

ARBORICULTURAL IMPACT ASSESSMENT

Land south of Henfield
Road, Albourne

July 2022



Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Land south of Henfield Road, Albourne	
Project reference:	4991	
Site Address:	Henfield Road, Albourne, Hassocks	
Nearest Postcode:	BN6 9DH	
Central Grid reference:	TQ 26185 16622	
Local Planning Authority:	Mid Sussex District Council	
Relevant planning policies:	Mid Sussex District Plan 2014-2031: DP37 Trees, woodland and hedgerows; (Site-specific - DP9 Strategic allocation to the north and north-west of Burgess Hill).	
Statutory Controls:	Tree Preservation Order	Conservation Area
	None	No. The Albourne conservation area abuts the site boundary to the south-east and appears to only affect off-site trees T7, T8, G5 and G6.
Soil Type: (Source: BGS online soils map © NERC 2022)	Superficial/Drift	Bedrock
	Deep clay to clayey loam and deep-intermediate sand to sandy loam (south-east of site)	Weald Clay Formation mudstone and Lower Greensand Group - silty sandstone (south-east of site)
Topographical Survey:	4DD1-Henfield Road (PS)	
Site Layout	Sketch Site Layout plan 3117-C-1006-SK-H	
Notes:	Oak T10, ash T13 and willow T16 identified as ‘veteran’ trees. The area in which fruit trees G17 grow is listed as ‘traditional orchard’ priority habitat in the Traditional Orchards HAP Inventory 2020.	
Report author:	Ian Monger <i>MSc, BSc (Hons), TechCert (ArborA) MArborA</i>	
Date of issue:	21.07.2022 (Revision A - amended layout)	

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1. INTRODUCTION

- 1.1. I am Ian Monger, an arboriculturist with 17 years of experience, and a professional member of the Arboricultural Association.
- 1.2. Barton Hyett Associates Ltd have been instructed by Croudace Homes to survey trees located at Land south of Henfield Road, Albourne ('the site') in accordance with the recommendations of British Standard 5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.
- 1.3. The scope of the instruction was to inspect trees relevant to an Outline planning application at the site and provide written advice on how they inform feasibility and design options. The instruction also required an assessment of the potential impact (the Arboricultural Impact Assessment) of the proposed development on the site's arboricultural resource to be undertaken.

2. SITE DESCRIPTION

- 2.1. The site is two large arable fields and an orchard located in the west of the village of Albourne, located just off the A23 road three miles east of Henfield and in the Mid Sussex district of West Sussex.
- 2.2. The site borders Henfield Road to the north and Church Lane to the south. To the east of the site is Albourne Primary School and the gardens of residential properties. To the west and north-west of the site are adjoining fields.
- 2.3. The local landscape character is rural, with houses at the edges of the village visible to the east and south. The site has long distance views of the hills of the South Downs to the south.
- 2.4. The site has a gated agricultural access from Henfield Road in the north-east corner. Another gate within the site provides access into the orchard.
- 2.5. Public footpath 15-1A crosses the centre of the site from the village in an east-west direction between the two large fields. Public footpath 12-1A enters the site in the south-east corner from Church Lane and heads northwards close to the east site boundary until it meets footpath 15-1A. It appears that informal walking takes place around the edges of the fields.
- 2.6. The site slopes down towards the north and south from the highest point near to the west boundary, at about 40m AOD. The southern site boundary is a steep bank above Church Lane. A wet ditch flows along the northern boundary of the northern large field, between it and the orchard.

3. TREE SURVEY FINDINGS

- 3.1. A total of 65 trees, groups of trees and hedgerows were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (**Section 2**) and within the Tree Survey Schedule (**Section 3**).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	27	9	16	1	1
Groups	18	10	8	-	-
Hedgerows	19	-	17	2	-
Woodlands	1	1	-	-	-
Total	65	20	41	3	1

Table 1: Summary of arboricultural features of each BS5837 quality category

4. KEY ARBORICULTURAL FEATURES

- 4.1. There is no ancient woodland affecting the site.
- 4.2. English oak T10, common ash T13 and crack willow T16 have been assessed as being veteran trees using the characteristic features found on veteran trees (in para. 2.1.1 in Read, 2000 ¹). Oak T10 is also an ancient tree by virtue of its 7.4m trunk girth in accordance to Figure 1.3 in Lonsdale (2013)². The three trees have been assigned Category A3 and are of high arboricultural and conservation value.
- 4.3. Oak T10 is a very large tree growing off-site to the south of Church Lane. Its crown slightly overhangs the southern site boundary and it is a very dominant visual feature in southerly views from the site. The tree appears on the Ancient Tree Forum Ancient Tree Inventory as a 'veteran' tree. It has evidence of decay within its very large trunk.
- 4.4. Common ash T13 grows in the south-west corner of the site and is a lapsed coppice tree with 7 large stems. Decay of the original stump has left decay cavities at the bases of all but 3 of the stems. These cavities provide dry crevices with probable water pools. There is also deadwood within the crown.
- 4.5. Crack willow T16 grows on the west boundary close to the meeting point of the two large fields. The tree is partially collapsed due to decay and has with cracks/splits and basal cavities which provide dry crevices. The collapsed but attached live growth rests on ground to the east.
- 4.6. The Forestry Commission and Natural England Standing Sdvice 'Ancient woodland, ancient trees and veteran trees: protecting them from development' ('the Standing Advice') is a material planning consideration which is taken into account when making decisions on planning applications. In reaching a planning decision, the LPA should assess the potential impacts, and avoid, mitigate or compensate for identified impacts. A key method of mitigation is the use of a 'buffer zone'. So, in accordance with the

¹ Read, H. 2000. Veteran Trees: A guide to good management. London: English Nature.

² Lonsdale, D. (ed.) 2013. Ancient and other veteran trees: further guidance on management. London: The Tree Council

Standing Advice, additional veteran/ancient tree buffers with radii of 15 times the diameter of each veteran tree stem have been shown on the Tree Survey and Constraints Plan in **Section 2**.

- 4.7. The orchard in the north of the site includes semi-mature apple, domestic pear, plum, quince, walnut, sweet cherry; and mulberry trees within G17 (B3). This replanted orchard site is listed as 'traditional orchard' priority habitat within the Traditional Orchards Habitat Action Plan Inventory 2020. However, it is of note that the orchard is not shown as orchard on historic maps of the site. The present trees were presumably planted at the same time but have varied sizes due to different root stocks. The orchard appears to be under active management.

5. PROPOSED DEVELOPMENT

- 5.1. The development proposal is an Outline planning permission for the erection of up to 120 residential dwellings including 30% affordable housing, public open space and community facilities. The proposed site layout is shown on the Sketch Site Layout plan 3117-C-1006-SK-H.

