



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 – 4th November 2021

Site – St Mellons Road, Cardiff

Project Reference – ArbTS_237.2_St Mellons Road

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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 St Mellons Road, 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 21st June 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 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)	1	0	0	1	0	2
B (Moderate - Desirable for retention)	1	0	0	0	0	1
C (Low - Optional for retention)	3	6	0	0	10	19
U (Poor - Unsuitable for retention)	0	0	0	0	0	0
Total A,B,C,U	5	6	0	1	10	22

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

5.2.2 Grouped Tree Loss –

- G1 - A small part (25 metres section) of Low (C) quality tree group is to be removed to facilitate the construction of the proposed design.

5.2.3 Hedgerow Tree Loss –

- H10 – 57 metres of Low (C) quality hedgerow is to be removed to facilitate the construction of the proposed design.
- H7 – 60 metres of Low (C) quality hedgerow is to be removed to facilitate the construction of the proposed design.

5.2.4 Overall Tree Loss –

25 metre section of trees and 117 metres of hedgerow are identified to be removed to facilitate the proposed development design. All of these trees and hedgerows are low quality that should not present a constraint on developing the site. The removal of these trees and hedgerows can be readily mitigated for through suitable compensatory tree planting.

5.3 Root Protection Area (RPA) – AIA - LOW - RPA potential damage can be managed through the installation of temporary and permanent 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 – AIA – LOW - Some minor pruning of over grown trees and hedgerows will be required to provide the necessary space to construct the proposed development. This pruning work will not cause an adverse impact onto the future health of these trees or their amenity value in the wider landscape. This work is to be carried out to the *British Standard 3998:2010 tree work recommendations*. Adhering to this standard will ensure no adverse impact onto the long term health or visual amenity of these trees will occur.

- 5.5.1 AIA – Conclusion – Overall AIA – LOW (Including landscape mitigation) - The site has a number of Arboricultural constraints that needed to be considered in the development design phase. 25 metres section of trees and 117 metres of hedgerow are identified to be removed to facilitate the proposed development design. All of these trees and hedgerows are low quality that should not present a constraint on developing the site. The removal of these trees and hedgerows can be readily mitigated for through suitable compensatory tree planting.
- 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/>

Bibliography

- British Standards 3998 (2010) Recommendations for Tree Work UK; British Standards Intuition
- British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition
- Coombes, A.J (1992) Trees London; Dorling Kindersley
- Lonsdale, D (1999) Principle of Tree Hazard Assessment and Management Edinburgh; Forestry Commission
- Mattheck, C (2007) Field Guide for Visual Tree Assessment Germany; Karlsruhe Research Centre
- Shigo, A.L (1991) Modern Arboriculture USA; Shigo and Trees, Association
- Sterry, P (2007) Collins Complete British Trees London; Collins
- Strouts, R.G (2000) Diagnosis of ill-health in trees Edinburgh; Forestry Commission
- Weber, K & Mattheck, C (2003) Manual of wood decay UK; Arboricultural Association

10.0 Appendix 1A -Tree Survey Data

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
G1	Acer platanoides (Norway Maple),Salix caprea (Goat Willow)	SM	1	200	C2	6(0)	3	3	3	3	F	F	20+	high C category. small group of semimature trees mainly Norway maple trees of fair form			2.4	18.1
G2	Alnus glutinosa (Common Alder)	SM	1	150	C2	6(0)	2	2	2	2	G/F	F	10+	high C category. small group of alder trees slender in form and growing around small water course			1.8	10.18
G3	Quercus petraea (Sessile Oak),Crataegus monogyna (Hawthorn),Alnus glutinosa (Common Alder),Acer campestre (Field Maple)	EM	1	225	C2	6(0)	3	3	3	3	G/F	F	20+	high C category. a group of mainly early mature hawthorn and alder surrounding small water course			2.7	22.91
G4	Salix caprea (Goat Willow)	EM	1	150	C2	4(0)	3	3	3	3	F	F	10+	high C category. sprawling scrub			1.8	10.18
G5	Salix caprea (Goat Willow)	EM	1	150	C2	4(0)	3	3	3	3	F	F	10+	high C category. sprawling scrub			1.8	10.18
G6	Acer platanoides (Norway Maple)	SM	1	150	C2	5(0)	2	2	2	2	F	F	20+	high C category. small group of semimature trees mainly Norway maple trees of fair form			1.8	10.18
H1	Corylus avellana (Hazel),Ilex aquifolium (Holly),Crataegus monogyna (Hawthorn),Prunus spinosa (Blackthorn),Acer campestre (Field Maple)	M	1	250	C2	4(0)	4	4	4	4	G/F	F	20+	high C category. thick broad area of unmanaged hedgerow, mixture of species noted			3	28.28
H2	Salix fragilis (Crack Willow),Corylus avellana (Hazel),Acer campestre (Field Maple),Crataegus monogyna (Hawthorn)	EM	1	250	C2	4(0)	4	4	4	4	G/F	F	20+	high C category. thick broad area of unmanaged hedgerow, mixture of species noted			3	28.28

