cheshire woodlands
arboricultural consultancy

ARBORICULTURAL STATEMENT

ON

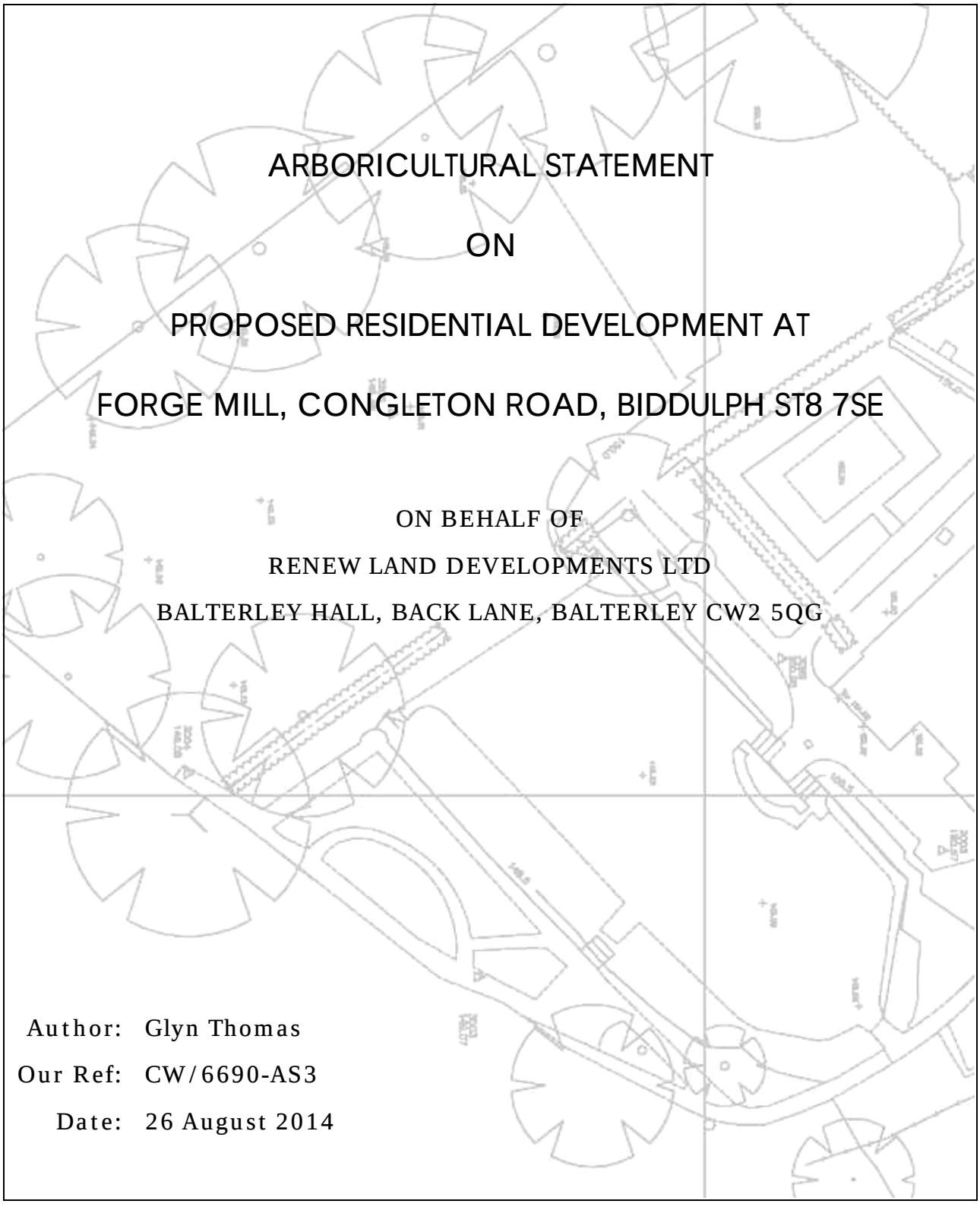
PROPOSED RESIDENTIAL DEVELOPMENT AT

FORGE MILL, CONGLETON ROAD, BIDDULPH ST8 7SE

ON BEHALF OF

RENEW LAND DEVELOPMENTS LTD

BALTERLEY HALL, BACK LANE, BALTERLEY CW2 5QG



Author: Glyn Thomas

Our Ref: CW/6690-AS3

Date: 26 August 2014

Partners: M. J. Ellison J. M. Ellison G. Thomas **Address:** 9 Lowe Street, Macclesfield, Cheshire, SK11 7NJ
T. +44(0)1625 669668 **F.** +44(0)1625 669355 **E.** info@cheshire-woodlands.co.uk **W.** www.cheshire-woodlands.co.uk

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1. EXECUTIVE SUMMARY

1.1 The former Forge Colour Works has been demolished in recent years and it is proposed that nineteen dwellings be constructed on the site.

1.2 The current development layout has been informed by a previous planning refusal and by the detailed comments of the Council's arboricultural officer on the refused scheme.

1.3 Trees on and adjacent to the site have been assessed and the current proposals evaluated in accordance with current best practice guidance.

1.4 Remediation of contaminated ground associated with the former industrial use will be necessary to render the site suitable for residential use and requires the removal of several trees.

1.5 The removal of further trees to accommodate the development proposal will have a short-term impact on amenity, which should be viewed in the context of the proposed ecological and landscape mitigation works and balanced with the wider social, environmental and economic benefits of the scheme as a whole.

1.6 All trees and hedges proposed for retention can be protected for the duration of site construction works in accordance with current best practice.

1.7 Some development is proposed within the root protection areas of retained boundary trees, but due to the long-standing presence of hardstanding and contaminated made ground in these areas, the impact on the trees is likely to be of a minor and insignificant nature.

2. TERMS OF REFERENCE

2.1 Instruction

2.1.1 Cheshire Woodlands is instructed by Renew Land Developments Ltd to:

- Survey and prepare a schedule of trees to comply with the general requirements of British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BS5837)
- Annotate a topographical land survey drawing and produce a Tree Constraints Plan
- Appraise a development proposal in relation to trees and produce an arboricultural statement

2.1.2 The following documents have been considered in our evaluation:

- Topographical survey drawing ref. RL008/T00
- Site layout drawing ref. 1844 -115 Revision J
- Phase II Ground Investigation report ref. 323.05 version 2
- Planning refusal notice ref. 13/00500/FUL_MJ
- Internal memorandum ref. SM/5110/BU.5

2.2 Limitations

2.2.1 Assessing the potential effects of trees upon load-bearing soils beneath existing and proposed structures is not considered in this report.

2.2.2 The tree survey is carried out in sufficient detail to gather data for and inform the current project. Our appraisal of the mechanical integrity of trees on the site is of a preliminary nature and sufficient only to inform the project. The assessment of trees is carried out from ground level without invasive investigation and the disclosure of hidden defects cannot therefore be expected.

2.2.3 Our assessment was restricted where trees were ivy clad, located wholly or partially on neighbouring land or where basal growth or other vegetation obscured lower stems and root collars. Where a more detailed assessment is required in this regard, our recommendations are set out in the survey schedule at appendix 1.

2.2.4 This report and associated documents remain the copyright of Cheshire Woodlands and there should be no transfer of rights to any third party without our express written consent.

