ARBORICULTURAL IMPACT ASSESSMENT

Land West of Trowes Lane and North of Charlton Lane, Swallowfield

August 2023

Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Land West of Trowes Lane and North of Charlton Lane	
Project reference:	4507	
Site Address:	Swallowfield, Wokingham	
Nearest Postcode:	RG7 1WY	
Central Grid reference:	SU 72347 64499	
Local Planning Authority:	Wokingham Borough Council	
Relevant adopted planning policies:	Wokingham Borough Local Development Framework - Core Strategy: CP3 - General principles for development; CP7 - Biodiversity. Managing Development Delivery Local Plan: CC03 - Green infrastructure, trees and landscape; TB21 - Landscape character; TB23 - Biodiversity & development.	
Statutory Controls:	**Tree Preservation Order**	**Conservation Area**
	None on site. (as per online mapping check on the 28th January 2023). Offsite TPO to north (ref: W1 of TPO-1750-2020). Possibly western end of H1 and eastern end of G3 are protected. **TBC**.	No
Soil Type: **(Source: BGS online soils map © NERC 2022)**	**Superficial/Drift**	**Bedrock**
	Deep sandy loam over river terrace sand/gravel	London Clay Formation - Clay, Silt And Sand
Topographical Survey:	ENC/290721/2PP9a (August 2021)	
Notes:	None	
Report author:	Richard Hyett *MSc, BSc (Hons), MICFor, MArborA*	
Date of issue:	24.08.2023 - Revision A - Updated to Site Layout Rev E	

Arboricultural Association
Professional Member
PR3525

Institute of Chartered Foresters
registered

Barton Hyett
Arboricultural Consultants

REPORT CONTENTS:

1. INSTRUCTION

1.1. I am Richard Hyett. I am a chartered arboriculturist and professional member of the Arboricultural Association with 19 years of experience in the arboricultural industry.

1.2. Barton Hyett Associates Ltd have been instructed by Croudace Homes to survey trees located on land west of Trowes Lane and north of Charlton Lane, Swallowfield ('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 a planning application for residential development at the site and provide written advice on how they inform feasibility and design options for the proposed development. This report has been prepared in order to accompany the planning submission to Wokingham Borough Council (WBC); the Local Planning Authority (LPA).

1.4. This report sets out the approach to the baseline assessment, how the identified constraints have informed the proposed development, and highlights any arboricultural impacts along with associated mitigations.

2. SITE DESCRIPTION

2.1. The field was previously used for agriculture but is not currently in production.

2.2. The site lies to the south-west of the village. It is a roughly rectangular field with agricultural accesses from Charlton Lane to the south and Trowes Lane to the east. The two lanes meet in the southernmost corner of the site, and between these is a triangular area of tree plantation that is approximately two-thirds of the size of the field.

2.3. There are no public rights of way through the site. The site is fairly level and at about 45m above mean sea level.

2.4. The local landscape is of the village edge and small fields. There are scattered farms that have been mostly converted to light industrial use. The parkland of Swallowfield Park lies to the north-east of the village.

3. TREE SURVEY FINDINGS

3.1. A total of 43 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 4**).

	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	**25**	-	16	5	4
Groups	**13**	-	12	1	-
Hedgerows	**5**	-	4	1	-
Total	**43**	**-**	**-**	**-**	**-**

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

4. KEY ARBORICULTURAL FEATURES

4.1. No ancient or veteran trees were identified at the site, and no ancient woodland is present.

4.2. The most significant single feature at the site is the dense plantation of semi-mature, mixed broadleaf and coniferous trees G13 (B2). The dense plantation is of even, semi-mature age and will require thinning management in the future to avoid trees becoming etiolated. The site includes a small linear boundary plantation G1 (B2). The similar plantation G2 (B2) along the west boundary is outside of the site boundary.

4.3. The monotonous, off-site Leyland cypress hedge H1 is not overly intrusive to the site as a whole because it is fairly short in length, is broken up by silver birches T3 and T4 and is balanced at its west end by the attractive, off-site tall tree growth beyond G3.

4.4. The eastern site boundary includes the most visually-significant trees at the site in terms of height and texture. These include tall white willows interspersed with English oaks, and the individual trees and group extend along the full field boundary and behind plantation group G13 along Trowes Lane and Charlton Lane. A few of these willows, T14, T17 and T19 (U), are dead standing trees liable to failure and so should be removed.

5. CONSTRAINTS AND OPPORTUNITIES

5.1. Overall, the peripheral locations of the trees at the site means that there are no significant tree-related constraints to providing new or improved accesses and no significant constraints upon the developable space within the centre of the site.

