



ARBORICULTURAL SURVEY REPORT

Maes Bach ESS

October 2024



Barton Hyett Associates
Arboricultural Consultants

Summary table	
Site Name:	Maes Bach ESS
Project reference:	6433
Site Address:	Maes Bach Farm, Maesmawr Road, Gwaelod-y-garth, Cardiff
Nearest Postcode:	CF15 9JL
Central Grid reference:	<u>ST 10425 85647</u>
Local Planning Authority:	<u>Rhondda Cynon Taf</u>
Relevant planning policies:	<u>Rhondda Cynon Taf Local Development Plan 2011 - 2021</u> (still in use): Policy AW 8 - Protection and Enhancement of the Natural Environment
Statutory Controls:	Tree Preservation Order
	Conservation Area
	TBC No
Ancient trees/ woodlands?	<u>Ancient Semi-Natural Woodland: W1, W2, W3</u>
Soil Type: (Source: BGS online soils map © NERC 2024)	Superficial/Drift
	Bedrock
	<u>Till, Devonian - Diamicton</u> <u>Grovesend Formation - Sadstone / Higher Member - Mudstone</u>
Topographical Survey:	Topographical Survey Maes Bach, Maesmawr Road, Pontypridd B452/13350/1
Report author:	Joe Robson BSc (Hons), MArborA
Checked by:	Richard Hyett MSc, BSc (Hons), MICFoR
Date of issue:	21/10/24

REPORT CONTENTS:

SECTION 1:	SUMMARY, SITE DETAILS & SURVEY FINDINGS
SECTION 2:	TREE SURVEY & CONSTRAINTS PLAN
SECTION 3:	TREE SURVEY SCHEDULE & SITE IMAGES
SECTION 4:	METHODOLOGY
SECTION 5:	DESIGN GUIDANCE AND GENERIC ADVICE

1. INSTRUCTION

- 1.1. I am Joe Robson. I am an arboriculturist with 10 years of experience, and a Professional member of the Arboricultural Association.
- 1.2. Barton Hyett Associates Ltd have been instructed by Firstway Solar on behalf of Net Zero Twenty Five Limited to survey trees located on land associated with Maes Bach farm and adjacent roads ('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 an Energy Storage System (ESS) and an indicative cable route at the site and provide written advice on how they inform feasibility and design options.
- 1.4. **This report is intended for use by the applicant and design team only and is not for submission to the Local Planning Authority (LPA).**

2. SITE DESCRIPTION

- 2.1. The site consists of a single agricultural field and an indicative cable route. The field is located to the east of Maesmawr Road, Pontypridd. The cable route extends north from the field, along Maesmawr Road, joining Pound Farm Lane and then the A473, following this road to the east and terminating at a substation to the south of the A473.
- 2.2. The site is located to the south of Pontypridd, to the west of Caerphilly, to the north of Cardiff and to the east of Church Village.



Figure 1: Approximate survey area around agricultural field (yellow) and approximate RLB (red). Google Maps 2024.



Figure 2: Approximate indicative cable route survey area with agricultural field within RLB shown with red point. Google Maps 2024.

- 2.3. The Red Line Boundary (RLB) spans the agricultural field's northern, southern and western boundaries but is within the field on its eastern boundary.
- 2.4. Category **B** managed hedgerows span the agricultural field's northern and western boundaries with a farm track beyond the northern field boundary within the RLB and Maesmawr Road beyond the western boundary. Category **A** individual and groups of trees span the agricultural field's southern boundary separating it from a solar farm. Category **B** individual and groups of trees are sporadically spaced beyond the Red Line Boundary (RLB) on the field's eastern boundary. There are no arboricultural features on the eastern RLB within the agricultural field.
- 2.5. The agricultural field is currently accessible via an agricultural access off the farm track outside the RLB to the northeast.
- 2.6. The agricultural field is on relatively level ground at around 118 metres above sea level. Ground level decreases steadily to the north as the site progresses along the indicative cable route.

3. TREE SURVEY FINDINGS

- 3.1. A total of 73 trees, groups of trees, woodlands 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 in the Tree Survey and Constraints Plan (**Section 2**) and within the Tree Survey Schedule (**Section 3**).

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

	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	22	7	15	-	-
Groups	30	7	18	5	-
Woodlands	3	3	-	-	-
Hedgerows	18	-	14	4	-
Total	73	17	47	9	0