3. INTRODUCTION

3.1 This assessment evaluates the effects of the current application proposal upon trees. The comparative values of trees are considered broadly in line with the guidance of BS5837 and retention, protection and management of trees are informed by this evaluation.

3.2 Glyn Thomas, senior consultant with Cheshire Woodlands Ltd assessed the trees and the development proposal. The tree survey was carried out on 4 October 2012.

3.3 Remediation of contaminated ground and construction of nineteen new dwellings and associated infrastructure is proposed as set out on the planning application drawings.

3.4 A previous planning application for twenty-six dwellings (local planning authority [LPA] reference 13/00500/FUL_MJ) was refused on 20 September 2013. Reason 7 in the decision notice deals with impacts on trees, and is expanded in an internal planning memorandum from the council's arboricultural officer dated 13 September 2013. The refused scheme has been substantially modified to address the council's objections to the

previous layout and the tree officer's specific comments in relation to impacts on trees.

4. THE SITE

4.1 The site comprises cleared ground, hardstanding and remnant boundary vegetation associated with the former Forge Colour Works and is bounded by Congleton Road (A527) to the west and by mature broadleaf woodland, open agricultural land and residential properties to the other three sides. Biddulph Brook and one of its tributaries extend along the northern and north western boundaries.

4.2 A ground investigation report submitted with the planning application outlines the history of the site and identifies the approximate locations of former buildings, roadways, ponds and settling tanks.

4.3 Made ground in the areas identified by red diagonal hatching on the tree removals plan at appendix 2 is contaminated with dye pigments, high concentrations of chromium, lead and cyanide and asbestos sheeting fragments, which require remediation. Excavation of grossly contaminated soils and installation of a barrier layer will be necessary to render the site suitable for residential use.

4.4 The British Geological Survey - Geology of Britain Viewer identifies the site as lying on an interface of 'Alluvium – Clay, Silt, Sand and Gravel' associated with Biddulph Brook, and 'Till, Devensian – Diamicton'. The ground investigation report identifies natural sand and clay with made ground in three main areas; a former pond and settling tanks and to the rear of the retaining wall alongside Biddulph Brook.

5. STATUTORY TREE PROTECTION

5.1 The Council's Arboricultural Officer has provided us with copies of the maps and first schedules of two tree preservation orders (TPO), The Staffordshire Moorlands District Council TPO No. S.M.118 (1994) (Fold Lane, Biddulph) and The Biddulph Urban District Council TPO (1971). Both orders are referenced in the 'comments' column of our tree survey schedule. The site is not in a conservation area. (See appendix 5 for further guidance).

6. SURVEY METHODOLOGY

6.1 The topographical land survey and the site layout proposal drawings are the base for our tree removals and tree protection plans at appendices 2 and 3.

6.2 The trees were identified, measured and recorded in the tree survey schedule. Tree stem diameters and canopy spreads were mostly measured using a tape, tree heights using a tape and clinometer.

6.3 All surveyed trees were assessed for 'Visual Prominence' and were categorised as set out in Table 1 below (see appendix 4 for further guidance).

6.4 A brief assessment for obvious signs of wildlife habitat in trees and hedges on the site was carried out during our survey. Any potential habitats of note will be included in the survey schedule.

7. EVALUATION OF THE TREES

7.1 BS5837 recommends that trees be evaluated and categorised as set out in Table 1, which also provides a summary of the impact of the current application proposal on trees.

	To be retained and protected or located off-site and unaffected by development	To be removed for development	To be removed to enable remediation of contaminated ground
Category A High quality with life expectancy of at least 40 years	Groups G2 and G6, and the eastern section of area A1	The southern and western sections of area A1	None
Category B Moderate quality with life expectancy of at least 20 years	The northern half of group G7, the western section of group G4, and the northern and western sections of area A2	Group G5, the northern section of group G3 and the southern half of group G7	Trees T3 and T4, the eastern section of group G4, and the southern sections of group G3 and area A2
Category C Low quality with life expectancy of at least 10 years, or small young trees	Trees T1 and T2 and group G1	None	None
Category U Cannot be retained in context of current land-use for longer than 10 years	None	None	None
Hedges	H1 and H3	None	H2

Table 1

7.2 The previously refused scheme has been substantially modified to take account of the council's reasons for refusal and the specific comments of their arboricultural officer. The southernmost dwelling has been omitted to provide for the retention of the protected 'high value' A category group G6; the layout in the north east corner of the site has been amended to ensure

retention of the protected woodland A1 up to the existing retaining structures; re-alignment of the new roadway has created additional space for new boundary landscaping fronting Congleton Road.

7.3 Removal of trees T3 and T4, the eastern half of group G4, the southern sections of group G3 and area A2 is required to facilitate the contaminated ground remediation works. These works will be necessary in any event, irrespective of any development of the site and will provide significant long-term environmental benefits.

7.4 The proposed removal of the non-native Leyland cypress hedge H2 and replacement with new boundary landscaping more in keeping with the character of the surrounding area, offers significant long-term amenity benefits and is supported by the council's arboricultural officer.

7.5 The removal of several 'high' and 'moderate' value A and B category trees in groups G3, G5, G6 and G7 and at the western end of area A1 will be necessary to accommodate the development and should be considered in the context of, and balanced with the wider social, environmental and economic benefits of the scheme as a whole, the proposed ecological enhancements identified by the project ecologist and the levels of mitigation that can be achieved by management and enhancement of the retained boundary vegetation and the provision of new trees and landscaping.

7.6 There is construction work proposed within the root protection areas of several retained trees, but in all cases the affected areas of ground either comprise contaminated fill material on the site of a former pond, or are occupied by hardstanding associated with the former mill.

7.7 All trees proposed for retention can be retained and protected for the duration of construction works in accordance with current best practice as set out in BS5837 and as further detailed on the tree protection plan at

appendix 3. Where appropriate, root protection areas have been modified to take account of the presence of adjacent existing and former hardstanding which are likely to have restricted root growth and encouraged non-symmetrical root distributions.

7.8 As a precautionary measure, we suggest that any excavation of ground within the area identified by cross-hatching on the tree protection plan, either as part of the ground remediation works, or to accommodate the proposed roadway, should be supervised by a competent arboriculturist.

8. CONCLUSIONS

8.1 The current development layout has been informed by a previous planning refusal and by the detailed comments of the council's arboricultural officer on the refused scheme. The proposal has been modified to retain an area of woodland in the north east corner of the site, a group of protected trees in the south east corner, and to increase space for new boundary landscaping along Congleton Road.

8.2 Removal of several trees is required, irrespective of the development proposal, to enable remediation of areas of contaminated ground associated with a former pond and settling tanks.

8.3 The proposed removal of further 'moderate' and 'high value' trees to accommodate the development should be weighed against the wider social, environmental and economic benefits of the scheme as a whole.

8.4 All trees and hedges proposed for retention can be protected for the duration of site construction works in accordance with current best practice guidance and as detailed on the tree protection plan. As a precautionary measure, we suggest that excavation of made ground alongside retained group G2 be supervised by a competent arboriculturist.

9. RECOMMENDATIONS

9.1 No tree pruning or removal works should commence on site until necessary consents have been obtained from the local planning authority, either in respect of tree preservation orders or as part of a detailed planning permission.