5.2. The trees within plantation G13 are of low individual quality, so some removal could be considered appropriate as part of the development and as part of appropriate plantation management. However, the northern edge of the plantation has a low canopy and is attractive when viewed from within the site. There is currently little in the way of understorey, and so thinning management of the plantation would promote understorey development and enhance the biodiversity value of the group.

5.3. There appear to be informal paths along the plantation edges, and so the plantation could be enhanced and managed for recreation and biodiversity.

5.4. The WBC Emerging Local Policy states, in relation to trees and woodlands, that proposed development should "*Provide appropriate buffer zones around woodlands, including semi-natural ancient woodlands, planted ancient woodland sites, orchards, hedgerows and individual trees*". In this case, appropriate buffers beyond the standard Root Protection Areas (calculated inline with BS58337:2012), can be achieved around not only the plantation trees in the south but also all retained trees whether located on and off site.

6. LAYOUT DESIGN APPROACH

6.1. The information from the baseline tree survey has been used in the preparation of design proposals for the site, in order to minimise negative arboricultural impacts.

6.2. A Site Layout drawing has been prepared by Omega Architects. The Site Layout is referenced as: *3145_C_1005_PL-E*. This plan should be viewed in conjunction with this report.

6.3. A summary of the approach adopted for the key design elements is provided below.

Built Form

6.4. The proposed locations of the buildings have been considered carefully in order to ensure there is no arboricultural impact resulting from their direct siting nor from their construction.

6.5. In particular, an appropriate buffer to the mixed species plantation in the south of the site (G13) has been provided. The buffer is formed by a 10m wide green landscape area adjacent G13, beyond which is the 5m wide access road for some of the proposed dwellings, with 5m deep front gardens beyond. Ultimately, this approach provides a 20m buffer between the trees within G13 and the proposed dwellings in the south of the site.

6.6. This buffer is deemed appropriate to safeguard the trees as well as avoid post development pressure from incoming residents to prune or fell them. The buffer has considered the size of the trees and the level nature of the site.

Highway Access

6.7. The proposed highway access into the site has been carefully considered to avoid any significant arboricultural impacts. Where the site access connects to Trowes Lane the alignment has been selected to avoid the most significant trees along Trowes Lane and to maintain its verdant character.

6.8. The proposed internal access roads and driveways will all be located outside of the RPA's (Root Protection Areas) of retained trees.

Drainage

6.9. The proposed drainage strategy has been prepared with consideration of the arboricultural constraints of the site. The drainage strategy requires the creation of some attenuation basins within the site. All of the basins can be accommodated outside of the RPA's of retained trees.

6.10. In addition, a number of ecological enhancement ponds are proposed that do not form part of the site's overall drainage strategy. Again, these can be accommodated outside of the RPA's of retained trees.

Landscape and Ecology

6.11. The proposed new soft landscape will include extensive new tree and shrub planting across the site, and in particular within the peripheral open space to the south and west. With particular reference to ecological enhancements as they relate to trees, the plantation in the south of the site will be appropriately managed to improve its biodiversity and ecological value. In particular, the management of the plantation, including selective thinning, can encourage a more robust understorey layer and improve the plantations vertical structure. The lateral structure of the plantation can also be improved with appropriate margin planting. The details of such works can be set out in a specific management plan if required.

7. DEVELOPMENT PROPOSAL

7.1. Residential development is proposed at the site. The description of development is:

"Full planning application for the erection of 81 dwellings (including 40% affordable housing) and associated infrastructure, including open space, SuDS, landscaping, biodiversity enhancements, new vehicular access off Trowes Lane, and pedestrian and cycle links, on Land West of Trowes Lane and North of Charlton Lane, Swallowfield"

8. ARBORICULTURAL IMPACT ASSESSMENT (AIA)

8.1. The AIA considers the effects of any tree and hedgerow loss that may be required to implement the layout design for the site, as well as any reasonably foreseeable, potentially damaging activities proposed in the vicinity of retained trees. This is undertaken with reference to BS5837:2012. Impacts can include tree removal to facilitate design, demolition of buildings and removal of existing hard surfacing, soil compaction in close proximity to trees and direct impact damage to canopy and roots of retained trees from construction activities. A summary of anticipated impacts resulting from the proposed development is provided below.

Anticipated Tree losses:

8.2. The Site Layout identifies that only very minor tree loss will be required in order to allow the proposed development to be implemented. This loss is the removal of G4 only. This loss is required in order to achieve an appropriate highway access into the site.

8.3. Tree group G4 is a relatively young group of blackthorn, hawthorn, English oak and elder that has maximum height of 5.5m. Whilst some variety in the species composition was noted, the group is predominantly formed by blackthorn scrub. The removal of G4 will have a negligible impact on the overall arboricultural resource of the site.

8.4. Appropriate and high quality mitigation planting can be provided for this loss through the provision of new tree planting within the proposed development area.