Tree ID #	Tree Species	Age	Stems	Stem Diam (mm)	Cat	Height + (Lower Branch Height)	Nrth	Est	Sth	Wst	Phys Cond	Struc Cond	Est. Remain Contrib	Comments	Preliminary Management Recommendations	Work Priority	RPR (m)	RPA (m2)
H3	Corylus avellana (Hazel), Fraxinus excelsior (Ash), Acer pseudoplatanus (Sycamore), Alnus glutinosa (Common Alder), Salix caprea (Goat Willow), Crataegus monogyna (Hawthorn), Ilex aquifolium (Holly)	EM	1	250	C2	6(0)	4	4	4	4	G/F	F	20+	high C category. a thick hedgerow group of mainly multistem trees that have received little recent management, some ash showing varying signs of ash dieback disease			3	28.28
H4	Crataegus monogyna (Hawthorn), Fraxinus excelsior (Ash), Corylus avellana (Hazel), Acer campestre (Field Maple), Ilex aquifolium (Holly)	EM	1	200	C2	7(0)	3	3	3	3	G/F	F	20+	high C category. a thick hedgerow group of mainly multistem trees that have received little recent management, a small number of semimature ash trees noted in hedgerow, some ash showing signs of ash hedgerow			2.4	18.1
H5	Crataegus monogyna (Hawthorn), Corylus avellana (Hazel), Ilex aquifolium (Holly)	EM	1	200	C2	6(0)	3	3	3	3	G/F	F	20+	high C category. a thick hedgerow group of mainly multistem trees that have received little recent management			2.4	18.1
H6	Crataegus monogyna (Hawthorn), Corylus avellana (Hazel)	M	1	150	C2	3(0)	3	3	3	3	G/F	F	20+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated. sprawling boundary hedgerow that has received little recent management			1.8	10.18
H7	Crataegus monogyna (Hawthorn), Corylus avellana (Hazel)	M	1	150	C2	3(0)	2	2	2	2	G/F	F	20+	high C category. Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated. boundary roadside hedgerow that has received little recent management within the site			1.8	10.18
H8	Crataegus monogyna (Hawthorn), Corylus avellana (Hazel), Salix caprea (Goat Willow)	M	1	150	C2	3(0)	2	2	2	2	G/F	F	20+	high C category. Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated. boundary roadside hedgerow that has received little recent management within the site			1.8	10.18
H9	Crataegus monogyna (Hawthorn), Corylus avellana (Hazel)	M	1	150	C2	4(0)	3	3	3	3	G/F	F	20+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated. boundary group of overgrown sprawling hedgerow			1.8	10.18