4. KEY ARBORICULTURAL FEATURES

- 4.1. The site benefits from numerous category **A** individual trees and groups of trees on the southern boundary of the agricultural field. These are T19, T20, T22, G27, G28 and G30 large, high-quality, characterful English oak with some hawthorn included in the group features. G30 extends further into the site on the southwestern side of the group, and the group is growing immediately north of an old ditch.
- 4.2. There are a number of high-quality category **A** features recorded alongside the indicative cable route on Maesmawr Road and Pound Farm Lane. This includes T10, a category **A1** sycamore with a large stem diameter which was recorded as 'notable'¹ in the Tree Survey Schedule, and T5, T6, G12, G13 and G17 consisting of various broadleaf species, including common beech, English oak, common ash and hybrid black poplar.
- 4.3. A single category **A** group was recorded alongside the indicative cable route adjacent to the A473. This high-quality tree group, G2, is located north of the A473 and opposite the sub-station where the indicative cable route terminates. The RPA is almost entirely set back from the road.
- 4.4. Root Protection Areas (RPAs) associated with some recorded features alongside the indicative cable route extend beneath the public highways. These RPAs should be seen as notional; it is unlikely that the RPAs extend beneath the public highways to the extent which is displayed on the Tree Survey and Constraints Plan. It is more likely that the RPAs are in fact asymmetric and likely to extend further away from hard standing and toward less compacted ground which is better suited to root growth.
- 4.5. Ancient Semi-Natural Woodlands (ASNW), W1, W2 and W3 have been recorded in the tree survey data. These category **A2** features are located on either side of Pound Farm Lane on the indicative cable route.

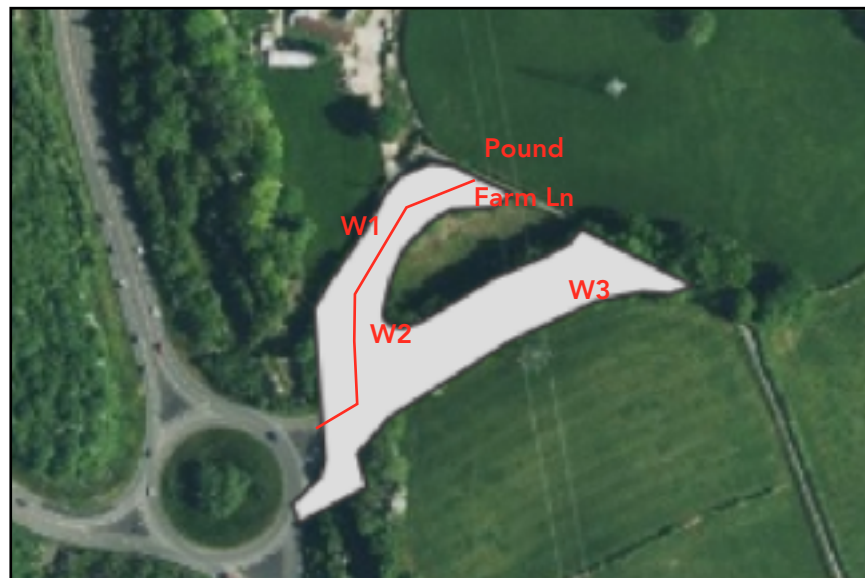


Figure 3: W1, W2 and W3 shown as a single ASNW on Data Map Wales plans. Pound Farm Lane approx. location shown with red line well within buffers between W1 and W2. Data Map Wales 2024.

- 4.6. A woodland is described as ASNW when it has persisted since at least the year 1600. Planning Policy Wales states that "ancient woodland, semi-natural woodlands, individual ancient, veteran and heritage trees and ancient hedgerows are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees, woodlands and hedgerows are to be afforded protection from development which would result in their **loss or deterioration** unless very exceptionally there are significant and clearly defined public benefits; this protection must prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW..."² (emphasis added).
- 4.7. Government guidance also states that ASNW buffers should be a minimum of 15 metres from the boundary of the woodland, though it may be reasonable to extend the buffer further. Such buffers are implemented for several reasons including, for example, to protect delicate below-ground soil structures and mycorrhizal relationships.
- 4.8. The woodlands have been assigned an **A2** quality category to reflect the ASNW designation, however, they are of reduced overall quality compared with other category **A2** woodlands.
- 4.9. Public highway Pound Farm Lane has already been developed well within the ASNW buffers. It is indeed likely, as per Data Map Wales ASNW mapping (see Figure 3), that W1 and W2 were once a single woodland and significant felling work was completed prior to the development of the road.
- 4.10. It is therefore highly unlikely that excavations into the public highway that fall within the ASNW buffers would cause any '**loss or deterioration**' to the ASNW. Root growth, if any, is likely to be fibrous and it is highly unlikely that mycorrhizal relationships have persisted following the development of the road.

5. CONSTRAINTS AND OPPORTUNITIES

- 5.1. The presence of ASNW buffers and category **A** RPAs within the highways along the indicative cable route is a constraint. These are not, however, as significant as they otherwise might have been. Existing public highways within ASNW buffers and RPAs significantly reduce the likelihood of root growth and mycorrhizal relationships.
- 5.2. The likelihood of significant root growth beneath public highways is further reduced when around areas where roads are flanked by steep banks and verges. This is the case around G14 - G17 on Pound Farm Lane.
- 5.3. Public highways within ASNW buffers and RPAs therefore present an opportunity to justify underground cabling within the public highway along the indicative cable route.
- 5.4. There is limited access into the agricultural field main site area and hedgerow removal will likely be required to create a new access off Maesmawr Road. Creation of this access may impact H16 and H18 category **B2** managed hedgerows.
- 5.5. There is limited space on site to undertake compensatory planting so landscape planting may need to be completed off-site or within an extended RLB.