Impacts Upon Retained Trees:

8.5. Once the tree removals have taken place, there is still potential for the retained trees being adversely impacted during the construction phase of the project. To ensure these impacts are kept to an acceptable level all construction works should adhere to recommendations within this report.

8.6. The Site Layout keeps all of the proposed main development outside of the RPA's of retained trees and therefore no impacts upon retained trees are envisaged. However, it is very important that no soil stripping or changes of ground levels occur within the RPA's of retained trees.

8.7. There is however one location in the south east corner of the site where a proposed hoggin perimeter footpath marginally encroaches into the RPA of T14 (B1 - oak). The encroachment is very minor and if, (when also considering the past agricultural land use and ploughing of the site) the hoggin path is constructed in a 'no dig' fashion with timber edging boards, impacts to adjacent trees can be avoided.

9. PROPOSED ENHANCEMENTS

9.1. A series of potential enhancements to the arboricultural resource of the site could be provided through the delivery of the development. These are summarised in the non-exhaustive list below:

- Undertake appropriate management of the onsite trees to improve biodiversity value and longevity
- Provide extensive new tree planting (beyond that required in mitigation for the proposed tree loss) using appropriate, ecologically valuable tree and shrub species
- Provide new tree planting around the perisperhal open space on the western and southern edges of the built form
- Delivery of appropriate high quality new amenity tree planting within the interior of the site
- Establish a circular walking route passing around the plantation (using the alignment of the existing track) to allow access for residents and to contribute to their physical and mental wellbeing
- Undertake appropriate management of the plantation in the south of the site, to promote its long term health and deliver ecological benefits.

10. TREE PROTECTION MEASURES

10.1. Tree protection fencing will be required to protect retained trees during the construction phase. A tree protection plan is provided in **Section 3** of this report. However, it will be necessary to revise this drawing once planning consent is granted in order to ensure the protection plan has been based on the final, consented, layout.

10.2. This approach is in line with Figure 1 of BS5837:2012 which advises 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.

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

11.1. 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.

11.2. Annex B and Table B.1 of BS5837:2012, an informative, advises that arboricultural method statement 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 Arboricultural Method Statement might reasonably be required as a planning condition.

11.3. In relation to the site, it is anticipated that arboricultural working methods will be straightforward. A brief summary of the principles of tree protection on development sites is included in Section 7. A draft, 'heads of terms' for an Arboricultural Method Statement is set out below:

- Project arboriculturist – schedule of monitoring and supervision (as required)
- Pre-commencement site meeting
- Tree removals (G4)
- Erection of temporary tree protection barriers (as approved)
- Main construction phase - project arboriculturist on hand to advise as required
- Removal of tree protection barriers (subject to approval of site conditions)
- Final landscaping including tree planting.

12. RECOMMENDATION AND SUMMARY

12.1. The baseline survey information has been used to inform the development proposal through the iterative design process. This has resulted in the preparation of design proposals for the site that minimise negative arboricultural impacts.

12.2. All the significant trees can be retained and adequately protected during construction activities to sustain their health and longevity. In particular, the plantation to the south of the site has provided an additional buffer to the development that will ensure it is successfully integrated into the development. This approach is compliant with WBC Emerging Local Plan Policy.

12.3. The direct arboricultural impacts are limited to minor tree loss (low quality group G4) that is required in order to achieve an appropriate highway access into the site.