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)
H10	Crataegus monogyna (Hawthorn), Fraxinus excelsior (Ash), Corylus avellana (Hazel), Acer campestre (Field Maple), Ilex aquifolium (Holly)	EM	1	150	C2	7(0)	3	3	3	3	G/F	F	20+	high C category. a thick hedgerow group of mainly multistem upright slender trees that have received little recent management, a small number of semimature ash trees noted in hedgerow, some ash showing signs of ash dieback			1.8	10.18
T1	Quercus petraea (Sessile Oak)	M	2	778	A1	13(2)	8	5	8	9	G/F	N/A	10+	Ivy on tree. Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated. Surrounding terrain prevented close inspection of the tree therefore all observations and measurements are estimated.	large twin stem located on edge of stream and edge of woodland		9.34	274.1
T2	Salix fragilis (Crack Willow)	EM	3	346	C2	8(0)	3.5	3.5	3.5	3.5	F	N/A	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	Appears to be multistem, species prone to stem failure and a short lived species		4.15	54.11
T995	Fraxinus excelsior (Ash)	M	1	600	C2	9(1)	6	7	6	5	G/F	N/A	20+	high C category. Ivy on tree. Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	tree of fair form, slightly sparse leaf cover		7.2	162.9
T998	Quercus petraea (Sessile Oak)	M	1	600	B2	8(1)	4	5	7	7	G/F	G/F	40+		ivy cover, limited access visibility to full inspect tree, suppressed in northern crown form from removal of adjacent large northern ash tree		7.2	162.9
T999	Fraxinus excelsior (Ash)	M	7	568	C2	12(1)	5	10	8	7	F	F	10+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated.	7 stems growing from base likely to be a hedgerow tree i.e. old coppice/layer tree, slightly sparse leaf cover		6.82	146.1

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)
W1	Quercus petraea (Sessile Oak),Alnus glutinosa (Common Alder),Prunus spinosa (Blackthorn),Corylus avellana (Hazel),Fraxinus excelsior (Ash)	M	1	400	A2	9(0)	4.5	4.5	4.5	4.5	G/F	G/F	40+	Surrounding vegetation prevented close inspection of the tree therefore all observations and measurements are estimated. Surrounding terrain prevented close inspection of the tree therefore all observations and measurements are estimated.	edge to woodland consisting mainly of small to medium diameter sized tightly grown woodland edge trees, larger trees noted some 10 to +15metres within woodland, one larger trees within this group individually included in the survey as noted of high value in edge of woodland (T1), average crown spread and rpa calculated to ensure protection of edge trees and larger trees further within woodland, some ash showing signs of ash dieback disease		4.8	72.39

10.0 Appendix 1B – Detailed Tree Survey Data Summary

(Please see Appendix 3 - Tree Survey Key)

Field Usage Results.		
Total Records: 25		
Tree Species	Count	% of Total
Fraxinus excelsior (Ash)	2	8
Quercus petraea (Sessile Oak)	2	8
Alnus glutinosa (Common Alder)	1	4
Salix fragilis (Crack Willow)	1	4
Salix caprea (Goat Willow)	2	8
Acer platanoides (Norway Maple)	1	4
Type	Count	% of Total
T	5	20
G	6	24
W	1	4
H	10	40
Cat	Count	% of Total
A1	1	4
A2	1	4
B2	1	4
C2	19	76
U	2	8
Age	Count	% of Total
SM	3	12
EM	9	36
M	10	40
Average Stem Diameter	Count	% of Total
<50	3	12
<250	13	52
<500	5	20
<750	3	12
<1000	1	4
Height	Count	% of Total

<5	8	32
<10	12	48
<15	2	8
Phy Cond	Count	% of Total
G/F	16	64
F	6	24
Stuc Cond	Count	% of Total
G/F	2	8
F	17	68
N/A	3	12
Est. Remain Contrib	Count	% of Total
10+	6	24
20+	14	56
40+	2	8
RPR	Count	% of Total
<5	21	84
<10	4	16

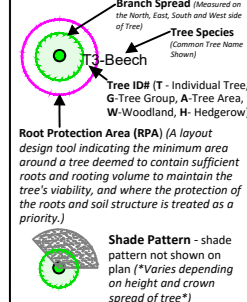
10.0 Appendix 2 - Tree Constraints Plan

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.