¹ The term 'notable' carries no weight within the National Planning Policy Framework (NPPF), but is a term that recognises a mature tree which may stand out in the local environment.

² Paragraph 6.4.43 of the Planning Policy Wales - Edition 12, February 2024 (PPW).

- 5.6. Ground within RPAs and within existing tree groups in general presents an opportunity to complete landscape planting without the need to extend the RLB or reduce the developable area on site.
- 5.7. The RPA associated with G30 category **A** tree group on the southwest of the agricultural field extends some way into the site. An old ditch is located to the immediate south of this group and the field has been used for grazing rather than arable use; which would have resulted in ploughing works compacting the RPAs and damaging roots. There are therefore limited reasons to present RPAs in this area as notional or already compromised and so development works within RPAs associated with field boundary trees and groups, including G30, should be avoided entirely if possible.
- 5.8. Planting will likely be required to the north and east of the agricultural field to screen the development from view. Planting could be undertaken within H16 and H18 providing that management of the hedges is altered.
- 5.9. Rhondda Cynon Taf Council do not provide publicly accessible Tree Preservation Order (TPO) information and TPO information relating to the Tree Survey Schedule is not currently known.

6. RECOMMENDATIONS AND CONCLUSION

- 6.1. The information contained within this report should be used in the preparation of design proposals for the site, in order to minimise negative arboricultural impacts.
- 6.2. Public highways within category **A** RPAs and ASNW buffers present an opportunity to justify the indicative cable route being placed within the highways, despite the RPAs and buffers.
- 6.3. Horizontal Directional Drilling (HDD) would allow for underground cables to be installed beneath the highways and to a depth to ensure that RPAs and buffers would not be impacted. Due to site constraints, including sharp turns in the roads, it is unlikely that HDD would be a viable option, however this could be explored in more detail if required. Due to the fact that RPAs are notional beneath the public highways and trenching works are highly unlikely to result in loss or deterioration of ASNW in this instance, investigating the viability of HDD is unnecessary in my opinion.
- 6.4. I recommend implementing an arboricultural watching brief to ensure open trench works are completed within category **A** RPAs and ASNW buffers without damaging structural roots. This approach demonstrates a recognition of the constraints whilst providing a feasible solution to completing works along the indicative cable route.
- 6.5. Care should be taken to avoid impacting RPAs within the agricultural field. If this is not possible a 'no-dig' solution may be specified to limit compaction damage.
- 6.6. Excavation within RPAs in the agricultural field should be avoided entirely.
- 6.7. Landscape planting could be undertaken within RPAs providing no heavy plant or machinery is used to complete planting works in these areas.
- 6.8. In arboricultural terms, the development of the site is feasible subject to detailed design. The information contained within this report should be used in the preparation of the emerging design proposals for the site, in order to minimise negative arboricultural impacts.
- 6.9. I would be pleased to provide comments and advice on the emerging design proposals before drafts are finalised.

Joe Robson

Joe Robson BSc (Hons), MArborA
Arboriculturist



IMAGE 1: G28 and lower quality G29 on southern boundary of agricultural field. Photo taken facing southeast.



IMAGE 2: G30, facing southwest. Photo shows G30 extending into site on RHS.



IMAGE 3: G30 with ditch to south of stems and existing solar farm fencing to south of site. Photo taken facing northeast.



IMAGE 4: Facing south into agricultural field site access. Photo taken from just outside RLB.



IMAGE 5: H14 and T15 on Maesmawr Road facing north.



IMAGE 6: G9 facing north from Pound Farm Lane onto the A473.

Tree Ref	Species	Height (m)	LifeStage	RPA Radius (m)	RPA (m2)
T1	Willow (Goat)	12	EM	4.8	72
T2	Willow (Goat)	14	EM	5.4	90
T3	Alder (Common)	13	SM	3.3	36
T4	Willow (Goat)	10	EM	4.2	60
T5	Oak (English)	17	M	7	152
T6	Oak (English)	13	M	7.8	191
T7	Maple (Fossil)	9	SM	3.6	41
T8	Sycamore	12	M	8.9	248
T9	Alder (Common)	10	SM	4.9	76
T10	Sycamore	17	M	14.4	651
T11	Chestnut (Horse)	14	EM	7.2	163
T12	Sycamore	17	M	14.4	222
T13	Ash (Common)	10	EM	5.4	92
T14	Sycamore	11	SM	8.4	222
T15	Oak (English)	12	EM	6	113
T16	Beech (Common)	6	EM	5.4	92
T17	Hawthorn	4	EM	2.6	22
T18	Hawthorn	3	EM	2.2	15
T19	Oak (English)	13	EM	6	113
T20	Oak (English)	11	EM	9	294
T21	Oak (English)	7	EM	6	113
T22	Oak (English)	14	EM	11.4	408