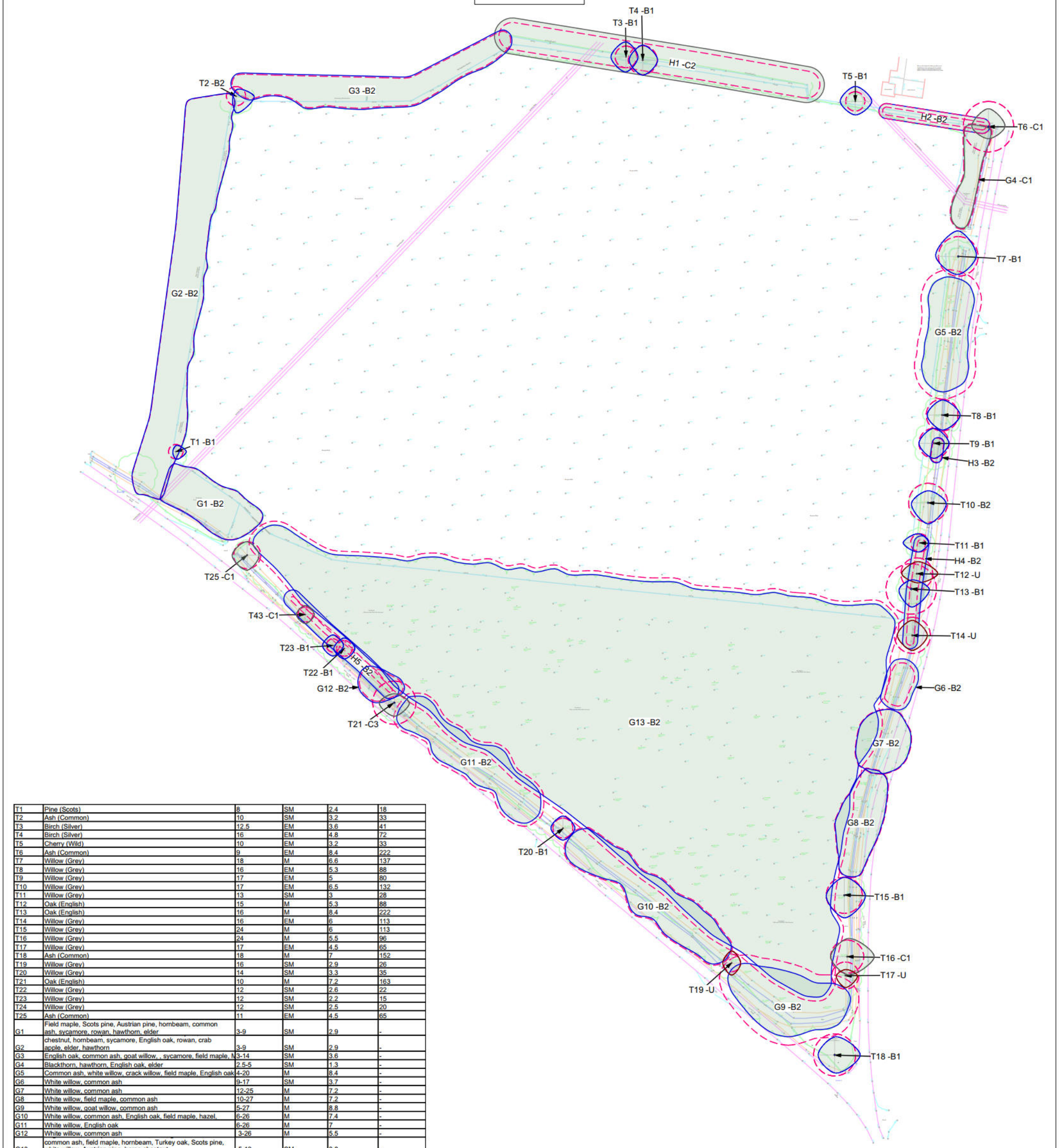
12.4. All tree losses can be mitigated through new diverse tree and shrub planting. New trees are likely to have an extended useful life expectancy compared to those which will likely be removed. In addition, enhancement planting beyond that required to mitigate the losses will also be provided.

12.5. On the basis that the recommendations and advice contained within this report are adhered to, and subject to appropriate implementation, the proposed development of the site is, in my opinion, acceptable from an arboricultural perspective.

[redacted]

Richard Hyett
MSc, BSc (Hons), MICFor, MArborA
Chartered Arboriculturist

TS - 'Section 2'



T1	Pine (Scots)	8	SM	2.4	18
T2	Ash (Common)	10	SM	3.2	33
T3	Birch (Silver)	12.5	EM	3.6	41
T4	Birch (Silver)	16	EM	4.8	72
T5	Cherry (Wild)	10	EM	3.2	33
T6	Ash (Common)	9	EM	8.4	222
T7	Willow (Grey)	18	M	6.6	137
T8	Willow (Grey)	16	EM	5.3	88
T9	Willow (Grey)	17	EM	5	80
T10	Willow (Grey)	17	EM	6.5	132
T11	Willow (Grey)	13	SM	3	28
T12	Oak (English)	15	M	5.3	88
T13	Oak (English)	16	M	8.4	222
T14	Willow (Grey)	16	EM	6	113
T15	Willow (Grey)	24	M	6	113
T16	Willow (Grey)	24	M	5.5	96
T17	Willow (Grey)	17	EM	4.5	65
T18	Ash (Common)	18	M	7	152
T19	Willow (Grey)	16	SM	2.9	26
T20	Willow (Grey)	14	SM	3.3	35
T21	Oak (English)	10	M	7.2	163
T22	Willow (Grey)	12	SM	2.6	22
T23	Willow (Grey)	12	SM	2.2	15
T24	Willow (Grey)	12	SM	2.5	20
T25	Ash (Common)	11	EM	4.5	65
G1	Field maple, Scots pine, Austrian pine, hornbeam, common ash, sycamore, rowan, hawthorn, elder	3-9	SM	2.9	-
G2	chestnut, hornbeam, sycamore, English oak, rowan, crab apple, elder, hawthorn	3-9	SM	2.9	-
G3	English oak, common ash, goat willow, , sycamore, field maple, M	3-14	SM	3.6	-
G4	Blackthorn, hawthorn, English oak, elder	2.5-5	SM	1.3	-
G5	Common ash, white willow, crack willow, field maple, English oak	4-20	M	8.4	-
G6	White willow, common ash	9-17	SM	3.7	-
G7	White willow, common ash	12-25	M	7.2	-
G8	White willow, field maple, common ash	10-27	M	7.2	-
G9	White willow, goat willow, common ash	5-27	M	8.8	-
G10	White willow, common ash, English oak, field maple, hazel,	6-26	M	7.4	-
G11	White willow, English oak	6-26	M	7	-
G12	White willow, common ash	3-26	M	5.5	-
G13	common ash, field maple, hornbeam, Turkey oak, Scots pine, white willow, Austrian pine, horse chestnut	5-12	SM	3.8	-
H1	Leyland cypress	12.5	EM	4.5	-
H2	Hawthorn, blackthorn, common ash, dog rose	5	SM	1.3	-
H3	Hawthorn, blackthorn, common ash	5	SM	1.8	-
H4	Blackthorn, field maple, hawthorn, common ash, English oak	4	SM	1.3	-
H5	Blackthorn, English oak	4	SM	0.8	-