6. IMPACT ASSESSMENT

Hedgerow sections to be removed

- 6.1. No trees are proposed to be removed. Two sections of hedgerow are proposed to be removed for the new site access road. These removals are shown on the Tree Retention and Removal Plan in **Section 3**.
- 6.2. An approximately 10m section of hedgerow H18 and in the region of 12-15m section of H17 (B2) require removal for the new access from Henfield Road. Both are managed agricultural hedgerows of low tree and shrub species diversity. The final specification for hedgerow section removals will depend on detailed design of the access road and can be assessed at the Reserved Matters stage. **Potential Impacts on retained trees**
- 6.3. The National Planning Policy Framework 2021 (NPPF) states that planning applications for '...development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused unless there are wholly exceptional reasons, and a suitable compensation strategy exists'.
- 6.4. The Standing Advice states that the area within a veteran tree buffer zone should consist of semi-natural habitats such as woodland or a mix of scrub, grassland, heathland and wetland planting. The area within the buffer zone should be part of the green infrastructure of the area and contribute to wider ecological networks and only be planted with local and appropriate native species. Access within a buffer should be appropriate, and can be allowed if the habitat is not harmed by trampling. Sustainable drainage schemes should be avoided unless they respect the root protection area and any change to the water table does not adversely affect the ancient tree.
- 6.5. The Sketch Site Layout plan shows that the veteran/ancient tree buffers are fully respected and enhanced as semi-natural habitat. This is a significant enhancement of the buffers when compared to the existing arable agricultural land use because of the cessation of regular ploughing and chemical application. The improved connectivity provided by new tree and shrub planting will contribute to wider ecological networks and access will be no greater than at present or reduced. The site topography and location of the veteran/ancient trees

is such that there would be no hydrological changes affecting the trees. In these respects, the outline layout is fully compliant with the Standing Advice, and there would be no significant future conflicts with these important trees.

- 6.6. The Root Protection Areas (RPAs) of other trees are also respected within green buffers for the site. The proposed access and parking spaces to the immediate north of G11, G12 and T17 (A2) are tight to the edges of the RPAs, and so detailed design should avoid these. However, this area has been regularly ploughed and so there will be no significant rooting in the upper soil layer. Also, the trees have ample rooting volume contiguous with their RPAs to the south and so minor incursions to the north would have a negligible impact. The detailed design of the SuDS basin in the north-west of the site may need minor adjustment to avoid the RPA of oak T22, but this should be straightforward to achieve.
- 6.7. New paths are shown passing through the RPAs of willows at T23/T24, oaks T25 and G9, and poplars G18. These paths can be constructed using lightweight hoggin or a no-dig cellular confinement system through the RPAs to ensure there is no impact on the tree root systems. In any case, willows and poplars have very vigorous root systems which have a high tolerance to disturbance. Willow T23 (U) is a partially collapsed tree with extensive decay. Although shown retained as a partly fallen tree on the sketch layout and Tree Retention and Removal Plan, it may be more appropriate to coppice it. Coppicing the tree will rejuvenate its growth and ultimately increase its longevity. Whether the tree is to be retained in its current size and condition or to be coppiced, the route of the path in this location could be adjusted in detailed design to accommodate both T23 and T24.
- 6.8. In the region of 150 new trees are indicatively shown within the northern part of the site and extensive new tree and shrub planting is shown in the southern part of the site. The proposed new tree and shrub planting has the potential to provide a significant net gain in tree number, species diversity and canopy cover at the site, as well as significantly increasing connectivity. The traditional orchard area will also be enhanced. The biodiversity enhancement and management plan for the traditional orchard should ensure that access to the orchard is appropriate and maintained at a suitable level.

Conclusion

- 6.9. The proposal is feasible from an arboricultural perspective, and if carefully implemented according to an approved Arboricultural Method Statement there would be a negligible potential impact on the retained trees and hedgerows.

7. TREE PROTECTION MEASURES


- 7.1. There is ample space to provide protective barriers to create construction exclusion zones to protect tree RPAs and crowns during construction activity. Arboricultural input into the Construction Environmental Management Plan (CEMP) at a later stage will ensure that site security hoarding/fencing and additional tree protection barriers can together provide the optimum protection for the trees.

8. HEADS OF TERMS FOR AN ARBORICULTURAL METHOD STATEMENT (AMS)

- 8.1. BS5837:2012 (Figure 1) recommends that detailed/technical design of tree protection and arboricultural methodologies should be resolved and finalised following on from the approval of the feasibility of a scheme by the Local Planning Authority.
- 8.2. Annex B and Table B.1 of BS5837:2012, an informative, advises that Arboricultural Method Statement (AMS) Heads of Terms are a sufficient level of information in order to deliver tree-related information into the planning system. The table also advises that a detailed AMS might reasonably be required as a 'reserved matter' or planning condition.
- 8.3. In relation to the site, it is anticipated that arboricultural working methods are likely to be quite straightforward. A brief summary of the principles of tree protection on development sites is included in **Section 7**.
- 8.4. Final specifications for the hedgerow section removals, the construction of new paths within tree RPAs and for arboricultural supervision of construction in the most sensitive areas will be provided at the Reserved Matters stage and/or included within an AMS.
- 8.5. A draft, 'Heads of Terms' for an AMS is set out below:
 - Project arboriculturist – schedule of monitoring and supervision to be agreed with the applicant and LPA
 - Pre-commencement site meeting - to be attended by the project arboriculturist, site manager and other relevant parties. Project arboriculturist to ensure that all parties have copies of the tree protection plan and this report.
 - Hedgerow section removals and treatment of collapsed willow T23 - as shown on the Tree Retention and Removal Plan (TRR)
 - Locations of new underground utilities including the drainage scheme to ensure there are no conflicts with tree RPAs or technical solutions are identified for installation
 - Erection of protection barriers and temporary ground protection as may be required as per the Tree Protection Plan (TPP), taking into account the site security measures proposed in the CEMP
 - Site preparation and ground works - no access for any machinery within the CEZs
 - Main construction phase - all tree protection measures shall remain in situ and intact for the duration of the construction phase
 - Removal of tree protection barriers - only to occur following approval of site conditions by the project arboriculturist.
 - Final landscaping including tree planting.

9. CONCLUSIONS AND RECOMMENDATIONS

- 9.1. Subject to the implementation of the advice contained within this report the proposed development is acceptable from an arboricultural perspective. The veteran/ancient tree buffers will be significantly enhanced because of the cessation of arable agriculture and improved connectivity provided by new tree and shrub planting. The outline layout is fully compliant with the Standing Advice, and there should be no significant future conflicts with these important trees.
- 9.2. The retained trees can be adequately protected during construction activities to sustain their health and longevity. The proposed new tree and shrub planting and enhancement of the traditional orchard has the potential to provide a significant net gain in tree number, species diversity and canopy cover at the site, as well as significantly increasing connectivity.
- 9.3. An AMS and Tree Protection Plan will need to be produced. Where the feasibility of a scheme has been agreed upon by the Local Planning Authority, this detail can be agreed and submitted later as part of a reserved matters application or pre-commencement planning condition (by agreement with the applicant).