Group Ref	Species	Height Range (m)	LifeStage	RPA Radius (m)	RPA (m2)
G1	Ash, alder, oak, silver birch	5-18	EM	4.8	72
G2	Common ash, raywood ash, chest, silver birch, alder	7-18	EM	7.8	113
G3	Alder, sycamore, ash, silver birch	6-10	SM	3.3	36
G4	Alder	4-10	SM	2.4	18
G5	Silver birch, hazel, alder, hawthorn, gorse	3-10	SM	2.4	18
G6	Alder, silver birch, goat willow	3-10	SM	2.4	18
G7	Silver birch, alder, goat willow, gorse	3-7	Y	1.8	9
G8	Silver birch, alder, hawthorn, buddleja, gorse	3-5	Y	1.5	7
G9	Hazel, blackthorn, alder, silver birch, hawthorn, oak	3-10	SM	2.4	18
G10	Hazel, blackthorn, alder, silver birch, hawthorn, oak	3-10	SM	2.4	18
G11	Goat willow, alder, hawthorn	6-12	SM	2.4	18
G12	Ash, beech, oak	10-15	EM	7.2	163
G13	Oak, beech	8-13	EM	6	113
G14	Hazel, hawthorn, field maple, silver birch	3-10	SM	2.4	18
G15	Alder	13-15	EM	4.8	72
G16	Ash, oak	12-15	SM	3.6	41
G17	Hybrid black poplar	20-38	EM	9.6	290
G18	Sycamore, oak	6-12	SM	2.4	18
G19	Sycamore, ash, hazel, alder	6-10	SM	3.8	41
G20	Sycamore, lime	10-14	EM	6	113
G21	Sycamore, ash, alder, oak, hazel, goat willow	5-15	EM	4.2	56
G22	Sycamore, ash, alder, oak, hazel, goat willow	5-15	EM	4.2	56
G23	Oak, Rowan, hawthorn	3-10	EM	4.8	72
G24	Beech, oak	5-7	EM	5.4	92
G25	Beech, hawthorn	5-7	EM	5.4	92
G26	Hawthorn, alder, oak, hazel	4-9	EM	4.5	65
G27	Oak, hawthorn, ash	6-15	SM	9	294
G28	Oak, hawthorn	4-14	EM	7.2	163
G29	Oak	6-7	EM	4.2	56
G30	Oak	7-14	EM	10.8	306

WoodRef	Species	Height Range (m)	LifeStage	RPA Radius (m)	RPA (m2)
W1	Oak, silver birch, ash, oak, gorse	3-10	SM	2.4	18
W2	Oak, ash, sycamore, silver birch, hazel, hawthorn	3-17	EM	3.6	41
W3	Sycamore, ash, oak, beech, holly, hazel	5-18	EM	6	113

Hedge Ref	Species	Avg. Height (m)	Life Stage	RPA Radius (m)	RPA (m2)
H1	Hazel, hawthorn, holly, blackthorn	4	EM	1.3	5
H2	Hazel, hawthorn, holly, blackthorn	4	EM	1.3	5
H3	Hazel, hawthorn, holly, blackthorn	4	EM	1.3	5
H4	Oak, hawthorn, hazel, holly, ash, blackthorn	3	SM	1.5	7
H5	Oak, hawthorn, hazel, holly, ash, blackthorn	3	SM	1.5	7
H6	Oak, hawthorn, hazel, holly, ash, blackthorn	3	SM	1.5	7
H7	Oak, hawthorn, hazel, holly, ash	2	SM	1.5	7
H8	Oak, hawthorn, hazel	2	SM	1.3	5
H9	Sycamore, hawthorn, hazel	2	SM	1.3	5
H10	Sycamore	5	SM	1.3	5
H11	Cherry laurel	5	SM	1.1	4
H12	Lepidoptera	13	M	2.4	18
H13	Sycamore, hazel, holly, blackthorn	3	EM	1.3	5
H14	Sycamore, hazel, holly, blackthorn	3	EM	1.3	5
H15	Blackthorn, hawthorn, hazel, holly	1	SM	1	3
H16	Holly, hazel, hawthorn, beech	1.5	SM	1.3	5
H17	Holly, hazel, hawthorn, beech	1.5	SM	1.3	5
H18	Holly, hazel, hawthorn, beech	1.5	SM	1.1	4