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/offsite tree/out of scope (OOS)

N
GRID NORTH

0 2 4 6 8 10
Meters

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 north of Charlton Ln & West of Trowes Ln

DRAWING TITLE
Tree Survey & Constraints Plan

SCALE	DRAWING NUMBER
1:1250 @ A3	BHA_4506_01

DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
SD	RH	-	-	10/09/2021

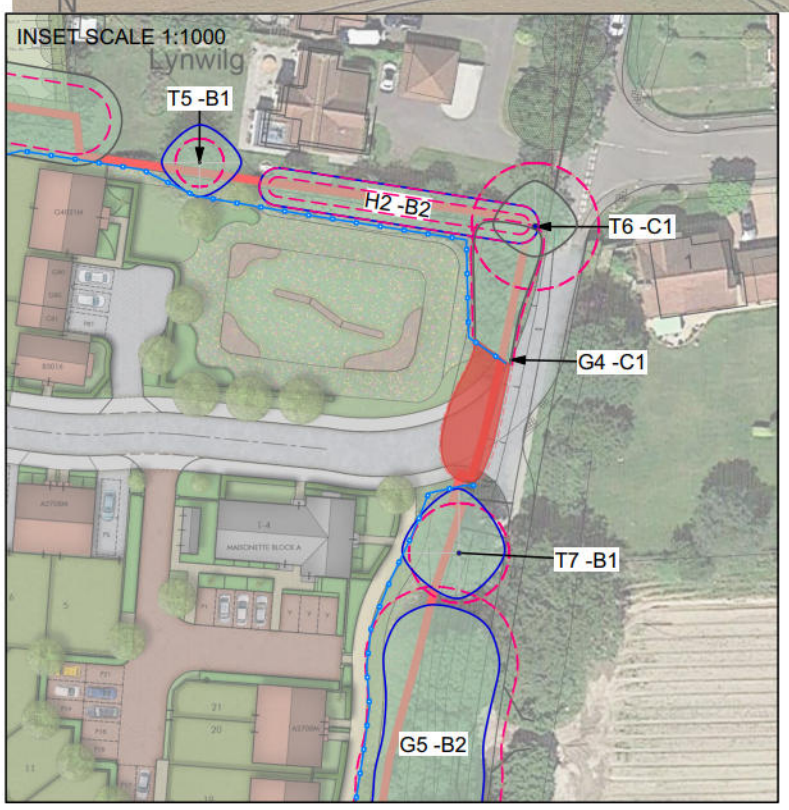
LAYOUT USED WITHIN DRAWING **XXXXXXXXXX**

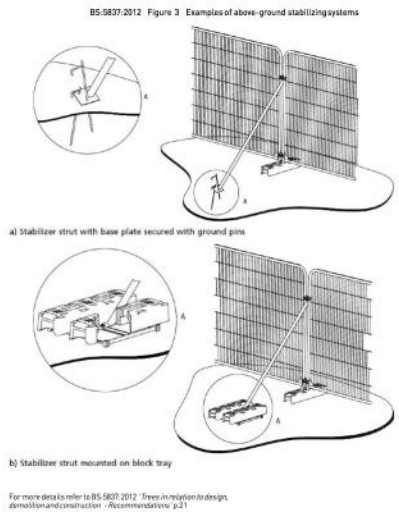
CLIENT **Croudace Homes**

COORDINATE SYSTEM / DATUM **British National Grid / Newlyn Datum (AOD)**

Barton Hyett Associates
Arboricultural Consultants
Tel: 01386 576161 Website: www.barton-hyett.co.uk
Address: Barn 2,Oxpens Farm,Yanworth,
Cheltenham,Gloucestershire,GL54 3QE

TRRP - 'Section 3'





The protective measures specified on this Tree Protection Plan must be used in combination with an approved Arboricultural Method Statement, and with reference to the overarching conditions of planning consent.