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Senior Arboriculturist



Tree Ref	Species	Height (m)	LifeStage	RPA Radius (m)	RPA (m2)
T1	Maple (Norway 'Crimson King')	12	M	6.5	132
T2	Maple (Silver)	18	M	9.6	290
T3	Hornbeam (Fastigate)	12	M	6.6	137
T4	Oak (English)	6.5	Y	2	13
T5	Oak (English)	7.5	SM	2.9	26
T6	Maple (Field)	6	SM	2.2	15
T7	Maple (Norway 'Crimson King')	12	M	7.2	163
T8	Holly	9	M	4.8	73
T9	Oak (English)	11	M	9.4	275
T10	Oak (English)	22	LM	15	707
T11	Oak (English)	11	EM	8.2	209
T12	Ash (Common)	17	M	8.5	132
T13	Ash (Common)	18	LM	13.9	609
T14	Oak (English)	14	EM	7.2	163
T15	Oak (English)	14	EM	7.9	197
T16	Willow (Crack)	8	LM	12	442
T17	Oak (English)	13	M	10.9	375
T18	Willow (Crack)	7	M	6.1	118
T19	Ash (Common)	14	M	8.6	137
T20	Oak (English)	15	M	8.9	248
T21	Oak (English)	10	SM	4.4	62
T22	Oak (English)	15	M	11.6	426
T23	Willow (Crack)	8	M	9.6	290
T24	Willow (Crack)	9	M	4.8	72
T25	Oak (English)	16	M	10.3	335
T26	Ash (Common)	16	M	9.8	290
T27	Oak (English)	8	SM	2.4	18

Group Ref	Species	Height Range (m)	LifeStage	RPA Radius (m)	RPA (m2)
G1	Silver birch, fastigate hornbeam, small-leaved lime,	11-14	M	7	152
G2	Field maple, hazel, guelder rose	3-6	SM	2.2	15
G3	Hazel, field maple, elder, guelder rose	3-5	SM	1.8	10
G4	Hazel, English oak, field maple, elder, guelder rose	3-5	SM	1.8	10
G5	Larch	11	M	6	113
G6	English oak, sycamore	15-20	M	9.6	290
G7	English oak	12-15	EM	8	203
G8	English oak	10-15	M	9.8	304
G9	English oak	12-16	M	11.5	417
G10	English oak	8-15	M	7.2	163
G11	English oak	12	M	10.9	375
G12	Field maple	7-10	M	10.7	358
G13	English oak	14-16	M	9.7	297
G14	English oak, common ash	12-15	M	8.8	241
G15	Common ash, field maple	10-12	EM	4.5	65
G16	English oak	10-15	M	9.1	261
G17	Orchard apple, domestic pear, plum, quince, walnut,	2-5	SM	2.4	18
G18	Lombardy poplar	18	EM	7.1	157

Woodland Ref	Species	Height Range (m)	LifeStage	RPA Radius (m)	RPA (m2)
W1	English oak, field maple, hawthorn, blackthorn, holly,	3-17	M	10.3	335

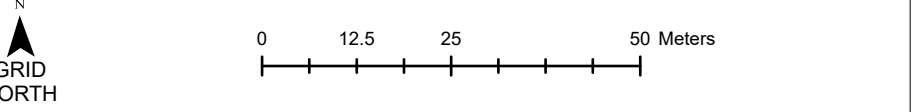
Hedge Ref	Species	Avg. Height (m)	Life Stage	RPA Radius (m)	RPA (m2)
H1	Common beech, blackthorn, English oak, Norway	3.5	SM	1.8	8
H2	Hawthorn, blackthorn, field maple, spindle, sallow,	2	Y	0	0
H3	Hawthorn, blackthorn, field maple, spindle, sallow,	1.5	Y	0	0
H4	Hawthorn, blackthorn, holly, common ash, hazel	2.5	M	1.5	6
H5	Hazel, sycamore, holly, hawthorn, elder, field maple,	3.5	M	1.8	10
H6	Hazel, blackthorn, dogwood, English oak, holly,	6	M	3.3	35
H7	Hawthorn, blackthorn, field maple, spindle, sallow,	2	Y	0.6	1
H8	Hazel	6	M	3	28
H9	Hazel, field maple	5	EM	2.4	18
H10	Hazel, common ash, elder, blackthorn, hawthorn, holly,	5	M	2.9	26
H11	Blackthorn	4	SM	1	3
H12	Blackthorn, hazel, spindle, field maple, dog rose	5	EM	1.8	10
H13	English oak, common ash, hawthorn, dog rose	5	Y	1.3	5
H14	Hazel, blackthorn, hawthorn, holly, elder, field maple,	5	M	2.8	24
H15	Blackthorn, English oak, dog rose	5	M	1.8	10
H16	Hawthorn, blackthorn, sallow, dog rose, English oak	2.5	EM	1.3	5
H17	Hawthorn, blackthorn, field maple	2.5	EM	1.8	10
H18	Hazel, sallow, blackthorn, field maple	5	EM	1.8	10
H19	Blackthorn, hawthorn	3.5	SM	0.6	1

- KEY**
- Category A Tree - High quality (Retention highly desirable)
 - Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
 - Category B Tree - Moderate quality (Retention desirable)
 - Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
 - Category C Tree - Low quality (May be retained but should not constrain development)
 - Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
 - Category U Tree - Very low quality (Mostly unsuitable for retention)
 - Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
 - Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
 - Shrub mass/offside tree/out of scope (OOS)
 - Tree/Group/Hedgerow not on topographical survey. Location given is an estimate

- Ancient Tree / Woodland or Veteran Trees**
- Ancient tree/woodland or Veteran tree: Important trees that require special consideration
 - Ancient tree/woodland or Veteran tree buffer: As per published standing advice from Natural England and the Forestry Commission



Note: The original of this drawing was produced in colour – a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice



PROJECT TITLE
Land south of Henfield Road (4991)

DRAWING TITLE
Tree Survey Plan

SCALE	Scale: 1:1,000 @ A1	DRAWING NUMBER	BHA_4991_01
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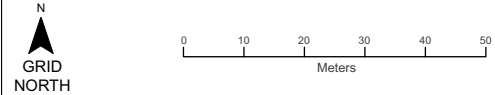
CLIENT
Croudace Homes

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DRAWING PRODUCED BY
SUMMIT GEO
info@summitgeo.co.uk



