



ArbTS - Arboricultural Technician Services Ltd

(Tree Consultancy Services)

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Arboricultural Report

Including:

Tree Survey Data &

Tree Constraints Plan,

Arboricultural Impact Assessment

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

Date – 26th October 2020

Site – Channel View, Cardiff

Project Reference – ArbTS_827.1_ChannelView

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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 Channel View, Cardiff, and to assess the arboricultural impact of the proposed development design.
- 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 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 introduced in Appendix 4 An introduction to tree protection.
- 1.4 The tree's 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), MArborA* on 20th and 21st October 2020. At the time of the survey no trees were marked with spray paint. This work was subsequently carried out by another contractor.
- 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 survey was conducted with the aid of a topographical tree 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 there above ground/below ground constraints. This survey does not constitute to a full tree condition/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)	2	0	0	0	0	2
B (Moderate - Desirable for retention)	40	6	0	0	0	46
C (Low - Optional for retention)	15	13	1	0	0	29
U (Poor - Unsuitable for retention)	0	0	0	0	0	0
Total A,B,C,U	57	19	1	0	0	77

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. A Tree Impact Plan can be found in Appendix 6. This plan illustrates the arboricultural impact of the proposal.

5.2.1 Tree Loss - The following table details the trees that are required to be removed to facilitate the construction of the proposed development design.

Tree ID loss (T – Individual Tree, G – Tree Group), species and description	Overall BS 5837 Category Quality Tree Loss (A – High, B- Moderate, C- Low, U – Poor)	Adverse impact onto the surrounding amenity (H -High, M - Medium, L - Low)	Adverse Arboricultural Impact (H -High, M - Medium, - L - Low)	Required Level of Landscape Mitigation (H -High, M -Medium, - L - Low)
T8 – Lime – Small tree adjacent to Channel View Road	C	M / L	M / L	M / L
T7 – Hornbeam – medium sized tree adjacent to Channel View Road	B	M	M	M
T6 – Lime – medium sized tree adjacent to Channel View Road	B	M	M	M
T9- Lime - medium sized tree adjacent to Channel View Road	B	M	M	M
T10 – Lime – medium sized tree adjacent to Channel View Road	B	M	M	M
T11- Lime – medium sized tree adjacent to Channel View Road	B	M	M	M
T12- Cherry – medium sized tree adjacent to Channel View Road	B	M	M	M
T13 Lime – medium sized tree adjacent to Channel View Road	B	M	M	M
T56- Leyland Cypress – small tree adjacent to Channel View Road	C	L	L	L
T17 - Lime – medium to large sized tree adjacent to South Clive Road. Forms first tree in avenue of trees along both side of road.	B	M / H	M / H	M / H
T14 - Sycamore – medium sized tree within grounds of flats	B	M	M	M
T57 - Sycamore – small sized tree within grounds of flats	C	L	L	L
T19 - Hornbeam – small / medium sized tree alongside cut though footpath	B	M / L	M / L	M / L
T31 - Hornbeam – small / medium sized tree alongside cut though footpath	B	M / L	M / L	M / L
T32 - Hornbeam – small / medium sized tree alongside cut though footpath	B	M / L	M / L	M / L
T33 - Hornbeam – small / medium sized tree alongside cut though footpath	B	M / L	M / L	M / L
T34 - Cherry – medium sized tree within park area	B	M / L	M	M
T35 - Cherry – medium sized tree within park area	B	M / L	M	M
T36 - Cherry – medium sized tree within park area	B	M / L	M	M
T37 - Cherry – medium sized tree within park area	B	M / L	M	M
T38 - Ash – medium to large sized tree within park area	B	M	M	M

Tree ID loss (T – Individual Tree, G – Tree Group), species and description	Overall BS 5837 Category Quality Tree Loss (A – High, B-Moderate, C-Low, U – Poor)	Adverse impact onto the surrounding amenity (H -High, M -Medium, L-Low)	Adverse Arboricultural Impact (H -High, M -Medium, - L - Low)	Required Level of Landscape Mitigation (H -High, M -Medium, - L - Low)
T39 - Ash – medium to large sized tree within park area	B	M	M	M
T40 - Ash – medium to large sized tree within park area	B	M	M	M
T41 – Norway Maple – medium to large sized tree within park area	B	M	M	M
T42 – Aspen – small tree on edge of park area	C	L	L	L
G6 – 77 m2 small group of mainly short cherry trees in grounds of flat	C	M / L	M / L	M / L
G13 – Small group of three trees - birch and ash	C	M / L	M / L	M / L
G12 – Small group of Leyland cypress trees	C	L	L	L
G11 – Two Norway Maples forming a whole located on edge of park area and footpath	B	M	M	M
G1 – 440m2 Tree group of a mixture of species, overgrown, sprawling with little recent management noted	C	M	M / L	M / L
G9 - 140m2 Tree group of a mixture of species, overgrown, sprawling with little recent management noted	C	M / L	M / L	M / L
G7 - 110m2 Tree group of a mixture of species, overgrown, sprawling with little recent management noted	C	M / L	M / L	M / L
G3 - 400m2 Tree group of a mixture of species, overgrown, sprawling with little recent management noted	C	M	M / L	M / L
G2 – 20 metre Tree group of a mixture of species, overgrown, sprawling with little recent management noted	C	M / L	M / L	M / L
G14 – 20 metre Tree group of hawthorn, overgrown, sprawling with little recent management noted	C	M / L	M / L	M / L
G4 – 480m2 Tree group of a mixture of species, overgrown, sprawling with little recent management noted	C	M / L	M / L	M / L