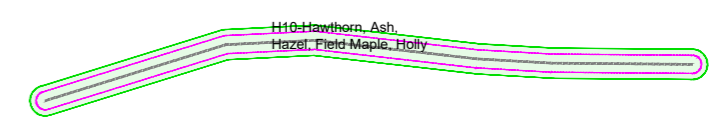
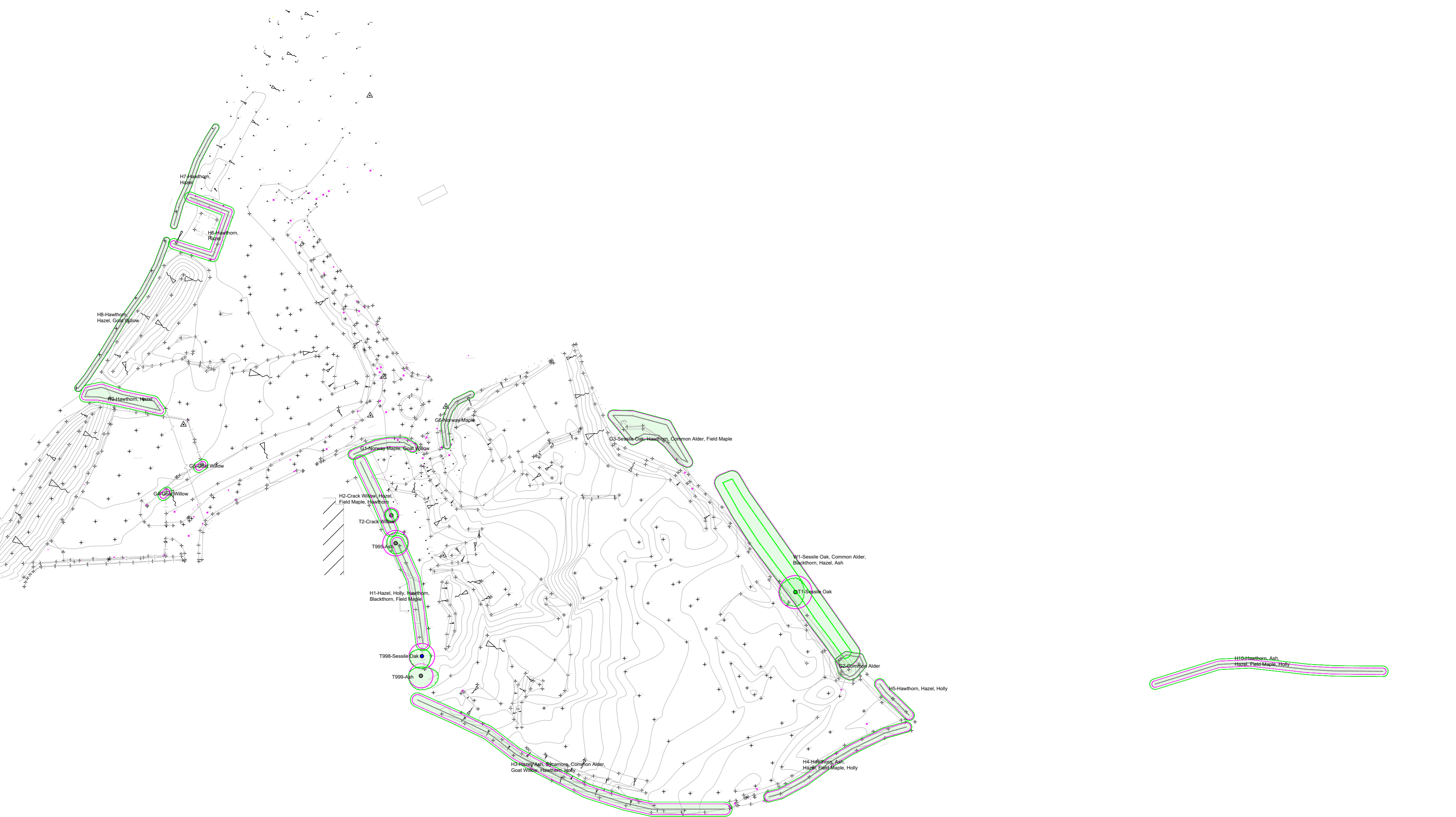
- **Tree Quality** - The TCP highlights the above and below ground constraint each tree poses to the design of future development schemes. Further to this the BS5837 tree quality category (A - High, B - Moderate, C - Low and U- Unsuitable for retention) are coloured coded as solid circles at the centre 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.

