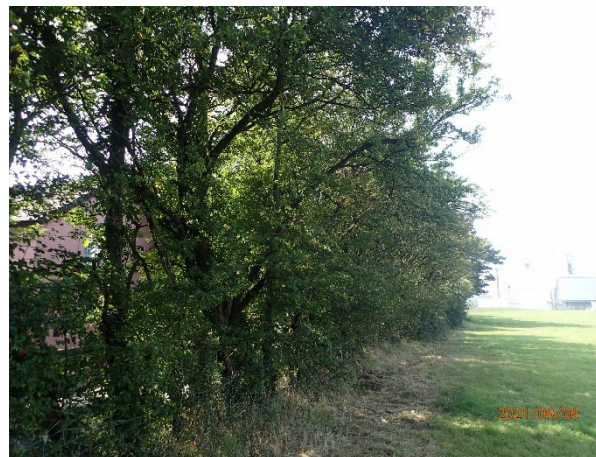
Tree ID#T422



Tree ID#G8



Tree ID#G10



Tree ID#G11



Tree ID#T3, T426 + G16



Tree ID#G427



Tree ID#T428 – G431



Tree ID#T433 – G17



Tree ID#G19



Tree ID#G14



Tree ID#G14