KEY

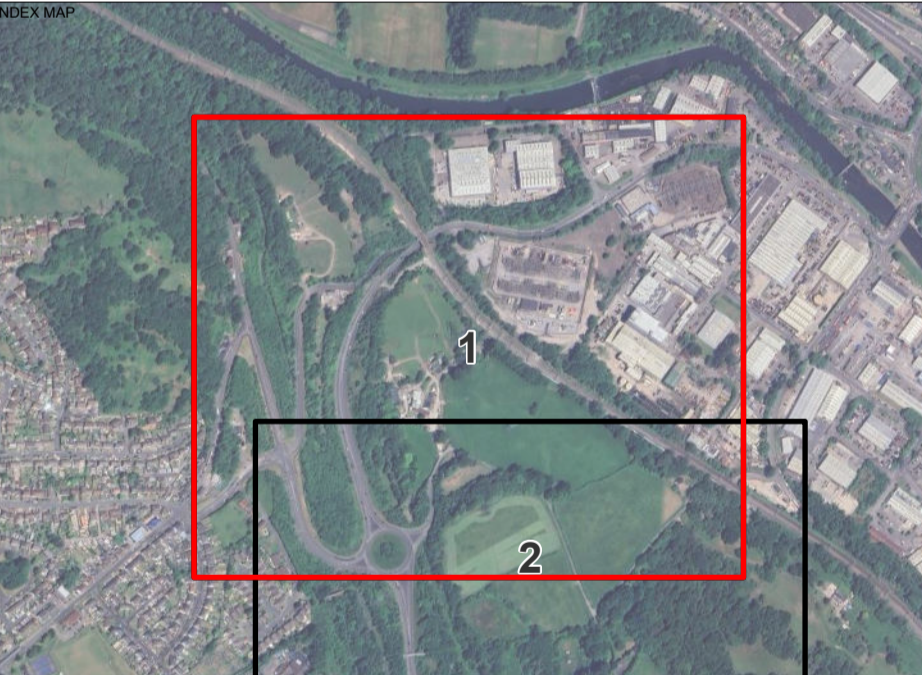
- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C 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/Group/Hedgerow not on topographical survey. Location given is an estimate
- Target Note

Label	Description
OOS	Newly planted trees small diameter: Establishing well

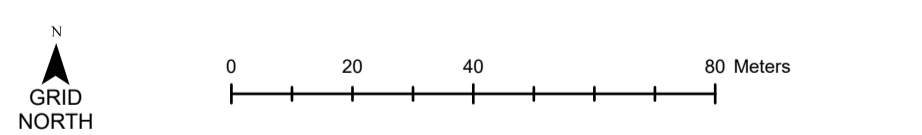
Target Notes

Label	Description
TN1	Public highway through ASNW polygon

Tree Canopy Area		Tree Group Canopy Area		Woodland Canopy Area		Hedgerow Canopy Area	
Category	Total SQM	Category	Total SQM	Category	Total SQM	Category	Total SQM
A	227.7	A	1021	A	9519.9	B	2452.7
B	1170.4	B	32539.1	B	9519.9	C	437.4
C	5170.4	C	5170.4	C	5170.4		



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: **Maes Bach (6433)**

DRAWING TITLE: **Tree Survey Plan**

SCALE: **Scale: 1:1,250 @ A1** DRAWING NUMBER: **BHA_6433_01**

DRAWN BY: **LB** APPROVED BY: **JR** REVISION: **-** SHEET: **of** DATE: **08/10/2024**

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

CLIENT: **Net Zero Twenty Five Limited**

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DRAWING PRODUCED BY: **SUMMIT GEO**

INDIVIDUAL TREES

Ref	Species	On/off site	Height (m)	No. of stems	Est diam?	Calc. / actual stem dia. (mm)	Crown radii (m) N-E-S-W	Av. 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)	BS 5837 Category	RPA radius (m)	RPA m ²
T1	Willow (Goat)	On	12.0	1	Yes	400	6.0-6.0-6.0-6.0	2.5	3.0	W	EM	None	Spreading canopy.	Good	Good	40+	B1	4.8	72.0
T2	Willow (Goat)	On	14.0	1	Yes	450	8.0-8.0-8.0-8.0	2.5	3.0	W	EM	None	Growing behind raised mound. Spreading canopy.	Good	Good	40+	B1	5.4	92.0
T3	Alder (Common)	On	13.0	1	Yes	280	4.0-4.0-4.0-4.0	3.0	3.0	NW	SM	None	Low cat B.	Good	Good	40+	B1	3.3	35.0
T4	Willow (Goat)	On	10.0	1	Yes	350	5.0-5.0-5.0-5.0	2.5	3.0	W	EM	None	Growing behind raised mound. Spreading canopy.	Good	Good	40+	B1	4.2	55.0
T5	Oak (English)	On	17.0	2	Yes	580	8.0-5.0-9.0-8.0	6.0	5.0	N	M	None	Contorted form. High aesthetic value for road users. Growing on top of road bank 1m above road level.	Good	Good	40+	A1	7.0	152.0
T6	Oak (English)	On	13.0	1	Yes	650	4.0-4.0-12.0-10.0	6.0	3.0	S	M	None	Contorted form. High aesthetic value for road users. Growing on top of road bank 1m above road level.	Good	Good	40+	A1	7.8	191.0
T7	Maple (Field)	On	9.0	1	Yes	300	2.0-4.0-4.0-3.0	5.5	4.0	SW	SM	None	Within larger wooded group compact medium sized potential tree.	Good	Good	40+	B1	3.6	41.0
T8	Sycamore	On	12.0	5	Yes	740	6.0-7.0-7.0-7.0	3.0	5.0	N	M	None	Ivy clad tree.	Good	Good	40+	B1	8.9	248.0
T9	Alder (Common)	On	10.0	2	None	410	4.0-5.0-5.0-4.0	4.0	3.0	NW	SM	None	Garden tree. Low cat B.	Fair	Good	40+	B1	4.9	76.0
T10	Sycamore	On	17.0	1	Yes	1200	11.0-11.0-11.0-11.0	4.0	4.0	SW	M	Notable	Large spreading tree with large low lateral branches. Impressive size and good form form. Set back from road along footpath.	Good	Good	40+	A1	14.4	651.0
T11	Chestnut (Horse)	On	14.0	1	Yes	600	7.0-8.0-8.0-8.0	4.0	5.0	E	EM	None	Viewed from behind wall. Balanced crown.	Good	Good	40+	B1	7.2	163.0
T12	Sycamore	On	17.0	1	Yes	700	10.0-10.0-10.0-10.0	4.0	5.0	W	M	None	Set back from road. Canopy thinning but possibly just autumn leaf drop.	Good	Good	40+	A1	8.4	222.0