KEY	
	Category A Tree - High quality (Retention highly desirable)
	Category B Tree - Moderate quality (Retention desirable)
	Category C Tree - Low quality (May be retained but should not constrain development)
	Category D Tree - Very low quality (Mostly unsuitable for retention)
	Category E Tree - Very low quality (Mostly unsuitable for retention)
	Category F Tree - Very low quality (Mostly unsuitable for retention)
	Category G Tree - Very low quality (Mostly unsuitable for retention)
	Category H Tree - Very low quality (Mostly unsuitable for retention)
	Category I Tree - Very low quality (Mostly unsuitable for retention)
	Category J Tree - Very low quality (Mostly unsuitable for retention)
	Category K Tree - Very low quality (Mostly unsuitable for retention)
	Category L Tree - Very low quality (Mostly unsuitable for retention)
	Category M Tree - Very low quality (Mostly unsuitable for retention)
	Category N Tree - Very low quality (Mostly unsuitable for retention)
	Category O Tree - Very low quality (Mostly unsuitable for retention)
	Category P Tree - Very low quality (Mostly unsuitable for retention)
	Category Q Tree - Very low quality (Mostly unsuitable for retention)
	Category R Tree - Very low quality (Mostly unsuitable for retention)
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	Category U Tree - Very low quality (Mostly unsuitable for retention)
	Category V Tree - Very low quality (Mostly unsuitable for retention)
	Category W Tree - Very low quality (Mostly unsuitable for retention)
	Category X Tree - Very low quality (Mostly unsuitable for retention)
	Category Y Tree - Very low quality (Mostly unsuitable for retention)
	Category Z Tree - Very low quality (Mostly unsuitable for retention)



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PROJECT TITLE				
Land south of Henfield Road, Albourne				
DRAWING TITLE				
Tree Retention & Removal Plan				
SCALE		DRAWING NUMBER		
1:1,250 @ A2		BHA_4991_2		
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IM	RH	A	-	21/07/2022
LAYOUT USED WITHIN DRAWING 3117-C-1006-SK-H Sketch Site Layout				
CLIENT Croudace Homes				
COORDINATE SYSTEM / DATUM British National Grid / Newlyn Datum (AOD)				
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Barton Hyett Associates Arboricultural Consultants Tel: 01386 576161 Website: www.barton-hyett.co.uk Address: Office 5E, Deer Park Business Centre, Eckington, Pershore, Worcestershire, WR10 3DN				

INDIVIDUAL TREES

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T1	Maple (Norway 'Crimson King')	Off	12.0	1	Yes	540	5.5-6.0-6.0-5.0	2.5	2.5	None	M	None	Compacted and excavated soil in root zone.	Good	Good	40+	B1	6.5	132.0	-
T2	Maple (Silver)	Off	18.0	1	Yes	800	8.0-8.0-6.0-7.5	3.5	2.0	None	M	None	No significant visible defects. Largest tree in belt.	Good	Good	40+	A2	9.6	290.0	-
T3	Hornbeam (Fastigiate)	Off	12.0	1	Yes	550	5.5-6.5-7.5-6.5	3.0	2.0	None	M	None	No significant visible defects.	Good	Good	40+	A2	6.6	137.0	-
T4	Oak (English)	On	6.5	1	Yes	170	3.5-2.5-2.5-2.5	1.5	1.5	SW	Y	None	No significant visible defects.	Good	Good	40+	B1	2.0	13.0	-
T5	Oak (English)	On	7.5	1	Yes	240	3.0-3.0-2.5-3.5	0.5	1.0	None	SM	None	No significant visible defects.	Good	Good	40+	B1	2.9	26.0	-
T6	Maple (Field)	On	6.0	1	Yes	180	3.0-3.0-2.5-2.5	0.5	0.5	None	SM	None	No significant visible defects.	Good	Good	40+	B1	2.2	15.0	-
T7	Maple (Norway 'Crimson King')	Off	12.0	1	Yes	600	6.0-6.0-7.0-7.0	3.0	1.5	S	M	None	Garden tree.	Good	Good	40+	B1	7.2	163.0	-
T8	Holly	On	9.0	2	Yes	400	3.5-4.5-3.5-4.0	2.5	2.0	None	M	None	No significant visible defects.	Good	Good	40+	B1	4.8	72.0	-
T9	Oak (English)	On	11.0	3	Yes	780	10.0-9.0-11.0-10.0	3.5	1.5	SW	M	None	Growing near top of steep bank.	Good	Good	40+	B1	9.4	275.0	-
T10	Oak (English)	Off	22.0	1	Yes	2350	14.0-15.0-14.0-13.0	5.0	2.5	S	LM	Veteran	Very large tree growing to south of road and site bank. Evidence of internal decay in bole with old FFBs present. Crown lift wounds. No significant deadwood. Deep drains in road.	Good	Fair	40+	A3	15.0	707.0	35.3
T11	Oak (English)	On	11.0	2	None	680	9.0-9.0-8.0-7.5	3.5	1.0	N	EM	None	Growing at top of steep highway bank.	Good	Good	40+	B1	8.2	209.0	-
T12	Ash (Common)	On	17.0	2	None	540	6.0-9.0-8.5-5.0	4.5	4.0	NE	M	None	Informal path past tree. Epicormic shoots throughout crown.	Fair	Good	10+	C1	6.5	132.0	-

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T13	Ash (Common)	On	18.0	7	None	1160	9.0-10.0-10.0-9.0	3.0	3.5	S	LM	Veteran	Large coppiced-origin tree of 7 large stems. Decay of original stump has left decay cavities at bases of all but 3 stems. Dry crevices. Likely water pools. Deadwood.	Good	Fair	20+	A3	13.9	609.0	17.4
T14	Oak (English)	Off	14.0	1	Yes	600	7.0-7.0-9.0-9.0	6.0	3.0	SW	EM	None	No significant visible defects.	Good	Good	40+	B1	7.2	163.0	-
T15	Oak (English)	Off	14.0	1	Yes	660	7.0-7.0-7.5-7.5	4.5	3.0	S	EM	None	No significant visible defects.	Good	Good	40+	B1	7.9	197.0	-
T16	Willow (Crack)	On	8.0	1	Yes	1000	10.0-10.0-6.0-7.0	0.0	0.0	S	LM	Veteran	Collapsed tree with extensive decay in bole; cracks/splits and dry crevices. Open cavity. Large fallen limbs have layered in ground.	Good	Fair	40+	A3	12.0	452.0	15.0
T17	Oak (English)	On	13.0	1	None	910	10.0-8.0-10.0-8.0	3.0	2.0	W	M	None	Exposed buttress roots.	Good	Good	40+	A2	10.9	375.0	-
T18	Willow (Crack)	On	7.0	2	None	510	5.0-9.0-1.5-3.5	0.0	3.0	NE	M	None	Partially collapsed tree with cracks/splits and basal cavities. Dry crevices. Recent storm fracture. Collapsed and attached live growth resting on ground to east.	Good	Fair	20+	B3	6.1	118.0	-
T19	Ash (Common)	Off	14.0	3	Yes	550	5.0-8.0-8.0-8.0	3.5	4.0	SE	M	None	Early crown dieback.	Fair	Good	20+	B2	6.6	137.0	-
T20	Oak (English)	On	15.0	2	Yes	740	7.0-7.0-7.0-7.0	3.5	2.5	SE	M	None	Lower crown dieback to north.	Good	Good	40+	B1	8.9	248.0	-
T21	Oak (English)	On	10.0	1	Yes	370	5.0-3.5-5.0-5.0	3.5	1.0	S	SM	None	No significant visible defects.	Good	Good	40+	B1	4.4	62.0	-
T22	Oak (English)	On	15.0	1	None	970	10.0-10.0-10.0-7.5	4.5	3.0	E	M	None	Good forms. Past branch tip dieback.	Good	Good	40+	A1	11.6	426.0	-