5.2.2 Overall Tree Loss for Proposed Design –

A number of trees are identified to be removed to facilitate the construction of the proposed development design. 21 B (moderate quality) category trees and 1 B (moderate quality) category tree group are required to be removed to facilitate the construction of the proposed design. In addition, 4 C (low quality) category trees and 10 C (low quality) category tree groups are also required to be removed to facilitate the construction of the proposed design. The removal of these trees can be mitigated for through a proportional compensatory tree planting scheme.

- 5.3 Root Protection Area (RPA) –RPA potential damage can be managed through the installation of temporary ground protection, arboricultural watching brief, excavation method statement and tree protective fencing etc 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 Tree surgery work – Some general minor maintenance tree pruning through the site will also be expected on a scheme of this nature. This work is to be carried out to the *British Standard 3998:2010 tree work recommendations*. Adhering to this standard will ensure no adverse impact onto the long term health or visual amenity of the trees will occur.
- 5.5.1 AIA – Conclusion - The site has a number of Arboricultural constraints that needed to be considered in the development design phase. A number of trees are identified to be removed to facilitate the construction of the proposed development design. Many of these trees are low quality that should not present a constraint on developing the site. Through suitable and proportional compensatory tree planting this loss can be offset to an acceptable level.
- 5.5.2 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.
- 5.5.3 The construction of the proposed development whilst complying to a suitable scheme for tree protection 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 Tree Protection

- 6.1 No Tree Protection Plan or Tree Protection Method Statement are included within this report. An introduction to Tree Protection can be found in Appendix 4.

7.0 Conclusion

- 7.1 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 and aftercare will be required for the loss of the trees on this site through a combination of different tree/shrub species and diverse nursery aged stock. Further to this, tree protection methods must be designed and implemented by an Arboriculturist to ensure no adverse impact occurs onto all the retained trees/shrubs during the entire construction phase.

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 Utilities Installation
<http://www.njug.org.uk/>

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- British Standards 3998 (2010) Recommendations for Tree Work UK; British Standards Intuition
- British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition
- Coombes, A.J (1992) Trees London; Dorling Kindersley
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- Mattheck, C (2007) Field Guide for Visual Tree Assessment Germany; Karlsruhe Research Centre
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- Strouts, R.G (2000) Diagnosis of ill-health in trees Edinburgh; Forestry Commission
- Weber, K & Mattheck, C (2003) Manual of wood decay UK; Arboricultural Association