9.2 All tree and hedge removal and pruning works should be implemented in accordance with tree survey schedule at appendix 1 and tree removals drawing at appendix 2, prior to commencement of any construction activity. All such works should be carried out in accordance with the requirements of British Standard 3998.

9.3 Statutory protection of wildlife should be taken into account in the planning and execution of tree pruning and removal. See appendix 5 for further guidance.

9.4 Construction exclusion zones around retained trees and hedges should be achieved by the erection of tree protection barriers as detailed on the tree protection plan at appendix 3.

9.5 Excavation of ground within the area identified by cross-hatching on the tree protection plan should be supervised by a competent arboriculturist.

9.6 There should be no excavation for new or replacement underground services within any area designated as a construction exclusion zone on the tree protection plan.

9.7 Foundation design should take into consideration the juxtaposition of existing and proposed trees and the nature of the load-bearing soils.

9.8 Management of retained trees and landscaping of the site should be implemented in accordance with a scheme of works to be agreed with the LPA.

10. REFERENCES.

Anon. Retrieved 2010-12-31. Geology of Britain Viewer. British Geological Survey, Nottingham. http://maps.bgs.ac.uk (accessed 25 April 2013)

BS5837:2012. Trees in relation to design, demolition and construction - Recommendations. British Standards Institute, London.

BS3998: 2010. Tree work - Recommendations. British Standards Institute, London.

APPENDIX 1

TREE SURVEY SCHEDULE

PROJECT: FORGE MILL, CONGLETON ROAD, BIDDULPH
CLIENT: RENEW LAND DEVELOPMENTS LIMITED
REF: CW/6690/SS3
DATE: 04 OCTOBER 2012

SURVEYED BY: G THOMAS
CHESHIRE WOODLANDS
PAGE: 1

No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual prominence	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
T1	Common alder *(Alnus glutinosa)*	Y	5	4	80	G	• Located off site • Recently pruned to remove or shorten low branches up to a height of 1.8 metres		3	C	C	0.9
T2	Ash *(Fraxinus excelsior)*	Y	6	6	1 X 60 1 X 80 1 X 50 1 X 90 1 X 100	G	• Located off-site • Growing abutting the side elevation of a disused single storey building, most probably recent natural colonisation		2	C	C	2.1
T3	Silver birch *(Betula pendula)*	M	18	9.5	380	G	• Recent disturbance of ground within the primary root zone on the south side, which extends almost up to the base of the stem • Clear stem to a height of 3.0 metres save for a minor low first order branch and general ground clearance of around 3.0 metres	• Fell to enable contaminated ground remediation works • Grind stump to a depth of 0.3 metres	3	B	U	N/A
T4	Common alder	SM	16	8	250	G	• Recent disturbance of ground within the primary root zone, which extends up to and around the base of the stem • Clear stem to a height of 4.5 metres save for a single minor low lateral branch	• Fell to enable contaminated ground remediation works • Grind stump to a depth of 0.3 metres	3	B	U	N/A

Inspection was restricted where trees were ivy clad or located on neighbouring land or where basal growth or other vegetation obscured lower stems and root collars
All trees should be re-assessed at appropriate intervals to assess their mechanical integrity unless otherwise stated in the schedule

HEADINGS & ABBREVIATIONS

Age Range: Y = Young, SM = Semi mature, EM = Early mature, M = Mature, PM = Post Mature.
Stem Dia. Stem diameter (measured at a height of approximately 1.5 metres) MS = multi-stemmed
Crown Spread: Maximum crown diameter
Vitality: D = Dead, MD = Moribund, P = Poor, M = Moderate, G = Good
Visual prominence: Broad indication of contribution to the landscape. 0 = none, 1=very low up to 5 =very high, G= contribution to a wider group. Values take into consideration the potential contribution to the landscape. Our assessment of public visibility is influenced by safe life expectancy of the tree or group
Retention Value Existing: Broadly in line with BS5837 (2012) Table 1. Our valuation considers the merits of the tree or group in the context of the existing land-use
Retention Value Proposed: Broadly in line with BS5837 (2012) chapter Table 1. Our valuation considers the merits of the tree or group in the context of a development proposal. U = Unsuitable for retention
BS5837 RPA Radius: Radius from the centre of the stem to the line of tree protection as set out in BS5837:2012

TREE SURVEY SCHEDULE

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No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual prominence	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
G1	Silver birch Goat willow *(Salix caprea)* Common alder Ash	Y	≤6	≤4 (EST)	≤120 (EST)	G	• Located off-site • Closely spaced group, most probably young natural colonisation • Would benefit from re-spacing		3	C	C	≤1.5 (EST)
G2	3 Scots pine *(Pinus sylvestris)*	M	≤18	≤10	400-675	M-G	• Closely spaced linear group of boundary trees growing on a raised boundary embankment • The two northernmost trees are colonised by dead and live ivy • Restricted access and not assessed in detail • **Trees T38 to T40 of the 1971 TPO**	• Retain and protect • Sever and remove ivy to a height of 3.0 metres from the two northernmost trees and re-assess	4	A	A	4.8 – 8.1
G3	Goat willow Silver birch Elder *(Sambucus nigra)* Sycamore *(Acer pseudoplatanus)*	Y-EM Y-EM Y	≤15	≤10	≤400	G	• Closely spaced linear group of boundary trees, most probably natural colonisation • Would benefit from re-spacing to favour long term retention of the birch • Several trees to the eastern edge have been affected by recent site clearance works	• Remove southern section to enable contaminated ground remediation works • Remove northern section for development • Grind stumps to a depth of 0.3 metres • Replace with new boundary landscaping	4	B	U	N/A
G4	Silver birch Goat willow Holly *(Acer pseudoplatanus)* Alder *(Alnus glutinosa)* Sycamore *(Acer pseudoplatanus)* Elder Ash	SM Y-SM Y SM Y Y Y	≤15 (EST)	≤8 (EST)	≤300 (EST)	P-G	• Linear belt of individuals and locally dense groups of recent natural colonisation • Restricted access and individual trees not assessed in detail • The majority of the sycamore trees are extensively squirrel damaged • Would benefit from selective re-spacing • Several trees to the eastern edge have been affected by past site clearance works	• Remove trees to east side (as identified on the tree removals plan) to enable contaminated ground remediation works and grind stumps to a depth of 0.3 metres • Individual trees for removal to be agreed on site with the LPA's arboricultural officer and marked up by the project arboriculturist prior to commencement of development • Retain and protect trees to west side • Re-space and supplement with new boundary landscaping	4	B	B&U	≤3.6 (EST)

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PROJECT: FORGE MILL, CONGLETON ROAD, BIDDULPH
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CHESHIRE WOODLANDS
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No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual prominence	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
G5	Sycamore Goat willow Pine *(Pinus sp.)* Alder	Y SM-EM Y SM	≤17	≤8	≤280	D-G	• Closely spaced linear group • Mainly natural colonisation save for a small number of dead and suppressed pine trees • A goat willow to the southern edge has a wire fence ingrown to the stem • The majority of the sycamore trees are extensively squirrel damaged • A closely spaced group of alder at the eastern end could be re-spaced to favour long term retention of the best individual stems • Ground clearance on the south side down to 4.0 metres over the existing access roadway and could quite easily be raised to a height of at least 6.0 metres by removal of low quality trees and low lateral branches	• Fell for development • Grind stumps to a depth of 0.3 metres	3	B	U	N/A