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T23	Willow (Crack)	On	8.0	1	Yes	800	1.0-12.0-10.0-2.0	0.0	1.5	E	M	None	Large partially collapsed tree. Advanced decay in bole. Tree has fallen into field and will require clearing. Growing in water course.	Good	Poor	<10	U	9.6	290.0	-
T24	Willow (Crack)	On	9.0	1	Yes	400	12.0-11.0-2.0-2.0	0.5	1.5	N	M	None	Growing in water course. Heavy lean to north.	Good	Fair	40+	B2	4.8	72.0	-
T25	Oak (English)	Off	16.0	2	None	860	5.0-10.0-9.0-9.5	4.0	4.0	S	M	None	Growing at edge of woodland.	Good	Good	40+	A2	10.3	335.0	-
T26	Ash (Common)	Off	16.0	1	Yes	800	9.0-10.0-9.0-10.0	1.0	3.0	S	M	None	Good form. Highly visible roadside tree.	Good	Good	40+	A2	9.6	290.0	-
T27	Oak (English)	On	8.0	1	None	200	4.0-4.0-4.0-4.0	3.0	2.5	None	SM	None	Good future roadside tree.	Good	Good	40+	B1	2.4	18.0	-

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G1	Silver birch; fastigiate hornbeam; small-leaved lime; sycamore	On	11-14	8	Yes	580	5.5	2.5	M	None	Some bark da;age from play and mowing.	Good	Good	40+	A2	7.0
G2	Field maple; hazel; guelder rose	Off	3-6	9	Yes	180	2.5	1.5	SM	None	Planted screening group.	Good	Good	40+	B2	2.2
G3	Hazel; field maple; elder; guelder rose	Off	3-5	18	Yes	150	2.5	0.0	SM	None	Screening group used for play.	Good	Good	40+	B2	1.8
G4	Hazel; English oak; field maple; elder; guelder rose	Off	3-5	18	Yes	150	2.5	0.0	SM	None	Screening group used for play.	Good	Good	40+	B2	1.8
G5	Larch	Off	11	2	Yes	500	6.0	5.0	M	None	Two trees leaning heavily away from site towards NE because of prevailing wind. Crowns do not overhang boundary fence. Trunk bases approx. 1.5m from boundary line. Some dieback.	Good	Good	20+	B2	6.0

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G6	English oak; sycamore	On	15-20	2	Yes	800	8.0	7.0	M	None	Growing on bank adjacent to footpath. Western crowns of both trees have been lifted away from adjacent HV power lines.	Good	Good	40+	B2	9.6
G7	English oak	On	12-15	2	Yes	670	9.0	3.5	EM	None	No significant visible defects.	Good	Good	40+	A2	8.0
G8	English oak	On	10-15	7	Yes	820	10.0	4.0	M	None	No significant visible defects.	Good	Good	40+	A2	9.8
G9	English oak	On	12-16	3	Yes	960	10.0	4.0	M	None	No significant visible defects. Informal path leading through group to public footpath.	Good	Good	40+	A2	11.5
G10	English oak	On	8-15	3	Yes	600	9.0	4.0	M	None	No significant visible defects.	Good	Good	40+	A2	7.2
G11	English oak	On	12	2	Yes	910	8.0	4.0	M	None	No significant visible defects.	Good	Good	40+	A2	10.9
G12	Field maple	On	7-10	2	None	890	8.0	3.0	M	None	No significant visible defects.	Good	Good	40+	A2	10.7
G13	English oak	On	14-16	4	None	810	10.0	4.0	M	None	No significant visible defects.	Good	Good	40+	A2	9.7
G14	English oak; common ash	On	12-15	8	None	730	10.0	4.0	M	None	No significant visible defects.	Good	Good	40+	A2	8.8
G15	Common ash; field maple	On	10-12	10	None	380	7.0	3.5	EM	None	Although ashes have Ash Dieback symptoms; tree bases have decay cavities providing habitat value.	Fair	Fair	20+	B3	4.5
G16	English oak	On	10-15	2	Yes	760	8.5	2.5	M	None	Prominent roadside trees.	Good	Good	40+	A2	9.1
G17	Orchard apple; domestic pear; plum; quince; walnut; sweet cherry; mulberry	On	2-5	42	Yes	200	2.5	0.5	SM	None	Replanted orchard listed as traditional orchard priority habitat in Traditional Orchard Inventory. Presumably trees planted at same time; but varied sizes due to different root stocks. Under active management.	Good	Good	40+	B3	2.4
G18	Lombardy poplar	On	18	3	Yes	590	4.0	4.5	EM	None	Trunk bases inaccessible. Compacted road stone fiend access to west. Substation to east.	Good	Good	20+	B2	7.1

WOODLANDS

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
W1	English oak; field maple; hawthorn; blackthorn; holly; hazel	On	3-17	16	None	860	7.0	3.0	M	None	Mature oak woodland with blackthorn and holly understorey.	Good	Good	40	A2	10.3