10.0 Appendix 1A -Tree Survey Data

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
A1	Acer pseudoplatanus (Sycamore), Fraxinus excelsior (Ash), Corylus avellana (Hazel)	EM	1	300	C1	7(0)	5	5	5	5	F	F	10+	Surrounding terrain prevented close inspection of the tree therefore all observations and measurements are estimated.	area of small trees and scrub alongside river bank, mainly multistem, short and sprawling in form		3.6	40.72
G1	Prunus avium (Wild Cherry), Populus spp (Poplar spp), Fraxinus excelsior (Ash), Buddleja (Buddleja)	EM	1	400	C2	14(0)	4	4	4	4	F	F	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	sprawling area of unmanaged trees and scrub		4.8	72.39
G2	Betula pendula (Silver Birch), Pinus spp (Pine), Prunus avium (Wild Cherry), Crataegus monogyna (Hawthorn), Alnus glutinosa (Common Alder), Acer campestre (Field Maple)	EM	1	300	C2	10(0)	5	5	5	5	F	F	10+		sprawling area of unmanaged trees and scrub		3.6	40.72
G3	Betula pendula (Silver Birch), Buddleja (Buddleja), Salix caprea (Goat Willow), Sorbus aucuparia (Rowan), Populus tremula (Aspen), Salix fragilis (Crack Willow)	M	1	400	C2	12(0)	4	4	4	4	F	F	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	sprawling area of unmanaged trees and scrub, one larger crack willow noted in group, appears to have received limited recent management		4.8	72.39
G4	Betula pendula (Silver Birch), Salix caprea (Goat Willow), Prunus avium (Wild Cherry), Quercus robur (Common Oak)	EM	1	350	C2	10(0)	5	5	5	5	F	F	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	sprawling area of trees and scrub, limited access into tree group, appears to have received limited recent management		4.2	55.42
G5	Prunus avium (Wild Cherry)	M	1	250	C2	8(0)	3	3	3	3	G/F	N/A	10+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.	small group of cherry trees		3	28.28
G6	Prunus avium (Wild Cherry), Betula pendula (Silver Birch)	M	1	350	C2	6(2)	4	4	4	4	F	F	10+		group of small trees		4.2	55.42
G7	Betula pendula (Silver Birch), Buddleja (Buddleja), Acer campestre (Field Maple), Corylus avellana (Hazel)	EM	1	300	C2	9(0)	4	4	4	4	F	F	10+		sprawling area of unmanaged trees and scrub		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)
G8	X Cupressocyparis leylandii (Leyland Cyp), Fruit tree spp (Fruit tree spp)	EM	1	450	C2	11(0)	3.5	3.5	3.5	3.5	G/F	F	10+	unmanaged row of leylandii and one small fruit tree			5.4	91.62
G9	Prunus avium (Wild Cherry), Fraxinus excelsior (Ash), Buddleja (Buddleja), Acer campestre (Field Maple), Corylus avellana (Hazel)	EM	1	250	C2	8(0)	3	3	3	3	F	F	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	sprawling area of unmanaged trees and scrub		3	28.28
G10	Populus tremula (Aspen)	SM	1	200	C2	7(1)	2.5	2.5	2.5	0.2	G/F	G/F	20+	high C category.	group of two small aspen trees of fair to good form		2.4	18.1
G11	Acer platanoides (Norway Maple)	M	1	420	B2	12(3)	5	5	5	5	G/F	F	20+	low B category. Suckers around stem base.	group of two sycamore trees forming a whole		5.04	79.81
G12	X Cupressocyparis leylandii (Leyland Cyp)	EM	1	300	C2	6(0)	4	4	4	4	F	F	10+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.	short overgrown group of leylandii trees		3.6	40.72
G13	Betula pendula (Silver Birch), Fraxinus excelsior (Ash)	EM	1	250	C2	9(2)	3	3	3	3	G/F	N/A	10+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.	group of two birch and one small ash		3	28.28
G14	Crataegus monogyna (Hawthorn)	EM	1	200	C2	4(0)	4	4	4	4	F	F	10+		small sprawling area of unmanaged hawthorn		2.4	18.1
G15	Populus spp (Poplar spp)	EM	1	430	B2	18(3)	3	3	3	3	G/F	G/F	20+	low B category.	row of upright poplar trees, some surface root damage noted		5.16	83.66
G16	Populus spp (Poplar spp)	EM	1	430	B2	18(3)	3	3	3	3	G/F	F	20+	low B category.	row of upright poplar trees, some surface root damage noted, footpath tarmac root damage noted		5.16	83.66