TREE SURVEY SCHEDULE

PROJECT: FORGE MILL, CONGLETON ROAD, BIDDULPH
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No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual prominence	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
G6	Rowan *(Sorbus aucuparia)* Oak *(Quercus robur)* Sycamore Elm *(Ulmus sp)* Alder Hornbeam *(Carpinus betulus)* Scots Pine *(Pinus sylvestris)* Hawthorn *(Crataegus monogyna)* Holly *(Ilex aquifolium)*	Y Y-EM Y-SM Y-SM SM-PM Y-EM EM Y Y	≤16	≤12 (EST)	≤850	P-G	• Closely spaced linear group of boundary trees growing on a raised bank, retained along part of its length on the west side by a 1.2 metre high stone wall • Comprised several early-mature and mature sycamore, alder, hornbeam, pine and oak interspersed with young to semi-mature natural colonisation of mainly sycamore with holly, elm, hornbeam and alder • Several of the sycamore trees are extensively squirrel damaged • Would benefit from re-spacing to favour long term retention of the best individual specimens • Several young sycamore trees to the western edge are growing atop and abutting the retaining wall and there is potential for future displacement of the wall by annual increment growth of the lower stems and buttress roots • Ground clearance on the west side down to 4.5 metres and could quite easily be raised to a height of at least 6.0 metres by selective removal of low quality trees and low lateral branches • Signs of recent pruning and felling works along the western edge, most probably in order to facilitate on-going site clearance works **G6/1 Sycamore.** • Reduced vitality with thinning of foliage and peripheral dieback of twigs and branches • **Several trees form part A11 of the 1971 TPO**	• Retain and protect • Re-space and supplement with new boundary landscaping • Individual trees for removal to be agreed on site with the LPA's arboricultural officer and marked up by the project arboriculturist prior to commencement of development • Prune on the west side by selective removal of low quality supressed trees and low lateral branches to obtain 6.0 metres ground clearance	2	A	A	≤10.2

TREE SURVEY SCHEDULE

PROJECT: FORGE MILL, CONGLETON ROAD, BIDDULPH
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CHESHIRE WOODLANDS
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No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual prominence	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
G7	Common oak Goat willow Common alder Silver birch Scots pine Alder	SM EM Y SM EM M	≤14	≤12 (EST)	≤MS 400/650	G	• Closely spaced linear group of boundary trees growing on a raised embankment, retained on its west side by a low stone wall • Would benefit from re-spacing • Two goat willow trees to the western edge are growing atop and abutting the wall and there is potential for future displacement of the structure by annular increment growth of the lower stems and root collars • Signs of recent pruning along the western edge, most probably to facilitate ongoing site clearance works	• Remove southern half for development (as identified on the tree removals plan) and grind stumps to a depth of 0.3 metres. Replace with new boundary landscaping • Retain and protect northern half • Prune on west side to reduce radial crown spread in line with existing low wall • Re-space and supplement with new boundary landscaping	2	B	B&U	≤9.0
A1	Goat willow Sycamore Silver birch Hawthorn Beech *(Fagus sylvatica)* Ash Cherry *(Prunus sp.)* Lombardy poplar *(Populus nigra 'Italica')* Common alder Hazel *(Corylus avellana)* Oak	Y-EM Y-EM Y-EM Y-EM Y SM SM-EM M EM EM M	≤20 (EST)	≤15 (EST)	≤750 (EST)	D-G	• Comprises occasional mature trees, which either pre-date or are contemporary with the recent industrial use, large areas of developing secondary woodland and recent locally dense natural colonisation • A small triangular shaped area of open ground to the western end • Restricted access and not assessed in detail • A closely spaced linear group of natural colonisation of sycamore, ash, goat willow and silver birch to the western edge could be removed to open up the area of open ground and would have no significant impact on the collective landscape value/visual qualities of the wider area of tree cover • Signs of recent badger activity • Opportunities for positive woodland management • Any future management should be informed by a detailed appraisal of the woodland and a detailed ecological assessment • **Part W1 of the 1994 TPO**	• Remove southern and western sections for development (as identified on the tree removals plan) and grind stumps to a depth of 0.3 metres • Individual trees for removal to be agreed on site with the LPA's arboricultural officer and marked up by the project arboriculturist prior to commencement of development • Retain and protect eastern section • Manage as an ecological area	3	A	A&U	≤9.0 (EST)