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

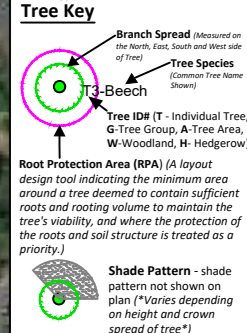


- A** - Those of high quality with an estimated remaining life expectancy of at least 40 years. (*Suitable for retention*)
- B** - Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (*Suitable for retention*)
- C** - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. (*Suitable for retention*)
- U** - Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. (*Unsuitable for retention*)

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).



- KEY**
BS 5837:2012 Tree Quality
(Individual Tree)
- Category A (High)
 - Category B (Moderate)
 - Category C (Low)
 - Category U (Poor)
 (*Unsuitable for retention*)



Definitions of BS5837:2012 Categories for Trees, Woodlands and Hedgerows (Colour Coded):

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

B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years.
 (*Suitable for retention*)

C - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.
 (*Suitable for retention*)

U - Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.
 (*Unsuitable for retention*)

Please Note:
 Barriers and Ground Protection must be designed by an arboriculturist, installed before materials or machinery is brought onto site and before any demolition, development or stripping of soil commences. Once erected, barriers and ground protection should be regarded as sacrosanct, and should not be removed or altered without prior recommendation by an Arboriculturist and approval of the Local Planning Authority (LPA).



10.0 Appendix 3 - Tree Survey Data Key

- **Tree ID #** - Identifies the location of individual trees (T-ID Number), Groups of trees (G-ID Number), Area of trees (A-ID Number), Hedgerow (H-ID Number), Woodland (W-ID Number), Row of trees (R-ID Number) and tree Stumps (S-ID Number) on the accompanying plan. (*Please note: A group of trees here refers to two or more standing trees that form a visual whole, whereas an area of trees refers to dispersed individual trees standing within the site*)
- **Tree Species** - Scientific names and common tree name in brackets are generally shown.
- **Age**
 - o (Y) Young – Less than 1/3 of life completed
 - o (SM) Middle Aged - 1/3 - 2/3 of life completed
 - o (EM) Early Mature – Just entering Maturity
 - o (M) Mature – more than 2/3 of life completed
 - o (OM) Over Mature - more than 3/3 of life completed and declining
 - o (V) Veteran - (v) Veteran – Veteran trees have no precise definition but are trees considered to be of biological aesthetic or ecological value because of their age
- **Stems** – Number of tree stems used to calculate the RPR/RPA
- **Stem Diam** (mm) - Diameter of tree stem measured in millimetres for single stem trees or average stem diameter calculated for multi-stemmed trees as detailed in section 4.6 & Annex C of the British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations. The height above ground level where the stem measurement was taken will be shown if not measured at 1.5 metres above ground level. (*Please note: that the stem diameter of certain trees will have to be estimated due to difficulties in taking measurements or for trees with a large number of stems*)
- **Cat** – Tree Quality Category - British Standard 5837:2012 A, B, C, U + 1, 2, 3

Based on BS5837:2012 categories A, B, C, U provides the basis of prioritising trees for retention:

- o A – Those of high quality with an estimated remaining life expectancy of at least 40 years. (*Most desirable for retention*)
- o B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (*Desirable for retention*)
- o C – Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. (*Optional for retention*)
- o U – Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. (*Unsuitable for retention unless provides high conservation value*)

Retention Criteria Subcategories: Used for identifying subcategories

E.g. A2 = A high quality tree with a high landscape qualities (further details can be found in British Standard 5837:2012, Trees in relation to design, demolition and construction - Recommendations UK; British Standards Intuition)

- o 1 – Mainly Arboricultural qualities
- o 2 – Mainly landscape qualities
- o 3 – Mainly cultural values, including conservation

- **Height + (Lower Branch Height)** - Tree height in metres and in brackets height in metres of the crown (tree branches) clearance at its lowest point above adjacent ground levels.

- **Nrth, Est, Sth, Wst** - Crown Spread (Metres) -Tree branch spread in metres measured in four directions (North, East, South, West) from the trunk.