HEDGEROWS

Ref	Species	On/off site	Avg. Height (m)	Avg. width (m)	Avg. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Common beech; blackthorn; English oak; Norway maple	Off	3.5	2	130	0.0	SM	Predominantly beech trimmed hedge. One outgrown semi-mature beech at southern end within RPA shadows of T1.	None	Good	40+	B2	1.6
H2	Hawthorn; blackthorn; field maple; spindle; willow; holly; guelder rose	On	2	1	20	0.5	Y	Recently planted hedgerow with rodent guards in place. Seven young trees planted within including birch; willow; lime and hornbeam.	Good	Good	40+	B2	0.6
H3	Hawthorn; blackthorn; field maple; spindle; willow; holly; guelder rose	On	1.5	1	20	0.5	Y	Recently planted hedgerow with rodent guards in place. Spaced young trees planted within including birch; willow; lime and hornbeam.	Good	Good	40+	B2	0.6
H4	Hawthorn; blackthorn; holly; common ash; hazel	Off	2.5	1.5	130	0.0	M	Maintained hedgerow.	Good	Good	40+	B2	1.6
H5	Hazel; sycamore; holly; hawthorn; elder; field maple; common yew	Off	3.5	2.5	150	0.0	M	Northern section has previously been laid and is trimmed on site side. Southern section from electricity pole to road is uncut.	Good	Good	40+	B2	1.8
H6	Hazel; blackthorn; dogwood; English oak; holly; sycamore	On	6	7	280	0.0	M	Predominantly hazel growing at top of steep highway bank. Unmanaged. Oak and sycamore natural regeneration within.	Good	Good	40+	B2	3.3
H7	Hawthorn; blackthorn; field maple; spindle; willow; holly; guelder rose	On	2	1	20	0.5	Y	Recently planted hedgerow with rodent guards in place. Spaced young trees planted within including birch; willow; lime and hornbeam.	Good	Good	40+	B2	0.6
H8	Hazel	On	6	7	250	1.0	M	Unmanaged hedgerow section.	Good	Good	40+	B2	3
H9	Hazel; field maple	On	5	6	200	0.5	EM	Unmanaged hedgerow.	Good	Good	40+	B2	2.4
H10	Hazel; common ash; elder; blackthorn; hawthorn; holly; English oak; crack willow; crab apple; dog rose	On	5	7	240	0.0	M	Unmanaged hedgerow of hazel; hawthorn and blackthorn with natural regeneration of oak; ash and field maple. Gaps in places.	Good	Good	40+	B2	2.9
H11	Blackthorn	On	4	4	80	0.0	SM	Unmanaged area of blackthorn scrub.	Good	Fair	40+	C1	1
H12	Blackthorn; hazel; spindle; field maple; dog rose	On	5	5	150	0.0	EM	Unmanaged hedgerow.	Good	Good	40+	B2	1.8
H13	English oak; common ash; hawthorn; dog rose	On	5	3	100	0.0	Y	Predominantly bramble with scattered young trees along fence line. Ash Dieback symptoms in young ashes.	Fair	Poor	20+	C1	1.3
H14	Hazel; blackthorn; hawthorn; holly; elder; field maple; willow; dog rose	On	5	6	230	0.0	M	Managed by flailing on south side. For most of length hedgerow grows on both sides of steep ditch banks. At east end at orchard hedgerow is more scrubby; particularly on north side.	Good	Good	40+	B2	2.8

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H15	Blackthorn; English oak; dog rose	On	5	7	150	0.0	M	Almost entirely blackthorn scrub hedgerow. Unmanaged. Seasonal pond within southern end where hedgerow splays at woodland. Orchard side south of pond is bramble.	Good	Good	40+	B2	1.8
H16	Hawthorn; blackthorn; willow; dog rose; English oak	On	2.5	3	100	0.0	EM	Managed hedgerow. Areas of willow within the site not recently cut.	Good	Good	40+	B2	1.3
H17	Hawthorn; blackthorn; field maple	On	2.5	3	150	0.0	EM	Managed hedgerow.	Good	Good	40+	B2	1.8
H18	Hazel; willow; blackthorn; field maple	On	5	5	150	0.0	EM	Flailed on south side only.	Good	Good	40+	B2	1.8
H19	Blackthorn; hawthorn	On	3.5	2	50	0.0	SM	Partially managed hedgerow.	Good	Good	40+	B2	0.6

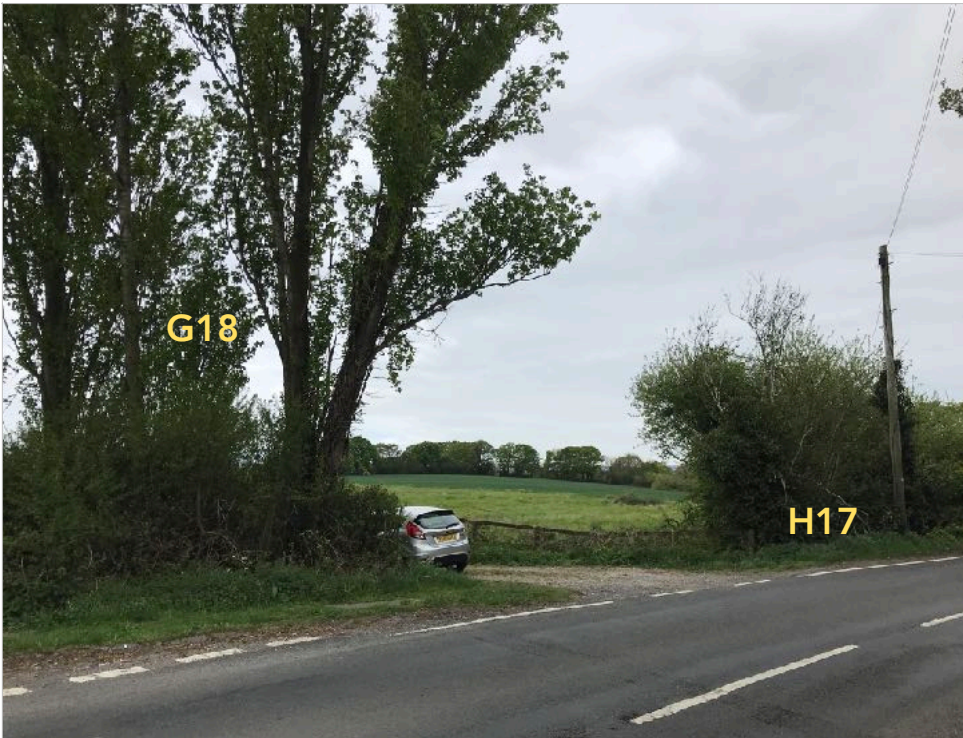


IMAGE 1: View of the site access from Henfield Road, looking west.



IMAGE 2: General view across the north field, looking south.



IMAGE 3: General view across the north field, looking south-west.



IMAGE 4: View along the east site boundary with the primary school, looking south.



IMAGE 5: The footpath access from Church Lane in the south-east corner of the site, looking north.