G17	Populus spp (Poplar spp)	EM	1	400	B2	18(3)	3	3	3	3	G/F	F	20+	low B category.	row of upright poplar trees		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)
G18	Populus spp (Poplar spp)	M	1	1250	B2	27(4)	10	10	10	10	G/F	F	20+	low B category. group of varying poplar tree species, many are large in form			15	707
G19	Ulmus spp (Elm spp)	EM	1	350	B2	10(2)	5	5	5	5	G/F	G/F	20+	row of elm trees			4.2	55.42
T1	Acer platanoides (Norway Maple)	M	1	490	B2	11(5)	5	5	5	5	G/F	G/F	20+	street tree growing from pavement planting pit			5.88	108.6
T2	Tilia X europaea (Common Lime)	M	1	400	B2	12(3)	4	3	4	4	G/F	G/F	20+	street tree growing from pavement planting pit			4.8	72.39
T3	Acer platanoides (Norway Maple)	M	1	380	B2	9(4)	4	5	4	3	G/F	F	20+	street tree growing from pavement planting pit			4.56	65.33
T4	Tilia cordata (Small-leaved Lime)	M	1	400	B2	11(4)	6	5	4	4	G/F	G/F	20+	street tree growing from pavement planting pit			4.8	72.39
T5	Tilia platyphyllos (Large-leaved Lime)	M	1	450	B2	12(4)	5	5	5	5	G/F	G/F	20+	street tree growing from pavement planting pit			5.4	91.62
T6	Tilia X europaea (Common Lime)	M	1	350	B2	11(3)	4	4	4	4	G/F	G/F	20+	twin stem, tree of fair to good form			4.2	55.42
T7	Carpinus betulus (Hornbeam)	M	1	350	B2	11(4)	4	4	4	4	G/F	G/F	20+	tree of fair to good form			4.2	55.42
T8	Tilia X europaea (Common Lime)	M	1	330	C2	7(3)	2	4	3	4	F	F	10+	high C category. street tree growing from pavement planting pit, large root growth, short tree of fair form			3.96	49.27
T9	Tilia X europaea (Common Lime)	M	1	350	B2	9(2)	4	4	4	4	G/F	G/F	20+				4.2	55.42
T10	Tilia X europaea (Common Lime)	M	1	350	B2	9(2)	4	4	4	4	G/F	G/F	20+				4.2	55.42
T11	Tilia X europaea (Common Lime)	M	1	400	B2	9(2)	4.5	4.5	4.5	4.5	G	G	20+	high B category.			4.8	72.39
T12	Prunus avium (Wild Cherry)	M	1	550	B2	9(2)	5	5	5	5	G/F	G/F	20+	tree of fair to good form and health			6.6	136.9
T13	Tilia X europaea (Common Lime)	M	1	350	B2	10(3)	4	4	4	4	G/F	G/F	20+	high canopy tree from branch pruning			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)	
T14	Acer pseudoplatanus (Sycamore)	M	1	500	B2	10(3)	6	6	6	6	G/F	N/A	20+	high B category. Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.	tree of good form		6	113.1	
T15	Robinia pseudoacacia (Locust Tree)	M	1	450	B2	10(2)	6	6	6	6	G/F	G/F	20+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.			5.4	91.62	
T16	Betula pendula (Silver Birch)	M	1	400	B2	12(2)	4	4	4	4	G/F	N/A	20+	low B category. Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.			4.8	72.39	
T17	Tilia cordata (Small-leaved Lime)	M	1	500	B2	11(4)	6	6	6	6	G/F	G/F	20+		street tree growing from pavement planting pit, hanging branch in crown, wound to trunk with surrounding reactive growth noted	removing hanging branch from crown	H/M	6	113.1
T18	Tilia cordata (Small-leaved Lime)	M	1	400	B2	11(5)	5	5	5	5	G/F	G/F	20+		street tree growing from pavement planting pit			4.8	72.39
T19	Carpinus betulus (Hornbeam)	M	1	250	B2	8(4)	3	3	4	4	F	F	20+	low B category.	growing within amenity grass area, tree of fair form, twin leader, trunk damage with surrounding callus growth noted			3	28.28
T20	Fruit tree spp (Fruit tree spp)	M	1	310	C2	6(3)	3	3	3	4	F	F	20+		small tree located in the park, wound to trunk with surrounding reactive growth noted			3.72	43.48
T21	Acer platanoides (Norway Maple)	M	1	470	B2	11(2.5)	5	5	5	5	G/F	G/F	20+		tree of fair to good form, some surface root damaged noted, located in the park			5.64	99.95
T22	Acer platanoides (Norway Maple)	M	1	290	B2	8(3)	3	3	3	3	G/F	F	20+		tree of fair form located in the park, some surface root damaged noted			3.48	38.05
T23	Acer platanoides (Norway Maple)	M	1	400	B2	9(2.5)	4	4	4	4	G/F	F	20+		tree of fair form and health, some surface root damaged note, located in the park			4.8	72.39
T24	Acer platanoides (Norway Maple)	M	1	410	B2	10(2.5)	4	5	6	5	G/F	F	20+	low B category. Suppressed growth from large adjacent tree.	small tree located in the park			4.92	76.06