Construction Exclusion Zone(s)

INSTALLING PROTECTION
Protective barriers and ground protection (as approved), must be installed before any materials or machinery are brought onto the site and before the commencement of any demolition, general site clearance, ground or construction works of any description.

RETENTION OF PROTECTION
All protective measures must remain fully intact, vertical (in the case of barriers) and in their approved locations from the outset of the development. They must be maintained, at all times, until all works have been completed on site, including any earthworks and associated soft landscaping works. Any approved phasing of protective measures must be fully observed and complied with.

RESTRICTIONS
Construction Exclusion Zone(s) are to remain completely undisturbed for the duration of all development works. No construction activity of any description including but not limited to the following must occur within these areas at any time.

- No excavation of any description.
- No storage, disposal of soil, rubble or materials of any other description.
- No alterations to existing levels or ground conditions.
- No vehicular access, parking or use of any tracked or wheeled machinery of any description.
- No tree works, without the written consent of the Council's Planning service.
- No erection of temporary structures of any description.
- No fires.
- No storage disposal handing or use of any chemicals including cement washings.
- No fixtures or fittings of any description, security lighting, signage etc shall be attached to any part of a tree.
- No fires shall be light within 10 metres of the canopies of any tree or spread of any hedge.
- No chemicals, fuel, liquids/waste residues of any other description to be stored or disposed of within close proximity to or drained towards/into protected areas.

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

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/offsite tree/out of scope (OOS)
- Tree / Hedgerow / Group to be removed

Protection Measures

- Tree Protection Barrier installed to specification of Figure 2 in BS5837: 2012

N
GRID NORTH
0 10 20 30 40 50
Meters

PROJECT TITLE
Land north of Charlton Ln & West of Trowes Ln

DRAWING TITLE
Combined Tree Retention/Removal & Protection Plan

SCALE	DRAWING NUMBER
1:1250 @ A3	BHA_4506_02

DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
IM	RH	A	-	24/08/2023

LAYOUT USED WITHIN DRAWING **3145-C-1005-PL-E Site Layout**

CLIENT **Croudace Homes**

COORDINATE SYSTEM / DATUM **British National Grid / Newlyn Datum (AOD)**

Barton Hyett Associates
Arboricultural Consultants
Tel: 01386 576161 Website: www.barton-hyett.co.uk
Address: Barn 2,Oxpens Farm,Yanworth,
Cheltenham,Gloucestershire,GL54 3QE

BS5837:2012 TREE SURVEY SCHEDULE

LAND WEST OF TROWES LANE AND NORTH OF CHARLTON LANE, SWALLOWFIELD

PROJECT NO: 4507

SURVEYOR: IM

CLIENT: CROUDACE HOMES LTD

SURVEY DATE: 02/09/2021

Barton Hyett Arboricultural Consultants

INDIVIDUAL TREES

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) E-S-W N-	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²
T1	Pine (Scots)	On	8	1	-	200	2-3.5-2.5-1	2.0	2.5	E	SM	No significant visible defects.	Good	Good	40+	**B1**	2.4	18
T2	Ash (Common)	On	10	1	Yes	270	2-6-5.5-1	3.0	3	S	SM	Growing at base of bank.	Good	Good	20+	**B2**	3.2	33
T3	Birch (Silver)	Off	12.5	1	Yes	300	5-4-5-5	4.0	1.5	SW	EM	No significant visible defects.	Good	Good	40+	**B1**	3.6	41
T4	Birch (Silver)	Off	16	1	Yes	400	5-5-5-4.5	4.0	4	S	EM	No significant visible defects.	Good	Good	40+	**B1**	4.8	72
T5	Cherry (Wild)	Off	10	1	Yes	270	5-5.5-4.5-5	2.0	2	-	EM	No significant visible defects.	Good	Good	40+	**B1**	3.2	33
T6	Ash (Common)	Off	9	4	Yes	700	6-5.5-4-5.5	3.0	3.5	N	EM	Ash Dieback symptoms. Multi-stemmed.	Poor	Fair	<10	**C1**	8.4	222
T7	Willow (Grey)	On	18	1	Yes	550	8.5-6-6-7.5	2.5	4	-	M	White willow. Heavily compacted field access to north. Wet ditch to east.	Good	Good	40+	**B1**	6.6	137
T8	Willow (Grey)	On	16	1	Yes	440	5-6-5-5	2.5	3.5	S	EM	White willow. No significant visible defects.	Good	Good	40+	**B1**	5.3	88
T9	Willow (Grey)	On	17	1	Yes	420	5-5-5-5	2.5	2	-	EM	White willow. No significant visible defects.	Good	Good	40+	**B1**	5.0	80
T10	Willow (Grey)	On	17	6	Yes	540	4-6-7-5.5	4	3	N	EM	White willow. Not clear whether multiple stems originate from ground or from low pollard.	Good	Fair	20+	**B2**	6.5	132
T11	Willow (Grey)	On	13	1	Yes	250	3-3-3-5.5	3	3	-	SM	White willow. No significant visible defects.	Good	Good	40+	**B1**	3.0	28
T12	Oak (English)	On	15	1	Yes	440	4-7-3-5	6	5	N	M	Dead standing tree.	Poor	Poor	<10	**U**	5.3	88
T13	Oak (English)	On	16	1	Yes	700	3-6-6-4	4	3	S	M	Retrenching crown. Branch dieback and deadwood.	Fair	Good	40+	**B1**	8.4	222