TREE SURVEY SCHEDULE

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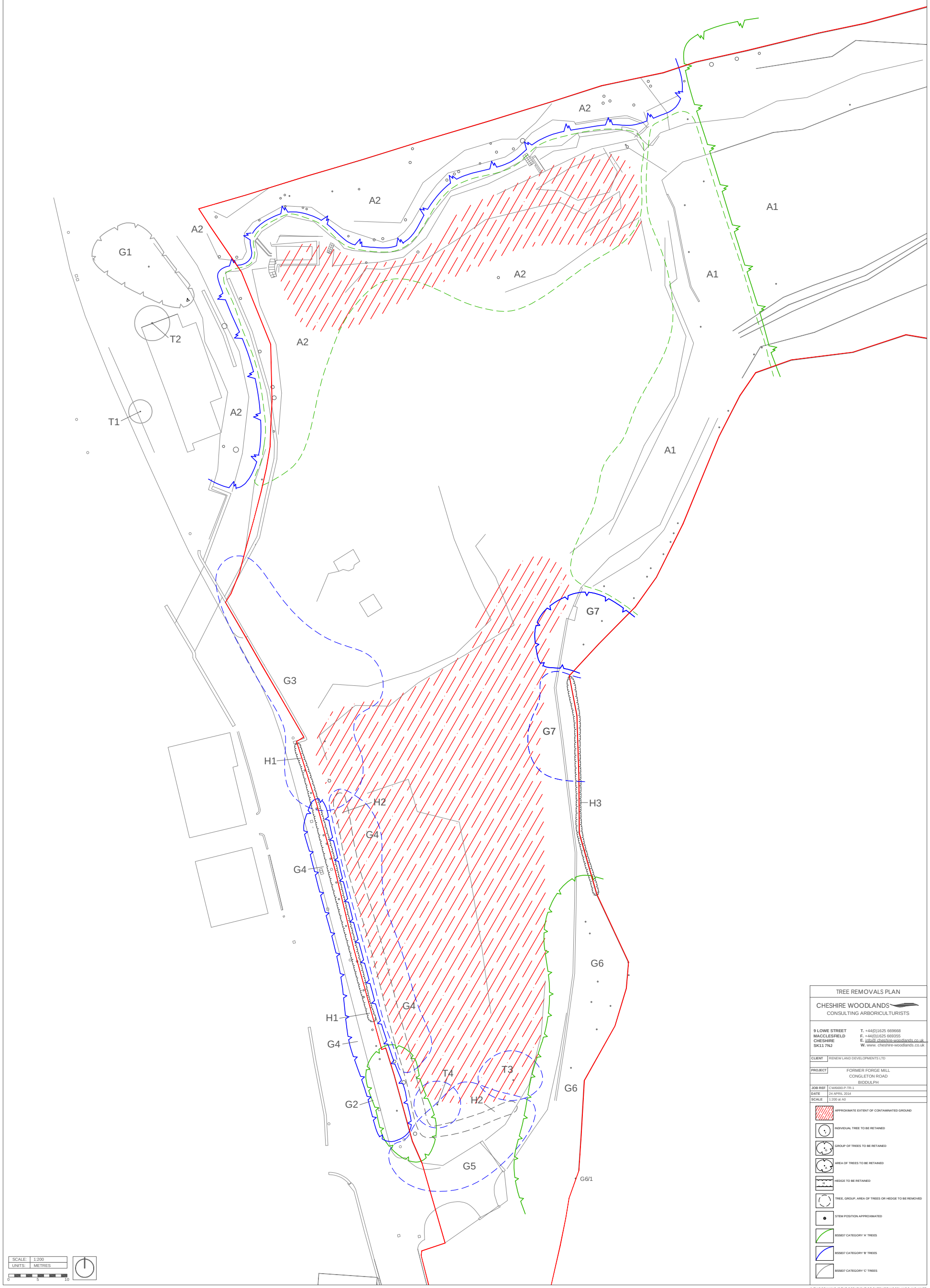
No.	Species	Age Range	Height (m)	Crown Spread (m)	Stem Dia. (mm)	Vitality	Comments	Management	Visual prominence	Retention Value Existing	Retention Value Proposed	BS5837 RPA Radius (m)
A2	Silver birch Ash Goat willow Common alder Willow *(Salix sp.)* Sycamore Hawthorn	Y-SM Y-SM Y-EM SM M SM-EM PM	≤18	≤15 (EST)	≤650 (EST)	D-G	• An area of previously re-modelled/disturbed ground, which has become colonised in recent years with mainly goat willow, ash, sycamore and silver birch • Growing on an area of ground to the south and east sides of a river, save for a multi-stemmed sycamore tree at the southern end, which is growing out of the western bank • Restricted access and individual trees not assess in detail • Could be managed as an area of developing riparian woodland • **Trees at the western end to the west side of the river form part area A9 of the 1971 TPO**	• Remove southern section to south and east side of river (as identified on the tree removals plan) to enable contaminated ground remediation works • Grind stumps to a depth of 0.3 metres • Retain and protect remainder (to north and west side of river) • Re-space and supplement with new boundary landscaping	3	B	B&U	≤7.8 (EST)
H1	Hawthorn Elder	-	≤8	-	-	M	• Length of overgrown boundary hedge • Substantially unmanaged in recent years save for minor pruning over the public footway • Colonised in places by dense ivy • Would benefit from management	• Retain and protect • Enhance by removal of ivy, pruning or laying and gapping-up • Extend to south along length of application site boundary	3	-	-	-
H2	Leyland cypress	-	≤15	-	-	M-G	• Unmanaged boundary hedge, • Not in keeping with the landscape character of the surrounding area • Removal and replacement with new boundary landscaping would provide long-term amenity benefits • Signs of past co-dominant and primary branch failures	• Remove to enable contaminated ground remediation works • Grind stumps to a depth of 0.3 metres	3	-	-	-
H3	Hawthorn	-	≤6	-	-	M	• Short length of boundary hedge bordering adjacent agricultural land • Growing on raised ground, retained on the west side by a 1.2 to 1.6 metre high stone wall • Would benefit from management	• Retain and protect	1	-	-	-

APPENDIX 2

TREE REMOVALS PLAN



TREE REMOVALS PLAN

CHESHIRE WOODLANDS
CONSULTING ARBORICULTURISTS

9 LOWE STREET
MACCLESFIELD
CHESHIRE
SK11 7NJ

T. +44(0)1625 669668
F. +44(0)1625 669355
E. info@ cheshire-woodlands.co.uk
W. www. cheshire-woodlands.co.uk

CLIENT	RENEW LAND DEVELOPMENTS LTD
PROJECT	FORMER FORGE MILL CONGLETON ROAD BIDDULPH
JOB REF	CW/6690-P-TR-1
DATE	24 APRIL 2014
SCALE	1:200 at A0

- APPROXIMATE EXTENT OF CONTAMINATED GROUND
- INDIVIDUAL TREE TO BE RETAINED
- GROUP OF TREES TO BE RETAINED
- AREA OF TREES TO BE RETAINED
- HEDGE TO BE RETAINED
- TREE, GROUP, AREA OF TREES OR HEDGE TO BE REMOVED
- STEM POSITION APPROXIMATED
- BS5837 CATEGORY 'A' TREES
- BS5837 CATEGORY 'B' TREES
- BS5837 CATEGORY 'C' TREES

APPENDIX 3

TREE PROTECTION PLAN

TREE PROTECTION SPECIFICATION

Construction Exclusion Zones shall: -

1. be secured prior to commencement of any construction works, delivery of site accommodation or materials and shall remain intact for the duration of construction works
2. preclude all construction activity with the sole exception of specified arboricultural works and such works as have been agreed by all parties and to be carried out under supervision
3. be protected by 'tree protection barriers' as specified on this drawing
4. preclude the storage or tipping of all materials and substances

Toxic substances such as fuels, oils, additives and cement shall not be stored within 5.0 metre of any area designated as a 'construction exclusion zone' on this drawing

Any incursion into 'construction exclusion zones' must be by prior arrangement, following consultation with the LPA

Type 1 Tree Protection Barriers (between points B & C and F & G on this drawing)

1. The 'tree protection barriers' shall comprise 2.0m high weldmesh 'Heras' type fencing
2. The fencing panels shall butt together and be securely fixed to a timber framework comprising 2.7m x 100 mm x 100mm timber posts, set or concreted into 0.6m deep, 150 mm diameter augured holes at 3.5m centres
3. No fixing shall be made to any tree and every possible precaution shall be taken to prevent damage to tree roots when locating posts
4. A 600mm x 300mm warning sign reading as per figure 1 shall be fixed to every 10.0m of 'tree protection barrier'
5. The 'project arboriculturist' shall direct erection of 'tree protection barriers'

Type 2 Tree Protection Barriers (between points A & B and D & E on this drawing)

1. The 'tree protection barriers' shall comprise 2.4m high, 1.2m wide, 18mm thick exterior grade softwood plywood boards (or oriental strand board)
2. A timber framework shall be constructed comprising 3.0m long by 100mm by 100mm timber posts, concreted into 0.6m deep, 200mm diameter augured holes at maximum 3.6m centres. Two horizontal cross rails 100mm x 50mm shall be securely fixed to each upright at 0.5m and 1.9m above ground level
3. The fencing boards shall butt together and shall be securely fixed to the timber framework
4. No fixing shall be made to any tree and every possible precaution shall be taken to prevent damage to tree roots when locating posts
5. A 600mm x 300mm warning sign reading as per figure 1 shall be fixed to every 10.0m of 'tree protection barrier'
6. The 'project arboriculturist' shall direct erection of 'tree protection barriers'