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)
T25	Quercus ilex (Holm Oak)	M	1	620	A2	11(2)	5.5	5.5	5.5	5.5	G	G	40+	open grown tree of good form and health, wound noted on stem with surrounding reactive growth, twin leader from 2 metres, tree located in the park			7.44	173.9
T26	Fruit tree spp (Fruit tree spp)	EM	1	150	C2	4(2)	2	0	0	2	F	F	10+	Suppressed growth from large adjacent tree.	small tree located in the park		1.8	10.18
T27	Fruit tree spp (Fruit tree spp)	EM	1	160	B2	6(2)	2	2	2	2	G	G	20+		small upright tree of good form located in the park		1.92	11.58
T28	Fruit tree spp (Fruit tree spp)	M	1	270	C2	5(2.5)	3	4	3	3	G/F	F	10+	high C category.	small tree located in the park, wounds to trunk with surrounding reactive growth noted		3.24	32.98
T29	Fruit tree spp (Fruit tree spp)	EM	1	150	C2	3(2)	1	4	2	0	F	F	10+	Suppressed growth from large adjacent tree.	small tree located in the park		1.8	10.18
T30	Fruit tree spp (Fruit tree spp)	EM	1	110	B2	6(2)	2	1	2	2	G	G	20+		small upright tree of good form located in the park		1.32	5.47
T31	Carpinus betulus (Hornbeam)	M	1	250	B2	7(4)	4	3	4	4	F	F	10+	low B category. Slightly sparse foliage cover.	growing within amenity grass area, tree of fair form		3	28.28
T32	Carpinus betulus (Hornbeam)	M	1	370	B2	8(4)	5	4	5	5	G/F	G/F	20+		growing within amenity grass area, tree of fair to good form and health		4.44	61.94
T33	Carpinus betulus (Hornbeam)	M	1	340	B2	8(4)	4	4	4	4	G/F	G/F	20+		growing within amenity grass area, tree of fair to good form and health		4.08	52.3
T34	Prunus avium (Wild Cherry)	M	1	310	B2	9(2.5)	5	3	4	4	G/F	G/F	20+		tree of fair to good form and health located in the park		3.72	43.48
T35	Prunus avium (Wild Cherry)	M	1	300	B2	9(2.5)	4	2	3.5	4	G/F	G/F	20+		tree of fair to good form and health located in the park		3.6	40.72
T36	Prunus avium (Wild Cherry)	M	1	310	B2	10(2.5)	4	4	3.5	3	G/F	G/F	20+		tree of fair to good form and health located in the park		3.72	43.48
T37	Prunus avium (Wild Cherry)	M	1	300	B2	10(2.5)	3	3	4	4	G/F	G/F	20+		tree of fair to good form and health located in the park		3.6	40.72
T38	Fraxinus excelsior (Ash)	M	1	600	B2	16(3.5)	6	7	4	5	G/F	G/F	20+		tree of fair to good form and health located in the park, twin stem, currently no signs of ash dieback disease		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)
T39	Fraxinus excelsior (Ash)	M	1	430	B2	14(3.5)	4	6	5	6	G/F	F	20+	low B category. Unbalanced crown shape. Suppressed growth from surrounding trees.	tree of fair to good form and health located in the park, currently no signs of ash dieback disease		5.16	83.66
T40	Fraxinus excelsior (Ash)	M	1	600	B2	15(3.5)	7	7	6	7	G/F	G/F	20+	high B category.	tree of fair to good form and health located in the park, currently no signs of ash dieback disease		7.2	162.9
T41	Acer platanoides (Norway Maple)	M	1	500	B2	13(5)	4	5	5	5	G/F	G/F	20+		tree of fair to good form and health located in the park, occluding northern trunk wound noted, some surface root damage and reactive growth noted		6	113.1
T42	Populus tremula (Aspen)	SM	1	150	C2	7(1)	2	2	1	1	G/F	G/F	10+	Suppressed growth from large adjacent tree.			1.8	10.18
T43	Betula pendula (Silver Birch)	M	1	400	B2	9(2)	4	3	4	3	G/F	N/A	20+	low B category. Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.	tree of fair to good form and health		4.8	72.39
T44	Betula pendula (Silver Birch)	M	1	300	C2	12(1)	3	3	3	3	G/F	F	10+	low B category. Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated.	tree of fair form, slender		3.6	40.72
T45	Fruit tree spp (Fruit tree spp)	EM	1	90	C2	3(2)	1	1	1	1	G/F	F	10+		small tree with some trunk damage		1.08	3.66
T46	Fruit tree spp (Fruit tree spp)	EM	1	90	C2	3(2)	2	2	2	2	G/F	F	10+		small tree		1.08	3.66
T47	Fruit tree spp (Fruit tree spp)	EM	1	120	C2	3(2)	2	2	2	2	G/F	G/F	10+		small tree		1.44	6.52
T48	Crataegus monogyna (Hawthorn)	EM	1	220	C2	3(2)	3	3	3	3	G/F	F	10+		small tree, twin stem from near ground level		2.64	21.9
T49	Fruit tree spp (Fruit tree spp)	EM	1	150	B2	6(2)	2	2	2	2	G	G	20+		small upright tree of good form located in the park		1.8	10.18
T50	Ulmus spp (Elm spp)	EM	1	270	B2	6(2)	3	3	3	3	G	G	20+		upright tree of good form located in the park		3.24	32.98
T51	Populus spp (Poplar spp)	EM	1	400	C2	10(3)	3	3	3	3	G/F	F	10+	high C category.			4.8	72.39
T52	Prunus avium (Wild Cherry)	M	1	280	B2	8(3)	3	3.5	3	3.5	G/F	G/F	20+		end tree in row of cherry trees		3.36	35.47