BS5837:2012 TREE SURVEY SCHEDULE

LAND WEST OF TROWES LANE AND NORTH OF CHARLTON LANE, SWALLOWFIELD

PROJECT NO: 4507

SURVEYOR: IM

CLIENT: CROUDACE HOMES LTD

SURVEY DATE: 02/09/2021

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) E-S-W N-	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²
T14	Willow (Grey)	On	16	1	Yes	500	5-5-5-5	6	4	S	EM	Dead standing tree.	Poor	Poor	<10	**U**	6.0	113
T15	Willow (Grey)	On	24	1	Yes	500	6-7-7.5-6	5	4	-	M	Minor twig dieback.	Good	Good	20+	**B1**	6.0	113
T16	Willow (Grey)	On	24	1	Yes	460	6-9-6-5.5	6	5.5	SW	M	Branch dieback.	Fair	Fair	20+	**C1**	5.5	96
T17	Willow (Grey)	On	17	1	Yes	380	2-4-4-3	5	4.5	N	EM	Dead standing tree.	Poor	Poor	<10	**U**	4.5	65
T18	Ash (Common)	On	18	1	-	580	6-8.5-6-5.5	4	4.5	NE	M	No significant visible defects.	Good	Good	20+	**B1**	7.0	152
T19	Willow (Grey)	On	16	1	Yes	240	4-3-4-3	6	5	-	SM	Dead standing tree.	Poor	Poor	<10	**U**	2.9	26
T20	Willow (Grey)	On	14	1	Yes	280	4-4-4-4	5	4	S	SM	No significant visible defects.	Good	Good	40+	**B1**	3.3	35
T21	Oak (English)	On	10	1	Yes	600	3-5-4.5-5	5	5	-	M	Dead standing tree. Some wildlife value as standing deadwood next to low use lane.	Poor	Poor	<10	**C3**	7.2	163
T22	Willow (Grey)	On	12	1	Yes	220	3.5-3.5-3.5-3.5	4.5	4	-	SM	No significant visible defects.	Good	Good	40+	**B1**	2.6	22
T23	Willow (Grey)	On	12	1	Yes	180	3.5-3.5-3.5-3.5	4.5	4	-	SM	No significant visible defects.	Good	Good	40+	**B1**	2.2	15
T24	Willow (Grey)	On	12	2	Yes	210	3-3-3-3	4.5	4	-	SM	Included bark stem union at 0.5m	Good	Poor	20+	**C1**	2.5	20
T25	Ash (Common)	On	11	1	Yes	380	4.5-4-5-5	4	3	W	EM	Advanced crown dieback.	Poor	Poor	<10	**C1**	4.5	65