Ref	Species	On/off site	Height (m)	No. of stems	Est diam?	Calc. / actual stem dia. (mm)	Crown radii (m) N-E-S-W	Av. 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)	BS 5837 Category	RPA radius (m)	RPA m ²
T13	Ash (Common)	On	10.0	1	Yes	450	5.0-5.0-5.0-5.0	6.0	6.0	S	EM	None	Growing from 1 m above road level. Low cat B.	Good	Good	20+	B1	5.4	92.0
T14	Sycamore	On	11.0	10	Yes	700	7.0-6.0-7.0-7.0	4.0	2.0	SW	SM	None	Probably regeneration from cut stump. Low cat B.	Good	Good	40+	B1	8.4	222.0
T15	Oak (English)	On	12.0	1	None	500	6.0-5.0-7.0-6.0	2.0	3.5	N	EM	None	Wound in stem of east occluding. Canopy cut back off road.	Good	Good	40+	B1	6.0	113.0
T16	Beech (Common)	On	6.0	1	Yes	450	7.0-4.0-6.0-5.0	2.5	2.0	SE	EM	None	Stunted canopy; large stem. Looks like a bonsai. High cat B because highly aesthetically pleasing. Hornets nest in cavity.	Good	Good	40+	B1	5.4	92.0
T17	Hawthorn	On	4.0	6	None	220	2.0-3.0-2.0-2.0	1.5	0.0	NW	EM	None	Stunted tree on field boundary.	Fair	Good	40+	B1	2.6	22.0
T18	Hawthorn	On	3.0	6	None	180	1.0-1.0-1.0-1.0	1.0	0.5	NW	EM	None	Stunted tree on field boundary.	Fair	Good	40+	B1	2.2	15.0
T19	Oak (English)	On	13.0	1	None	500	7.0-3.0-5.0-6.5	5.0	4.0	NE	EM	None	Forms larger high value group.	Good	Good	40+	A1	6.0	113.0
T20	Oak (English)	On	11.0	1	None	750	3.0-6.0-7.0-5.5	4.0	4.0	NE	EM	None	Forms larger high value group.	Good	Good	40+	A1	9.0	254.0
T21	Oak (English)	On	7.0	1	None	500	3.0-3.0-3.0-3.0	2.0	3.0	W	EM	None	Tree in decline; possibly from waterlogged soil.	Fair	Good	40+	B1	6.0	113.0
T22	Oak (English)	On	14.0	1	None	950	11.0-11.0-6.0-5.0	3.0	2.0	E	EM	None	Largest individual within larger group. Spreading canopy; good form.	Good	Good	40+	A1	11.4	408.0