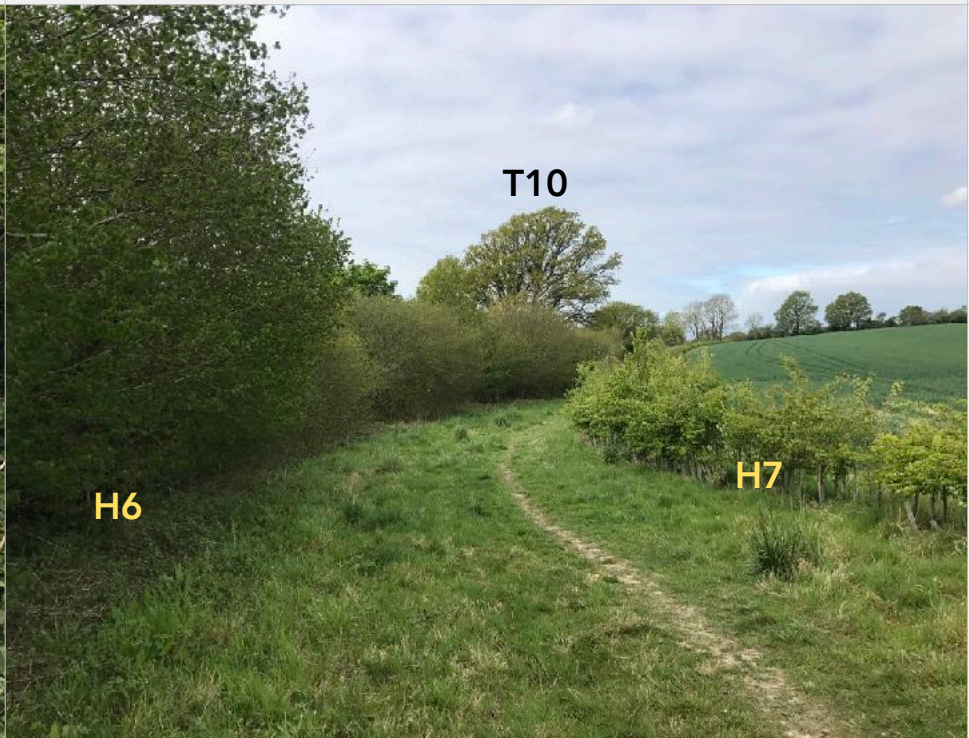


IMAGE 6: View along the south site boundary, looking west.



IMAGE 7: Detail of off-site veteran oak T10, looking south-west.



IMAGE 8: Detail of veteran ash T13, looking west.



IMAGE 9: View of oaks G9 to G12 and T17, looking north.



IMAGE 10: Detail of veteran willow T16, looking west.



IMAGE 11: Detail of woodland W1, looking west from the orchard.



IMAGE 12: View across the orchard and G17, looking north-east.

- The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.
- The full tree survey findings are recorded in the following tree survey schedule.
- Within the tree survey schedule, each surveyed TREE (T), GROUP (G), HEDGEROW (H), WOODLAND (W) or SHRUB MASS on or adjacent to the site is given a reference number which refers to its position on the tree survey and constraints plan.
- TREE SPECIES are listed by common name.

The **DIMENSIONS** taken are:

- STEM-No. Indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- STEM DIAMETER (measured in millimetres), obtained from the girth measured at approx. 1.5m. For trees with 2 to 5 sub-stems a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees, the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- HEIGHT (measured in metres), recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD, taken at the four cardinal points to derive an accurate representation of the tree crown, recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m.
- CROWN CLEARANCES are expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall crown e.g. the average height of the crown above ground level. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- ESTIMATES. Where any measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

LIFE STAGE is defined as follows:

- Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.
- SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature).

- EM Early-mature: Not yet having reached 75% of expected mature size. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.
- M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.
- LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.
- A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):

Essentially a snapshot of the general health of the tree based upon its general appearance, it's apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but decay giving rise to structural weakness would be recorded under 'Structural Condition' – see next parameter):

- Good: No significant health issues.
- Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).
- Poor: Significant stress or disease noted; larger areas of dieback than above.
- Dead: (or Moribund).

STRUCTURAL CONDITION:

Defects affecting the structural stability of the tree including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. Classified as:

- Good: No obvious structural defects: basically sound.
- Fair: Minor, potential or incipient defects.
- Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.
- Dead: (or Moribund).

ESTIMATED REMAINING CONTRIBUTION:

An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance):

- Less than 10 years
- 10+ years
- 20+ years
- 40+ years

SPECIAL IMPORTANCE:

Trees that are particularly notable as high value trees such as ancient trees/woodland or veteran trees. Such trees may be regarded as the principal arboricultural features of a site and pose a significant constraint to potential development.

An *ancient* tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old but not necessarily so; they may be regarded as ‘survivors’ that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

QUALITY CATEGORY:

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value, These are:

- (1) arboricultural qualities
- (2) landscape qualities, and
- (3) cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only.

Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees’ general suitability for retention.

CATEGORY A: HIGH QUALITY:

Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life expectancy of at least 40 years.

- A1: Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.).
- A2: Trees, groups or woodlands of particular visual importance as landscape features.
- A3: Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

CATEGORY B: MODERATE QUALITY:

Trees or groups of some importance with a likely useful life expectancy in excess of 20 years. Their retention would be desirable; selective removal of certain individuals may be acceptable but only after full consideration of all alternative courses of action.

- B1: Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)
- B2: Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees’ overall, collective value).
- B3: Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

CATEGORY C: LOW QUALITY:

Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. Also small trees with stems below 15cm diameter.

Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

- C1: Unremarkable trees of very limited merit or of significantly impaired condition.
- C2: Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.
- C3: Trees with extremely limited conservation or other cultural benefit.

CATEGORY U:

Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

E.g. dead or moribund trees; those at risk of collapse or in terminal decline; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens.

(Category U trees may have conservation values that it might be desirable to preserve. This category may also include trees that should be removed irrespective of any development proposals.)

ROOT PROTECTION AREA (RPA):

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter, measured at 1.5m above ground level. The shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s stem diameter.

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

THE IMPORTANCE OF TREES

Wider benefits:

There is a growing body of evidence that trees bring a wide range of benefits to the places people live.

Some *Economic* benefits of trees include:

- Trees can increase property values
- As trees grow larger, the lift they give to property values grows proportionately
- They can improve the environmental performance of buildings by reducing heating and cooling costs, thereby cutting bills
- Mature landscapes with trees can be worth more as development sites
- Trees create a positive perception of a place for potential property buyers
- Urban trees improve the health of local populations, reducing healthcare costs

Some *Social* benefits of trees include:

- Trees help create a sense of place and local identity
- They benefit communities by increasing pride in the local area
- They can create focal points and landmarks
- They have a positive impact on people's physical and mental health
- They can have a positive impact on crime reduction

Some *Environmental* benefits of trees include:

- Urban trees reduce the 'urban heat island effect' of localised temperature extremes
- They provide shade, making streets and buildings cooler in summer
- They help remove dust and particulates from the air
- They help to reduce traffic noise by absorbing and deflecting sound
- They help to reduce wind speeds
- By providing food and shelter for wildlife they help increase biodiversity
- They can reduce the effects of flash flooding by slowing the rate at which rainfall reaches the ground
- They can help remediate contaminated soil

On new development sites:

Trees bring many benefits to new development. Where retained successfully they can form important and sustainable elements of green infrastructure, contribute to urban cooling and reduce energy demands in buildings. Their importance is acknowledged in relation to adaptation to the effects of climate change. Other benefits brought by trees include:

- increasing property values;
- visual amenity
- softening, complementing and adding maturity to built form
- displaying seasonal change
- increasing wildlife opportunities in built-up areas
- contributing to screening and shade
- reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that, when determining planning applications, local planning authorities should apply the following principle:

c) 'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.'

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and

'Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'

Note: Further information from the National Planning Policy Guidance Suite and Standing Advice is provided in the design guidance section.

Other paragraphs of the NPPF 2021 of relevance to this report are:

Paragraph 131: *'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

Paragraph 174: *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.'