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)
T53	Tilia cordata (Small-leaved Lime)	M	1	550	A2	10(1)	8	8	8	8	G	G	40+	tree of good form and health			6.6	136.9
T54	Populus spp (Poplar spp)	M	1	1100	B2	24(4)	4	4	4	4	G/F	F	20+	low B category. tall tree, area of decay noted between buttresses on northern side that penetrates a small distance into the trunk when probed with metal rode, surrounding outer reactive growth on outer buttresses noted	carry out decay detection of trunk to determine residual wall thickness	H/M	13.2	547.5
T55	Populus spp (Poplar spp)	EM	1	350	C2	10(3)	3	3	3	3	G/F	F	10+	high C category. Suckers around stem base.			4.2	55.42
T56	X Cupressocyparis leylandii (Leyland Cyp)	EM	1	200	C2	7(3)	3	3	3	3	F	F	10+				2.4	18.1
T57	Acer pseudoplatanus (Sycamore)	M	1	300	C2	8(3)	4	4	4	4	G/F	N/A	20+	Located on private land preventing a close inspection of the tree therefore all observations and measurements are estimated. small tree			3.6	40.72

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 77		
Tree Species	Count	% of Total
Acer platanoides (Norway Maple)	8	10.4
Tilia X europaea (Common Lime)	7	9.1
Tilia cordata (Small-leaved Lime)	4	5.2
Tilia platyphyllos (Large-leaved Lime)	1	1.3
Carpinus betulus (Hornbeam)	5	6.5
Prunus avium (Wild Cherry)	7	9.1
Acer pseudoplatanus (Sycamore)	2	2.6
Robinia pseudoacacia (Locust Tree)	1	1.3
Betula pendula (Silver Birch)	3	3.9
Fruit tree spp (Fruit tree spp)	10	13
Quercus ilex (Holm Oak)	1	1.3
Fraxinus excelsior (Ash)	3	3.9
Populus tremula (Aspen)	2	2.6
X Cupressocyparis leylandii (Leyland Cyp)	2	2.6
Crataegus monogyna (Hawthorn)	2	2.6
Ulmus spp (Elm spp)	2	2.6
Populus spp (Poplar spp)	7	9.1
Type	Count	% of Total
T	57	74
G	19	24.7
A	1	1.3
Cat	Count	% of Total
A2	2	2.6
B2	46	59.7
C1	1	1.3
C2	28	36.4
Age	Count	% of Total
SM	2	2.6
EM	27	35.1
M	48	62.3

Average Stem Diameter	Count	% of Total
<100	2	2.6
<150	2	2.6
<250	9	11.7
<500	54	70.1
<750	8	10.4
<2000	2	2.6
Height	Count	% of Total
<5	7	9.1
<10	33	42.9
<15	30	39
<20	5	6.5
<25	1	1.3
<30	1	1.3
Phy Cond	Count	% of Total
G	7	9.1
G/F	53	68.8
F	17	22.1
Stuc Cond	Count	% of Total
G	7	9.1
G/F	29	37.7
F	35	45.5
N/A	6	7.8
Est. Remain Contrib	Count	% of Total
10+	27	35.1
20+	48	62.3
40+	2	2.6
RPR	Count	% of Total
<5	58	75.3
<10	17	22.1
<15	1	1.3
<20	1	1.3
RPA	Count	% of Total
<5	2	2.6

<10	2	2.6
<15	5	6.5
<20	3	3.9
<25	1	1.3
<30	5	6.5
other	59	76.6

10.0 Appendix 2 - Tree Constraints Plan

An introduction to the Tree Constraints Plan (TCP)