Fig 1

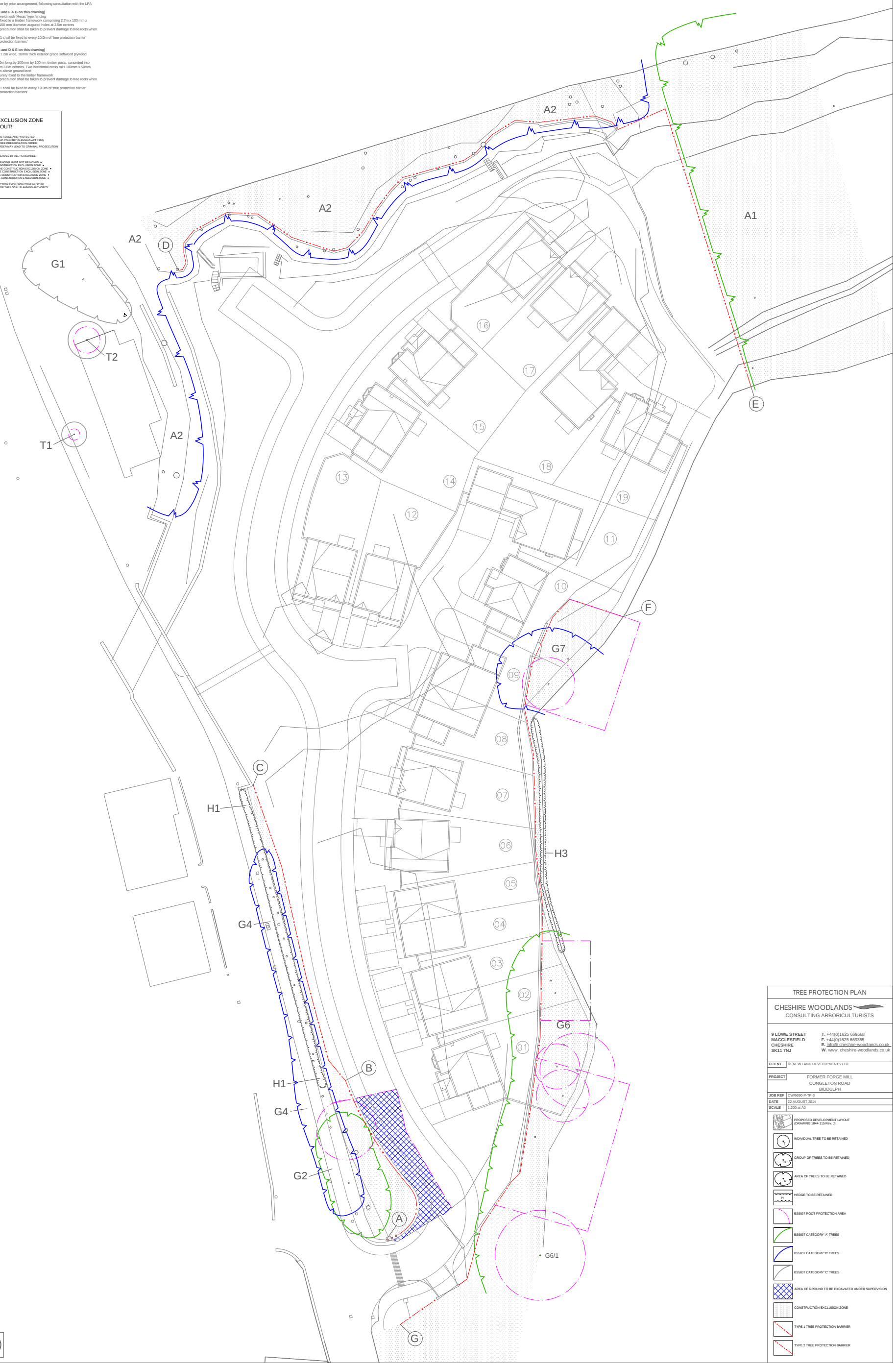
CONSTRUCTION EXCLUSION ZONE
KEEP OUT!

ALL TREES ENCLOSED BY THIS FENCE ARE PROTECTED
BY PLANNING CONDITIONS (TOWN AND COUNTRY PLANNING ACT 1990)
AND ARE THE SUBJECTS OF A TREE PRASERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION

THE FOLLOWING MUST BE OBSERVED BY ALL PERSONNEL:

- THE TEMPORARY PROTECTIVE FENCING MUST NOT BE MOVED
- NO PERSON SHALL ENTER THE CONSTRUCTION EXCLUSION ZONE
- NO MACHINE OR PLANT SHALL ENTER THE CONSTRUCTION EXCLUSION ZONE
- NO MATERIAL SHALL BE STORED IN THE CONSTRUCTION EXCLUSION ZONE
- NO SPOIL SHALL BE DEPOSITED IN THE CONSTRUCTION EXCLUSION ZONE
- NO EXCAVATION SHALL OCCUR IN THE CONSTRUCTION EXCLUSION ZONE

ANY INCURSION INTO THE CONSTRUCTION EXCLUSION ZONE MUST BE
WITH THE PRIOR WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY



SCALE: 1:200
UNITS: METRES
0 5 10

TREE PROTECTION PLAN

CHESHIRE WOODLANDS
CONSULTING ARBORICULTURISTS

9 LOWE STREET
MACCLESFIELD
CHESHIRE
SK11 7NJ

T. +44(0)1625 669668
F. +44(0)1625 669355
E. info@ cheshire-woodlands.co.uk
W. www. cheshire-woodlands.co.uk

CLIENT	RENEW LAND DEVELOPMENTS LTD
PROJECT	FORMER FORGE MILL CONGLETON ROAD BIDDULPH
JOB REF	CW/6690-P-TP-3
DATE	22 AUGUST 2014
SCALE	1:200 at A0

- PROPOSED DEVELOPMENT LAYOUT (DRAWING 1844-115 Rev. J)
- INDIVIDUAL TREE TO BE RETAINED
- GROUP OF TREES TO BE RETAINED
- AREA OF TREES TO BE RETAINED
- HEDGE TO BE RETAINED
- BS5837 ROOT PROTECTION AREA
- BS5837 CATEGORY 'A' TREES
- BS5837 CATEGORY 'B' TREES
- BS5837 CATEGORY 'C' TREES
- AREA OF GROUND TO BE EXCAVATED UNDER SUPERVISION
- CONSTRUCTION EXCLUSION ZONE
- TYPE 1 TREE PROTECTION BARRIER
- TYPE 2 TREE PROTECTION BARRIER

APPENDIX 4

Guidance Note - Assessment of Visual Prominence and Assessment of Retention Values

Visual Prominence Values

Determined by assessment of current and potential visual prominence and taking account of location, tree size, growth potential and useful life expectancy. Visual prominence values are classified as follows:

(0) none, (1) very low up to (5) very high

Retention Values

Trees or groups of trees are evaluated twice in order to facilitate consideration of their relative merits. Firstly, the trees are assessed and categorised in the context of the pre-development situation to provide a broad valuation of all of their attributes and the contribution to their environs. Secondly, the trees are similarly assessed and categorised in the context of a development proposal. The evaluations consider current or projected:

- life expectancy (broad categorisation)
- visual prominence (current and potential)
- landscape function
- numbers of other trees and their maturity (continuity for landscape, amenity, habitat)
- wildlife habitats (incl. continuity)
- safety
- conflicts with the built environment or other land-use
- cultural, historical or other special value

Groups of trees are assessed and categorised as a single unit.

Pre-Development Retention Value

Each surveyed tree or group of trees is valued and placed into one of the following categories (A, B, C or U). The valuation considers the benefits and disbenefits of retaining the tree or group of trees in the pre-development context; any specific issues are noted in the tree survey schedule.