BS5837:2012 TREE SURVEY SCHEDULE

LAND WEST OF TROWES LANE AND NORTH OF CHARLTON LANE, SWALLOWFIELD

PROJECT NO: 4507

SURVEYOR: IM

CLIENT: CROUDACE HOMES LTD

SURVEY DATE: 02/09/2021

Barton Hyett Arboricultural Consultants

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	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G1	Field maple, Scots pine, Austrian pine, hornbeam, common ash, sycamore, rowan, hawthorn, elder	On	3-9	100	-	240	3	1	SM	Dense planted belt of even age. Trees have low individual merit and value comes from screening. Will require thinning management to avoid trees becoming attenuated. Little in the way of understorey.	Good	Good	40+	**B2**	2.9
G2	Field maple, Scots pine, common ash, Austrian pine, sweet chestnut, hornbeam, sycamore, English oak, rowan, crab apple, elder, hawthorn	Off	3-9	250	-	240	3	1	SM	Off-site planted belt of same group form as G5. Some Ash Dieback symptoms.	Good	Good	40+	**B2**	2.9
G3	English oak, common ash, goat willow, , sycamore, field maple, Myrobalan plum, hawthorn, elder	Off	3-14	100	Yes	300	4	1.5	SM	Edge of larger planted woodland belt. Larger trees are set further to north outside of the zone of influence. Group is scrubby in places.	Good	Good	40+	**B2**	3.6
G4	Blackthorn, hawthorn, English oak, elder	On	2.5-5	60	Yes	100	1	0.5	SM	Predominantly blackthorn scrub.	Good	Fair	20+	**C1**	1.3
G5	Common ash, white willow, crack willow, field maple, English oak	On	4-20	6	Yes	700	6	2	M	Mature trees are ashes and willows. One ash has bark fissures and dieback indicating Inonotus decay.	Good	Good	20+	**B2**	8.4
G6	White willow, common ash	On	9-17	2		310	5	4	SM	Two semi-mature white willows with young ash natural regeneration below.	Good	Good	40+	**B2**	3.7
G7	White willow, common ash	On	12-25	4	Yes	600	7	5	M	No significant visible defects.	Good	Good	20+	**B2**	7.2
G8	White willow, field maple, common ash	On	10-27	9	Yes	600	7	3.5	M	Included bark stem union in northernmost mature willow at 4m.	Good	Fair	20+	**B2**	7.2
G9	White willow, goat willow, common ash	On	5-27	11	-	730	6	3	M	Goat willows have subsided stems.	Good	Good	20+	**B2**	8.8
G10	White willow, common ash, English oak, field maple, hazel,	On	6-26	20	-	620	7	4	M	Predominantly mature white willows. One mature oak. Understorey of semi-mature trees and hawthorn.	Good	Good	40+	**B2**	7.4
G11	White willow, English oak	On	6-26	9	-	580	6	3	M	Understorey of occassional young oaks.	Good	Good	40+	**B2**	7.0
G12	White willow, common ash	On	13-26	2	Yes	460	6	5	M	Twig dieback in ash.	Fair	Good	20+	**B2**	5.5

BS5837:2012 TREE SURVEY SCHEDULE

LAND WEST OF TROWES LANE AND NORTH OF CHARLTON LANE, SWALLOWFIELD

PROJECT NO: 4507

SURVEYOR: IM

CLIENT: CROUDACE HOMES LTD

SURVEY DATE: 02/09/2021

Barton Hyett Arboricultural Consultants

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	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G13	English oak, Scots pine, silver birch, larch, goat willow, common ash, field maple, hornbeam, Turkey oak, Scots pine, white willow, Austrian pine, horse chestnut	On	5-12	1000	-	320	2.5	0.5	SM	Dense even-aged plantation of predominantly English oak, ash, birch and field maple. Attenuated stems.	Good	Good	40+	**B2**	3.8

HEDGEROWS

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)
H1	Leyland cypress	Off	12.5	12	380	0.5	EM	Out-grown unmaintained hedge. Highly monotonous. Section below HV lines previously clearance pruned.	Good	Good	20+	**C2**	4.5
H2	Hawthorn, blackthorn, common ash, dog rose	On	5	5	100	0.0	SM	Scrubby unmaintained hedgerow providing screening for neighbouring property.	Good	Good	20+	**B2**	1.3
H3	Hawthorn, blackthorn, common ash	On	5	4	150	0.5	SM	Remnant hedgerow.	Good	Good	20+	**B2**	1.8
H4	Blackthorn, field maple, hawthorn, common ash, English oak	On	4	5	100	0	SM	Scrubby remnant hedgerow.	Good	Good	20+	**B2**	1.3
H5	Blackthorn, English oak	On	4	6	60	0.5	SM	Unmaintained blackthorn scrub.	Good	Good	20+	**B2**	0.8

SELECT IMAGES FROM THE TREE SURVEY

LAND WEST OF TROWES LANE AND NORTH OF CHARLTON LANE, SWALLOWFIELD

PROJECT NO: 4507

SURVEYOR: IM

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IMAGE 7: View of the south access into the site, looking north-east from Charlton Lane.

IMAGE 8: View along Charlton Lane, looking south-east from the site access.

IMAGE 9: View of the north access into the site, looking south along Trowe's Lane.

IMAGE 10: View looking north across the site from near to the Charlton Lane access.

IMAGE 11: View looking east across the site from near to the Charlton Lane access.

IMAGE 12: View looking south-west across the site from G9 on the east boundary.

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- 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.

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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 is 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.

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 Planing 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