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

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

Tree Key

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

Tree Key - Individual Files

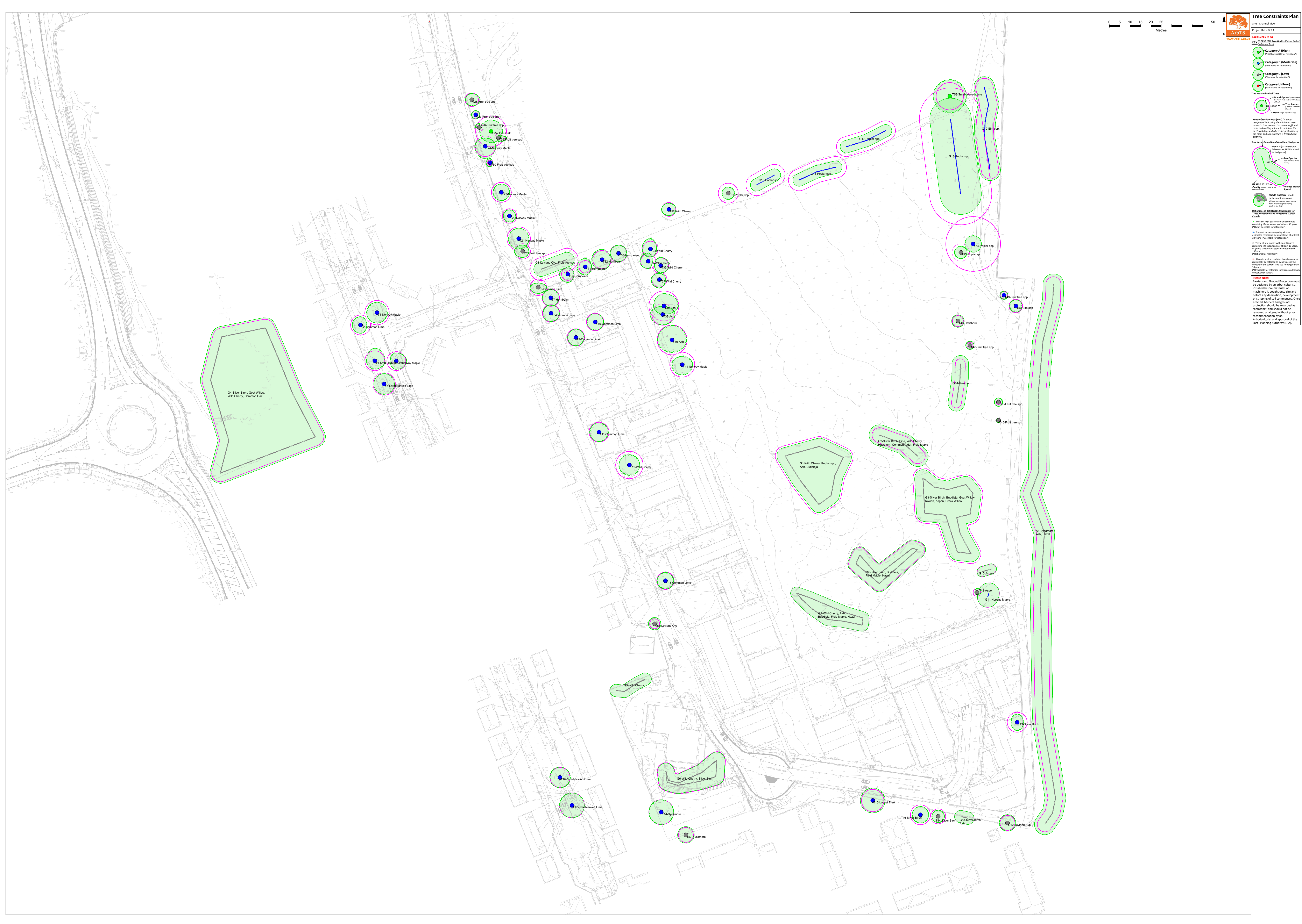
- Branch Spread**
Indicates the spread of the tree canopy
- Root Protection Area (RPA)**
Indicates the area around the tree trunk where roots are likely to be found
- Tree Species**
Indicates the species of the tree
- Tree Age**
Indicates the age of the tree
- Tree Health**
Indicates the health of the tree
- Tree Condition**
Indicates the condition of the tree
- Tree Location**
Indicates the location of the tree
- Tree Size**
Indicates the size of the tree
- Tree Shape**
Indicates the shape of the tree
- Tree Orientation**
Indicates the orientation of the tree
- Tree Spacing**
Indicates the spacing of the tree
- Tree Density**
Indicates the density of the tree
- Tree Diversity**
Indicates the diversity of the tree
- Tree Value**
Indicates the value of the tree
- Tree Risk**
Indicates the risk of the tree
- Tree Impact**
Indicates the impact of the tree
- Tree Benefit**
Indicates the benefit of the tree
- Tree Cost**
Indicates the cost of the tree
- Tree Time**
Indicates the time of the tree
- Tree Space**
Indicates the space of the tree
- Tree Light**
Indicates the light of the tree
- Tree Air**
Indicates the air of the tree
- Tree Soil**
Indicates the soil of the tree
- Tree Water**
Indicates the water of the tree
- Tree Temperature**
Indicates the temperature of the tree
- Tree Humidity**
Indicates the humidity of the tree
- Tree Wind**
Indicates the wind of the tree
- Tree Sun**
Indicates the sun of the tree
- Tree Moon**
Indicates the moon of the tree
- Tree Stars**
Indicates the stars of the tree
- Tree Planets**
Indicates the planets of the tree
- Tree Galaxies**
Indicates the galaxies of the tree
- Tree Universe**
Indicates the universe of the tree

Shade Pattern
Indicates the shade pattern of the tree

Notes

- 1. Those of high quality with an estimated remaining life expectancy of at least 40 years. (Highly desirable for retention)
- 2. Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (Desirable for retention)
- 3. Those of low quality with an estimated remaining life expectancy of at least 10 years. (Considered for retention)
- 4. Those of poor quality with an estimated remaining life expectancy of less than 10 years. (Unsuitable for retention)

Please Note:
Barriers and Ground Protection must be designed by an arboriculturist. Machinery is brought onto site and before any demolition, development or siting of soil commerce. 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).