(A) Trees the retention of which in the pre-development context is most desirable and that have an estimated remaining life expectancy of at least 40 years (high value category)

Wholly appropriate to the pre-development situation and without significant conflict

(B) Trees the retention of which in the pre-development context is desirable and that have an estimated remaining life expectancy of at least 20 years (moderate value category)

Appropriate to the pre-development situation but not of highest value

(C) Trees that could be retained in the pre-development context and have an estimated remaining life expectancy of at least 10 years (low value category)

Ill-suited to the pre-development situation but could be retained with moderate conflicts

Trees of no particular merit in the pre-development context

(U) Trees unsuitable for retention in the pre-development context

Cannot reasonably be retained within the pre-development situation for longer than 10 years

Post-Development Retention Value

With reference to a development proposal, each of the trees or groups of trees is placed in one of the following categories (A, B, C or U). The valuation considers the benefits and disbenefits of retaining the tree or group of trees in the context of the development proposal; any specific issues are noted in the tree survey schedule.

(A) Trees the retention of which is most desirable (high value category)

Retention wholly appropriate to the proposed situation and without significant conflict

(B) Trees the retention of which is desirable (moderate category)

Retention appropriate to the proposed situation but not of highest value and/or having only minor conflicts

(C) Trees which could be retained (low value category)

Retention ill-suited to the proposed situation but could be retained with moderate conflicts

Trees of no particular merit in the proposed situation

(U) Trees for removal

Cannot reasonably be retained within the proposed situation

APPENDIX 5

GUIDANCE NOTE- STATUTORY CONTROLS

TREES AND HEDGES:

Subject to certain specified exemptions, the Town and Country Planning Act 1990, requires that an application must be made to the local planning authority (LPA), to carry out works upon or remove trees that are subject to a tree preservation order (TPO).

Six weeks' notice must be given to the LPA of intention to carry out works upon or remove trees within a conservation area and not protected by a TPO.

Local planning authority consent may be required to carry out works upon or remove trees, shrubs and hedges that are the subjects of planning conditions.

LPA consent may be required for the removal of hedgerows under the Hedgerow Regulations 1997.

Your Council's planning department will advise whether or not any of the above controls apply to your trees, shrubs and hedges.

Subject to certain exemptions, the Forestry Act (1967 specified) requires that a licence must be obtained for the felling of growing trees

Your nearest Forestry Commission office will advise whether you require a felling licence.

WILDLIFE

The Wildlife and Countryside Act 1981 (together with the amendments of 1985 & 1991, the subsequent variations to the schedule orders, and strengthening amendments made within the Countryside and Rights of Way Act 2000) forms the basis for legislation protecting Britain's flora and fauna.

Nesting birds and all species of bat are afforded statutory protection. It is an offence to:

- disturb a nesting bird
- disturb a roosting bat or damage, destroy or block access to a bat roost
- intentionally kill, injure or take a bat
- sell, hire, barter or exchange a bat, dead or alive
- be in possession or control of a bat or anything derived from a bat

Your local Wildlife Trust or your Council's Ecologist will provide guidance on statutory controls relating to wildlife.

APPENDIX 6

GLOSSARY OF ARBORICULTURAL TERMS

Abscission. The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way

Abiotic. Pertaining to non-living agents; e.g. environmental factors

Absorptive roots. Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients

Adaptive growth. In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress

Adaptive roots. The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading

Adventitious shoots. Shoots that develop other than from apical, axillary or dormant buds; see also 'epicormic'

Anchorage. The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree

Architecture. In a tree, a term describing the pattern of branching of the crown or root system

Axil. The place where a bud is borne between a leaf and its parent shoot

Bacteria. Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms

Bark. A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm; occasionally applied only to the periderm or the phellem

Basidiomycotina (Basidiomycetes). One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like structures (basidia), which in many types are in turn borne on or within conspicuous fruit bodies, such as brackets or toadstools. Most of the principal decay fungi in standing trees are basidiomycetes

Bolling. A term sometimes used to describe pollard heads

Bottle-butt. A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay involving selective delignification

Bracing. The use of rods or cables to restrain the movement between parts of a tree

Branch:

- Primary. A first order branch arising from a stem
- Lateral. A second order branch, subordinate to a primary branch or stem and bearing sub-lateral branches
- Sub-lateral. A third order branch, subordinate to a lateral or primary branch, or stem and usually bearing only twigs

Branch bark ridge. The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem

Branch collar. A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base

Brown-rot. A type of wood decay in which cellulose is degraded, while lignin is only modified

Buckling. An irreversible deformation of a structure subjected to a bending load

Buttress zone. The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions

Cambium. Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally

Canker. A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria

Canopy species. Tree species that mature to form a closed woodland canopy

Cleaning out. The removal of dead, crossing, weak, and damaged branches, where this will not damage or spoil the overall appearance of the tree

Compartmentalization. The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and / or active defences operating at the boundaries of the affected region

Compression fork. An acute angled fork that is mechanically optimised for the growth pressure that two or more adjacent stems exert on each other

Compression strength. The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees with special drilling devices

Compressive loading. Mechanical loading which exerts a positive pressure; the opposite to tensile loading

Condition. An indication of the physiological condition of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree

Construction exclusion zone. Area based on the Root Protection Area (in square metres) to be protected during development, by the use of barriers and / or ground protection

Crown/Canopy. The main foliage bearing section of the tree

Crown lifting. The removal of limbs and small branches to a specified height above ground level

Crown thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure

Crown reduction/shaping. A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape

Crown reduction/thinning. Reduction of the canopy volume by thinning to remove dominant branches whilst preserving, as far as possible the natural tree shape

Deadwood. Dead branch wood

Decurrent. In trees, a system of branching in which the crown is borne on a number of major widely-spreading limbs of similar size (cf. excurrent). In fungi with toadstools as fruit bodies, the description of gills which run some distance down the stem, rather than terminating abruptly

Defect. In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment

Delamination. The separation of wood layers along their length, visible as longitudinal splitting

Dieback. The death of parts of a woody plant, starting at shoot-tips or root-tips

Disease. A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms

Distal. In the direction away from the main body of a tree or subject organism (cf. proximal)

Dominance. In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours

Dormant bud. An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so

Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood

DBH (Diameter at Breast Height). Stem diameter measured at a height of 1.5 metres (UK) or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified

Deadwood. Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

Endophytes. Micro-organisms which live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed, for example by lack of moisture

Epicormic shoot. A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot

Excrescence. Any abnormal outgrowth on the surface of tree or other organism

Excurrent. In trees, a system of branching in which there is a well defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (cf. decurrent)

Fastigiate. Having upright, often clustered branches

Felling licence. In the UK, a permit to fell trees in excess of a stipulated number of stems or volume of timber

Field layer. Herbs, ferns, grasses and sedges

Flush-cut. A pruning cut which removes part of the branch bark ridge and or branch-collar

Girdling root. A root which circles and constricts the stem or roots possibly causing death of phloem and / or cambial tissue

Ground layer. Mosses, ivy, lichens and fungi

Guying. A form of artificial support with cables for trees with a temporarily inadequate anchorage

Habit. The overall growth characteristics, shape of the tree and branch structure

Haloing. Removing or pruning trees from around the crown of another (usually mature or post-mature) tree to prevent it becoming supressed

Hazard beam. An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting

Heartwood/false-heartwood/ripewood. Sapwood that has become dysfunctional as part of the natural aging processes