STATUTORY CONTROLS

Statutory tree protection

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Where information is available on any Statutory designations such as this they are identified within the summary table in Section 1 and on the Tree Survey and Constraints Plan at Section 2.

Notwithstanding specific exceptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of protected trees or woodlands without the prior written consent of the LPA.

Penalties for contravention of a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates' Court, or an unlimited fine if the matter is determined by the Crown Court.

Similarly, and again notwithstanding specific exceptions, it is an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75mm diameter at 1.5 height without having first provided the LPA with 6 weeks written notification of intent to carry out the works.

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic

terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined. Therefore, we recommend that a further check is made with the LPA before any tree works are carried out.

Statutory Wildlife Protection

Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside of the scope for this report.

Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for protected species such as bats in addition to birds and small mammals. It is advised that in some instances specialist ecological advice may be required. This may result in tree works being carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the site manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by the appointed Ecologist or Natural England.

It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. This time period only provides an indication of likely nesting times and as such diligence is required when undertaking tree works at all times.

Irrespective of the time of year and other than any actions approved under General Licence, it is an offence to intentionally kill, injure or take any wild bird or to intentionally take, damage or destroy the nest or eggs of any wild bird. Ideally, tree operations should be avoided during the likely bird nesting period. However, any tree works should always only be carried out following a preliminary visual check of the vegetation.

For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in England and Wales. A different legislative framework applies in Scotland and Northern Ireland.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with any relevant statutory controls, outlined above.

DESIGN GUIDANCE

Approach

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

A hierarchical approach is adopted in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods subject to site-specific soil conditions.

Service runs that cannot be routed outside the RPA(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable or desirable. Off-site provision may be considered in some circumstances but this will require negotiation with the local planning authority.

Considerations:

For proposed residential developments, consideration must be given to numerous factors future tree growth and orientation.

Tree constraints

Root Protection Areas:

With reference to BS5837:2012, a root protection area (RPA) is defined as “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 should be treated as a priority”. **“The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained”.**

BS5837:2012 states (4.6.2) that, “where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced.” The BS goes on to state that, “modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution,” and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- topography and drainage;
- soil type and structure;
- the likely tolerance of the tree to root damage/disturbance.

Additional buffer zones beyond the RPA:

The following text is taken from the Standing Advice produced by the Forestry Commission and Natural England as included in the National Planning Policy Guidance:

‘A buffer zone’s purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development’.

Ancient woodland buffer:

‘For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you’re likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic’.

Ancient and veteran tree buffer:

‘A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s diameter’.

Above ground:

Above ground constraints posed by trees describe the capacity for trees to have an overbearing or dominating effect on new developments; usually post occupancy. Typical above ground constraints include a number or combination of inconveniences including shading, branch spread, movement of trees during strong winds and so on. If not adequately considered, above ground constraints can lead to repeated requests to fell or heavily prune retained and protected trees.

Shade:

Adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light. Conversely, appropriate designed development can use existing or new trees to create necessary and welcome shade and screening.

As part of the adopted approach the above considerations and constraints are assessed cumulatively in order to provide clear and site-specific advice on the areas of a site most suitable for the location of development.

Dependent on the site and nature of the proposed development, the Tree Survey and Constraints Plans may show the following:

Recommended Developable area - an advisory area defined in order to minimise arboricultural impacts using standard approaches to construction. Restricting proposed development to this area will limit the risk of harm to retained trees and of the Local Planning Authority objecting to the proposed development. It may be possible to propose development outside of this area but specific ‘low impact’ construction techniques may be needed recommended.

Recommended Buffer to development - similar to the Recommend Developable Area but defined as a line marking a suitable buffer to retained trees. More commonly used on large sites or sites where the presence of trees is localised.

Tree Opportunities

Depending on the scale of developments existing trees can often provide opportunities to enhance the existing arboricultural resource of a site by bringing it into good management or by putting in place remedial measures e.g. soil amelioration.

Appropriately designed new tree planting is extremely important in maintaining healthy and sustainable tree populations. For the reasons highlighted, new trees can bring many benefits to new developments. It is critical to the establishment of new tree planting that the locations, species and specification of new trees is appropriate. Subsequently the sourcing of high-quality stock, suitable planting and the provision of post planting maintenance are essential to allow new trees to establish and to allow them to mature.

HOW TREE DAMAGE CAN OCCUR

Above the ground

Damage can occur as a result of knocks and scuffs, breakages of branches and/or tree trunks. This is often but not always associated with machine operations, groundworks excavations, tele handlers, high sided vehicles and crane use. Other forms of above ground damage include fixings to trunk and unauthorised cutting back of branches. Wounds will harm a tree's health and shorten its life by letting in disease-causing organisms.

Below the ground

It is often not appreciated that the majority of most tree roots are generally located within the top 600mm of the ground. On this basis it needs to be understood that damage to roots can occur in three ways:

- Root severance can occur as a result of, for example, soil stripping during site clearance or excavations.
- Root dieback and death can result from compaction of the soil. Compaction can occur as a result of vehicle weight, weight of stored materials or increased pedestrian access. Compaction crushes out soil pore space and prevents tree respiration from occurring (respiration requires gas exchange between the ground and the atmosphere). Compacted soil is denser and therefore inhibits/prevents any further new root growth.
- Pollution of the soil with chemicals such as oil or cement washings can destroy the soil environment, making it inhospitable for the tree cause causing it stress.

The effects of these impacts can be disfiguring to a tree's appearance and also weaken a tree making it more liable to attack by pest and diseases. In addition, root damage or death results in corresponding decline above the ground with dieback occurring within the tree crown.

The effects of damage to trees generally take some time to become fully apparent. In many cases, damaged trees decline slowly after the completion of a new development, until they eventually need to be removed due to ill health.

Tree protection barriers and load distributing 'no-dig' paths are specified in order to prevent soil compaction from taking place.

GENERAL SITE RULES FOR TREE PROTECTION

Do not independently carry out any activity that is at odds with the site scheme of tree protection. This is contained within an approved Arboricultural Method Statement (AMS) and accompanying Tree Protection Plan.

In simple terms: do not carry out any work within any Construction Exclusion Zone (CEZ) without prior liaison with the Project Arboriculturist and written authorisation from the Local Planning Authority.

Within the CEZ:

- No mixing of cement
- No soil/turf stripping, raising/lowering of ground levels (unless advised), deposit or excavation of soil or rubble
- No excavations for services or installation of services
- No storage of materials, machinery fuel, chemicals or other materials of any other description
- No parking/use of tracked or wheeled machinery
- No siting of temporary structures including hard standing areas, portaloos, site huts
- No lighting of fires or disposal of liquids
- Fires on site should be avoided if possible. Where they are unavoidable, they must not be lit in a position where heat could damage foliage or branches. Fires must be a minimum of 20m from the trunk of any retained tree or the centre line of any hedgerow to be retained
- No signs, cables, fixtures or fittings of any other description shall be attached to any part of a retained tree