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. crown radius (m)	Av. low crown height (m)	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
G1	Ash; alder; oak; silver birch	On	5-18	50	None	400.0	4.0	2.0	EM	None	Predominantly ash som of which have crowns dying back. Bramble understory.	Fair	Good	40+	B2	4.8
G2	Common ash; raywood ash; cherr; silver birch; alder; oak	On	7-18	80	None	500.0	3.0	5.0	EM	None	Aesthetically pleasing roadside group with good screening value. Coming into maturity; some dead roadside ash trees. Raywood ash looking in good condition.	Good	Fair	40+	A2	6.0
G3	Alder; sycamore; ash; silver birch	On	4-10	6	None	280.0	2.0	2.0	SM	None	Low value b group. Has screening value.	Good	Good	40+	B2	3.3
G4	Alder	On	4-10	6	None	200.0	2.0	2.0	SM	None	Low value b group. Has screening value.	Good	Good	40+	B2	2.4
G5	Silver birch; hazel; alder; hawthorn; gorse	On	3-10	80	None	200.0	5.0	1.0	SM	None	Establishing dense tree group. Individuals within group of low value but as a large continues group it has higher value. Growing 2-3 m from road in verge.	Good	Good	40+	B3	2.4
G6	Alder; silver birch; goat willow;	On	3-10	80	None	200.0	5.0	1.0	SM	None	Pioneer species. Establishing dense tree group. Individuals within group of low value but as a large continues group it has higher value. Get less dense towards road with trees of lower quality. Low cat B.	Good	Good	40+	B3	2.4
G7	Silver birch; alder; goat willow; gorse	On	3-7	20	None	130.0	2.0	1.0	Y	None	Fragmented low value group near roadside. Pioneer species.	Good	Good	40+	C2	1.6
G8	Silver birch; alder; hawthorn; buddleja; gorse	On	3-5	200	None	120.0	2.0	2.0	Y	None	Fragmented group of pioneer species low value; turns into higher quality dense group further up verge away from road.	Good	Good	40+	C2	1.5
G9	Hazel; blackthorn; alder; silver birch; hawthorn; oak; ash; goat willow; Rowan; dog rose; gorse	On	3-10	300	None	200.0	5.0	1.0	SM	None	Establishing dense tree group. Individuals within group of low value but as a large continues group it has higher value. Possibly important linking habitat for neighbouring ASNW.	Good	Good	40+	B3	2.4
G10	Hazel; blackthorn; alder; silver birch; hawthorn; oak; ash; goat willow; Rowan; dog rose; gorse	On	3-10	150	None	200.0	5.0	1.0	SM	None	Establishing dense tree group. Individuals within group of low value but as a large continues group it has higher value. Possibly important linking habitat for neighbouring ASNW.	Good	Good	40+	B3	2.4
G11	Goat willow; alder hawthorn;	On	5-12	50	None	200.0	3.0	2.0	SM	None	Same species assemblage as nearby ASNW.	Good	Good	40+	B2	2.4

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. crown radius (m)	Av. low crown height (m)	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
G12	Ash; beech; oak	On	10-15	20	None	600.0	6.0	7.0	EM	None	Predominantly oaks with some ash and beech. Ash showing signs of crown dieback. Individuals of higher value on his side of the road than other side even though other side is ASNW on maps.	Good	Good	40+	A3	7.2
G13	Oak; beech	On	8-13	4	None	500.0	7.0	7.0	EM	None	Growing on top of bank 2m above road level down separate road on junction.	Good	Good	40+	A2	6.0
G14	Hazel; hawthorn; field maple; silver birch.	On	3-10	30	Yes	200.0	3.0	2.0	SM	None	Ditch runs through centre of group parallel to road. Trees on either side of ditch. Trees road side of ditch of lower value. Low cat B generally.	Good	Good	40+	B2	2.4
G15	Alder	On	13-16	2	Yes	400.0	5.0	4.0	EM	None	Within larger wooded group. Growing from 4-5 m into verge. Ivy clad.	Good	Good	40+	B2	4.8
G16	Ash; oak	On	12-15	4	None	300.0	3.0	7.0	SM	None	Roadside trees growing 1.5m into verge. High category C. Suppressed by larger poplars behind.	Fair	Good	20+	C2	3.6
G17	Hybrid black poplar	On	20-38	8	None	800.0	8.0	10.0	EM	None	Set back from road; behind stream and 2m below road level.	Good	Good	40+	A2	9.6
G18	Sycamore; oak	On	6-12	4	Yes	200.0	2.0	5.0	SM	None	Growing 2-3 m into verge from road. Suppressed by larger poplars behind. Poor form and low future potential.	Fair	Good	20+	C2	2.4
G19	Sycamore; ash; hazel; alder	On	4-10	14	None	300.0	3.0	4.0	EM	None	Low cat B group. Ash trees are dying back and trees are young and ivy clad. Set back from roadside.	Fair	Good	40+	B2	3.6
G20	Sycamore; lime	On	10-14	2	None	500.0	4.0	4.0	EM	None	Trees located up bank 1-2m above road level.	Good	Good	40+	B2	6.0
G21	Sycamore; ash; alder; oak; hazel; goat willow;	On	5-15	25	Yes	350.0	4.0	3.0	EM	None	Predominantly sycamore and alder with some ash and oak making up over story. Hazel and holly understory. Many multi stemmed trees crown lifted over road. Most trees growing from bank set back from road.	Good	Good	40+	B2	4.2
G22	Sycamore; ash; alder; oak; hazel; goat willow;	On	5-15	25	Yes	350.0	4.0	3.0	EM	None	Predominantly sycamore and alder with some ash and oak making up over story. Hazel and holly understory. Many multi stemmed trees crown lifted over road. Most trees growing from bank set back from road.	Good	Good	40+	B2	4.2
G23	Oak; Rowan; hawthorn;	On	3-10	4	None	400.0	7.0	2.5	EM	None	1 large oak; 1 small Rowan and hawthorn both suppressed; 1 less suppressed hawthorn.	Good	Good	40+	B2	4.8
G24	Beech; oak	On	5-7	6	None	450.0	4.0	2.5	EM	None	Windswept trees.	Good	Good	40+	B2	5.4