Heave. A term mainly applicable to a shrinkable clay soil which expands due to re-wetting after the felling of a tree which was previously extracting moisture from the deeper layers; also the lifting of pavements and other structures by root diameter expansion; also the lifting of one side of a wind-rocked root-plate

High canopy tree species. Tree species having potential to contribute to the closed canopy of a mature woodland or forest

Incipient failure. In wood tissues, a mechanical failure which results only in deformation or cracking, and not in the fall or detachment of the affected part

Included bark (ingrown bark). Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact

Increment borer. A hollow auger, which can be used for the extraction of wood cores for counting or measuring wood increments or for inspecting the condition of the wood

Infection. The establishment of a parasitic micro-organism in the tissues of a tree or other organism

Internode. The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches

Lever arm. A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch

Lignin. The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification

Lions tailing. A term applied to a branch of a tree that has few if any side-branches except at its end, and is thus liable to snap due to end-loading

Loading. A mechanical term describing the force acting on a structure from a particular source; e.g. the weight of the structure itself or wind pressure

Longitudinal. Along the length (of a stem, root or branch)

Lopping. A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting

Mature Heights (approximate):

- Low maturing – less than 8 metres high
- Moderately high maturing – 8 – 12 metres high
- High maturing – greater than 12 metres high

Microdrill. An electronic rotating steel probe, which when inserted into woody tissue provides a measure of tissue density

Minor deadwood. Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree

Mulch. Material laid down over the rooting area of a tree or other plant to help conserve moisture; a mulch may consist of organic matter or a sheet of plastic or other artificial material

Mycelium. The body of a fungus, consisting of branched filaments (hyphae)

Occluding tissues. A general term for the roll of wood, cambium and bark that forms around a wound on a woody plant (cf. woundwood)

Occlusion. The process whereby a wound is progressively closed by the formation of new wood and bark around it

Pathogen. A micro-organism which causes disease in another organism

Photosynthesis. The process whereby plants use light energy to split hydrogen from water molecules, and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products

Phytotoxic. Toxic to plants

Pollarding. The removal of the tree canopy, back to the stem or primary branches, usually to a point just outside that of the previous cutting. Pollarding may involve the removal of the entire canopy in one operation, or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species

Primary branch. A major branch, generally having a basal diameter greater than 0.25 x stem diameter

Primary root zone. The soil volume most likely to contain roots that are critical to the health and stability of the tree and normally defined by reference BS5837 (2005) Guide for Trees in Relation to Construction.

Priority. Works may be prioritised, 1. = high, 5. = low

Probability. A statistical measure of the likelihood that a particular event might occur

Proximal. In the direction towards from the main body of a tree or other living organism (cf. distal)

Pruning. The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs

Radial. In the plane or direction of the radius of a circular object such as a tree stem

Rams-horn. In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in cross-section

Rays. Strips of radially elongated parenchyma cells within wood and bark. The functions of rays include food storage, radial translocation and contributing to the strength of wood

Reactive Growth/Reaction Wood. Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth)

Removal of dead wood. Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branchwood and broken snags

Removal of major dead wood. The removal of, dead, dying and diseased branchwood above a specified size

Respacing. Selective removal of trees from a group or woodland to provide space and resources for the development of retained trees.

Residual wall. The wall of non-decayed wood remaining following decay of internal stem, branch or root tissues

Rib. A ridge of wood that has usually developed because of locally increased mechanical loading. Often associated with internal cracking in the wood of the stem, branch or root.

Ring-barking (girdling). The removal of a ring of bark and phloem around the circumference of a stem or branch, normally resulting in an inability to transport photosynthetic assimilates below the area of damage. Almost inevitably results in the eventual death of the affected stem or branch above the damage

Root-collar. The transitional area between the stem / s and roots

Root-collar examination. Excavation of surfacing and soils around the root-collar to assess the structural integrity of roots and / or stem

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

Root protection area. An area of ground surrounding a tree that contains sufficient rooting volume to ensure the tree's survival. Calculated with reference to Table 2 of BS5837 (2005) and shown in plan form in square metres

Root zone. Area of soils containing absorptive roots of the tree/s described. The Primary root zone is that which we consider of primary importance to the physiological well-being of the tree

Sapwood. Living xylem tissues

Secondary branch. A branch, generally having a basal diameter of less than 0.25 x stem diameter

Selective delignification. A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose

Shedding. In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales

Silviculture. The practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values

Silvicultural thinning. Removal of selected trees to favour the development of retained specimens to achieve a management objective

Simultaneous white-rot. A kind of wood decay in which lignin and cellulose are degraded at about the same rate

Snag. In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point

Soft-rot. A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole

Spores. Propagules of fungi and many other life-forms; most spores are microscopic and dispersed in air or water

Shrub species. Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees

Sporophore. The spore bearing structure of fungi

Sprouts. Adventitious shoot growth erupting from beneath the bark

Stem/s. The main supporting structure/s, from ground level up to the first major division into branches

Stress. In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature

Stress. In mechanics, the application of a force to an object

Stringy white-rot. The kind of wood decay produced by selective delignification

Storm. A layer of tissue which supports the fruit bodies of some types of fungi, mainly ascomycetes

Structural roots. Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree

Subsidence. In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots

Subsidence. In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight

Taper. In stems and branches, the degree of change in girth along a given length

Target canker. A kind of perennial canker, containing concentric rings of dead occluding tissues

Targets. In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it

Topping. In arboriculture, the removal of the crown of a tree, or of a major proportion of it

Torsional stress. Mechanical stress applied by a twisting force

Translocation. In plant physiology, the movement of water and dissolved materials through the body of the plant

Transpiration. The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells

Tree Risk Assessment. An assessment and description of the risks and where appropriate the values associated with a tree or trees. The primary risk being considered is that from falling trees. Other risks, such as damage to infrastructure, interruption of service and building subsidence may also be considered.

- Walkover – A general view of the tree population considered in the context of the adjacent land-use to identify trees that present significantly elevated risks
- Drive-by - A general view of the tree population from a moving vehicle and considered in the context of the adjacent land-use to identify trees that present significantly elevated risks
- Individual – the assessment of risks from a single tree considered in the context of the adjacent land-use to identify trees that present significantly elevated risks

Understorey. This layer consists of younger individuals of the dominant trees, together with smaller trees and shrubs which are adapted to grow under lower light conditions

Understorey tree species. Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland

Vascular wilt. A type of plant disease in which water-conducting cells become dysfunctional

Vessels. Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees

Veteran tree. A loosely defined term for an old specimen that is of interest biologically, culturally or aesthetically because of its age, size or condition and which has usually lived longer than the typical upper age range for the species concerned

Vigour. The expression of carbohydrate expenditure to growth (in trees)

Vitality. A measure of physiological condition expressed through the health and growth of foliage, shoots and adaptive woody tissues.

Volunteer trees. Trees arising from natural colonisation rather than having been planted

White-rot. A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded

Wind exposure. The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity

Wind pressure. The force exerted by a wind on a particular object

Windthrow. The blowing over of a tree at its roots

Wound dressing. A general term for sealants and other materials used to cover wounds in the hope of protecting them against desiccation and infection; only of proven value against fresh wound parasites

Woundwood. Wood with atypical anatomical features, formed in the vicinity of a wound

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London