- **Phys Cond** - Physiological Condition Indicating the health of the tree -
 - o (G) Good
 - o (F) Fair
 - o (P) Poor
 - o (D) Dead

- **Struc Cond** – Structural Condition indicting the structural integrity of the tree -
 - o (G) Good – No, or remediable physical defects or decay
 - o (F) Fair - Physical non-remediable defects or decay present, not presenting imminent danger but should be monitored
 - o (P) Poor - physical non-remediable defects or decay present, tree liable to imminent collapse or loss of major limbs.
 - o (D) Dead

- **Est. Remain Contrib - (<10, 10+, 20+, 40+)**

The trees estimated remaining contribution in years, recorded as:

 - o <10 – less than 10 years
 - o 10+ – at least 10 years
 - o 20+ – at least 20 years
 - o 40+ – at least 40 years

- **Comments** – Additional Comments if required

- **Preliminary Management Recommendations** – Work Recommendations, including further investigation of suspected defects that require more detailed assessment and pose potential for wildlife habitat.

- **Work Priority - Work Priority** -This gives a work priority rating of preliminary management for each tree.
 - o H - High – Urgent work to be carried out as soon as practicable due to safety reasons (Within 14 days).
 - o H/M – High - Medium – Work to be carried out within 6 months/or before construction phase begins
 - o M - Medium – Work to be carried out in 12 months
 - o L - Low – After consideration/Re-inspect in 18-24 months
 - o Blank – No work required.

- **RPR – Root protection radius / RPA - Root Protection Area** - Is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority. RPR is a circular area measured as a radius in metres from the centre of the tree or RPA is an area in metres squared. Where required this area may be changed in shape but not reduced in area whilst providing adequate protection of the tree’s rooting system.

10.0 Appendix 4 – An Introduction to Tree Protection

The purpose of this section is to give an introduction 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 brought 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 to.

10.0 Appendix 5 – Tree Photographs

Tree ID#H7



Tree ID#G1



Tree ID#H8 + H9



Tree ID#G6



Tree ID#H2, T2, T995



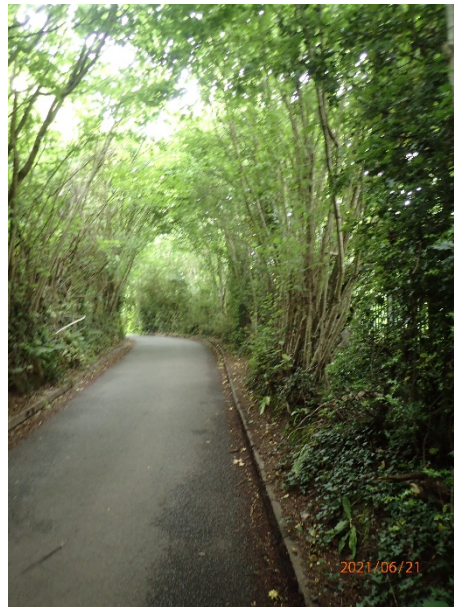
Tree ID#T998 + T999



Tree ID#H3



Tree ID#H10



Tree ID#H5, G2



Tree ID#W1



Tree ID#G3



10.0 Appendix 6 – Tree Impact Plan



- KEY**
BS 5837:2012 Tree Quality
(Individual Tree)
- Category A (High)
 - Category B (Moderate)
 - Category C (Low)
 - Category U (Poor)
 (*Unsuitable for retention*)
- Tree Key**
- Tree ID (Individual Tree, Tree Group, Tree Area, Woodland, Hedgerow)
 - Branch Spread (Measured on the ground, not the air)
 - Tree Species (Common Tree Name)
 - Tree ID (Individual Tree, Tree Group, Tree Area, Woodland, Hedgerow)
 - Foot Protection Area (FPA) (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.)
 - Shade Pattern - shade pattern not shown on plan (*Varies depending on height and crown spread of tree*)

Definitions of BS5837:2012 Categories for Trees, Woodlands and Hedgerows (Colour Coded):

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

B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years. (*Suitable for retention*)

C - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. (*Suitable for retention*)

U - Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. (*Unsuitable for retention*)

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).



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