Category A (High)
Highly desirable for retention

Category B (Moderate)
Desirable for retention

Category C (Low)
Moderately desirable for retention

Category U (Poor)
Unsuitable for retention

Tree ID
Numbered tree symbols

Species
Tree species names

Health
Health status indicators

Shade Pattern
Shade pattern symbols

Notes
Detailed notes for specific trees and areas



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.
 - H - High – Urgent work to be carried out as soon as practicable due to safety reasons (Within 14 days).
 - H/M – High - Medium – Work to be carried out within 6 months/or before construction phase begins
 - M - Medium – Work to be carried out in 12 months
 - L - Low – After consideration/Re-inspect in 18-24 months
 - 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 – An Introduction to Tree Protection

For the purpose of this report is to give an introduction is given to tree protection. If required a Tree Protection Plan and Tree Protection Methods Statement can be provided for the finalised development design.

Tree protection methods must be considered and designed by an Arboriculturist. These should then be implemented BEFORE any machinery or materials are bought onto site and before any demolition, development or stripping of soil commences. The Root Protection Area (RPA) (cyan circles/lines) indicated on the Tree Constraints Plan must be set out and the protective barriers and ground protection installed accordingly for retained trees. The protective barriers and ground protection areas shall be regarded as sacrosanct, and shall not be removed or altered without prior recommendation by an Arboriculturist and approval of the LPA.

The areas protected by barrier fencing and ground protection shall be subject to the following restrictions:

- Existing soil levels within the protected areas shall not be altered.
- No excavation of any kind shall take place within the protected areas.
- The protected areas shall not be used for storage of any kind.
- No vehicles or machinery shall be allowed into the areas protected by fencing.
- Should the developer require the above restrictions to be breached for unforeseen reasons, an appropriate method of works must be agreed with the Local Planning Authority prior to any works taking place within the protected areas.

Additional precautions outside protected barrier areas and ground protection:

- All underground services should be installed following 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/>.
- Building materials and fuels such as oil, bitumen or cement should not be stacked or discharged within 10 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 outer canopy of any 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 tree during the process.

Visits by an Arboriculturist during the construction process should be conducted to ensure all of the above are being strictly adhered too.

10.0 Appendix 5 – Tree Photographs

Tree ID#T20 – T21



Tree ID#G8 + T19



Tree ID#T8, T7, T6



Tree ID#T34 – T37



Tree ID#T38 – T41



Tree ID#G1



Tree ID#G9



Tree ID#G3



Tree ID#A1



Tree ID#G11, T42 + G10



Tree ID#T43



Tree ID#G13



Tree ID#T16



Tree ID#T15



Tree ID#T45 + T46



Tree ID#G3



Tree ID#T48



Tree ID#G14



Tree ID#T49 + T50



Tree ID#T55 + T54



Tree ID#T51 + G15 + G16



Tree ID#T53



Tree ID#G18



Tree ID#G19



Tree ID#T9 + T10



Tree ID#T11 + T12



Tree ID#G5



Tree ID#G6



Tree ID#T1 – T5



Tree ID#T17 + T18



Tree ID#G4



10.0 Appendix 6 – Tree Impact Plan

Key : Tree Impact

- Trees to be removed to facilitate development design
- Tree Group to be removed to facilitate development design



Tree Key

- Category A (High)** - High quality trees (suitable for retention)
- Category B (Moderate)** - Moderate quality trees (suitable for retention)
- Category C (Low)** - Low quality trees (suitable for retention)
- Category U (Poor)** - Poor quality trees (suitable for retention)

Tree Key - Individual Trees

- Tree ID** - Unique identifier for each tree
- Species** - Name of the tree species
- Quality** - Quality rating of the tree
- Retention** - Whether the tree is to be retained or removed

Tree Key - Tree Groups

- Tree Group ID** - Unique identifier for each tree group
- Tree Group Species** - Name of the tree species
- Tree Group Quality** - Quality rating of the tree group
- Tree Group Retention** - Whether the tree group is to be retained or removed

Tree Key - Tree Groups

- Tree Group ID** - Unique identifier for each tree group
- Tree Group Species** - Name of the tree species
- Tree Group Quality** - Quality rating of the tree group
- Tree Group Retention** - Whether the tree group is to be retained or removed

Tree Key - Tree Groups

- Tree Group ID** - Unique identifier for each tree group
- Tree Group Species** - Name of the tree species
- Tree Group Quality** - Quality rating of the tree group
- Tree Group Retention** - Whether the tree group is to be retained or removed

Tree Key - Tree Groups

- Tree Group ID** - Unique identifier for each tree group
- Tree Group Species** - Name of the tree species
- Tree Group Quality** - Quality rating of the tree group
- Tree Group Retention** - Whether the tree group is to be retained or removed

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 20-40 years. (Moderately desirable for retention)
- 3. Those of low quality with an estimated remaining life expectancy of 10-20 years. (Less desirable for retention)
- 4. Those of poor quality with an estimated remaining life expectancy of less than 10 years. (Not desirable 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 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).