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. crown radius (m)	Av. low crown height (m)	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
G25	Beech; hawthorn.	On	5-7	4	None	450.0	4.0	2.5	EM	None	Windswept trees.	Good	Good	40+	B2	5.4
G26	Hawthorn; alder; oak; hazel	On	4-9	14	None	380.0	3.0	3.0	EM	None	One mature but stunted hawthorn; some larger oak and alder with hazel and hawthorn as smaller trees. High cat B.	Good	Good	40+	B2	4.5
G27	Oak; hawthorn; ash	On	5-15	28	None	750.0	5.0	4.0	EM	None	Generally taller than linear group to west; growing either side of drainage ditch. Predominantly oak with 4 hawthorn and one ash. Will possibly stay as smaller statured trees because of wind exposure.	Good	Good	40+	A2	9.0
G28	Oak; hawthorn	On	4-14	12	None	600.0	5.0	2.0	EM	None	Gnarled and windswept oaks; with one hawthorn. Cavities twisted stems and deadwood.	Good	Good	40+	A2	7.2
G29	Oak	On	6-7	3	None	350.0	3.0	2.0	EM	None	Stunted and in decline; one dead. Makes up larger high value group which means they are a high cat C group.	Poor	Good	40+	C2	4.2
G30	Oak	On	7-14	15	None	900.0	5.0	3.0	EM	None	Gnarled and windswept group. Cavities and deadwood. All located on north ditch bank.	Good	Good	40+	A2	10.8

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)	ASNW or ARW buffer (m)
W1	Goat willow; alder; ash; oak; gorse	On	3-10	100	None	200	2.0	2.0	SM	ASNW	Lower individual tree quality than other ASNW compartments nearby but nonetheless ASNW. Small statured young trees.	Good	Good	40	A3	2.4	15.0
W2	Oak; ash; sycamore; silver birch; hazel; hawthorn	On	3-17	200	None	300	5.0	4.0	EM	ASNW	Maps indicate ASNW. High wildlife value and amenity value given to road users.	Good	Good	40	A3	3.6	15.0
W3	Sycamore; ash; oak; beec; holly; hazel	On	5-18	20	None	500	6.0	6.0	EM	ASNW	Most higher value trees set back up bank away from road. Trees close to road are of lower value containing ash with significant crown dieback and low value sycamores.	Good	Good	40	A3	6.0	15.0

HEDGEROWS

Ref	Species	On/off site	Av. height (m)	Av. width (m)	Av. stem diam (mm)	Av. low crown height (m)	Life stage	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
H1	Hazel; hawthorn; holly; blackthorn	On	4.0	2.5	100	0.0	EM	Maintained hedgerow.	Good	Good	40+	B2	1.3
H2	Hazel; hawthorn; holly; blackthorn	On	4.0	2.5	100	0.0	EM	Maintained hedgerow.	Good	Good	40+	B2	1.3
H3	Hazel; hawthorn; holly; blackthorn	On	4.0	2.5	100	0.0	EM	Maintained hedgerow.	Good	Good	40+	B2	1.3
H4	Oak; hawthorn; hazel holly; ash; blackthorn	On	3.0	3	120	0.0	SM	Maintained hedgerow.	Good	Good	40+	B2	1.5
H5	Oak; hawthorn; hazel holly; ash; blackthorn	On	3.0	2.5	120	0.0	SM	Maintained hedgerow.	Good	Good	40+	B2	1.5
H6	Oak; hawthorn; hazel holly; ash; blackthorn	On	3.0	3	120	0.0	SM	Maintained hedgerow.	Good	Good	40+	B2	1.5
H7	Oak; hawthorn; hazel holly; ash	On	2.0	2	120	0.0	SM	Maintained hedgerow.	Good	Good	40+	B2	1.5
H8	Oak; hawthorn; hazel	On	2.0	2	100	0.0	SM	Maintained hedgerow.	Good	Good	40+	B2	1.3
H9	Sycamore; hawthorn; hazel	On	2.0	1.5	100	0.0	SM	Hedgerow on top of bank.	Fair	Good	40+	C2	1.3
H10	Sycamore	On	5.0	3	110	1.0	SM	Hedgerow outgrown and dying.	Fair	Fair	20+	C2	1.3
H11	Cherry laurel	On	5.0	4	90	0.0	SM	Growing on top of bank 1.5 m above road level. Residential garden hedge.	Good	Good	20+	C2	1.1
H12	Leyland cypress	On	12.0	4	200	2.0	M	Outgrown hedgerow; likely be reduced soon.	Good	Good	10+	C2	2.4
H13	Sycamore; hazel; holly; blackthorn	On	3.0	2	110	0.0	EM	Healthy hedgerow on roadside.	Good	Good	40+	B2	1.3
H14	Sycamore; hazel; holly; blackthorn	On	3.0	2	110	0.0	EM	Healthy hedgerow on roadside.	Good	Good	40+	B2	1.3
H15	Blackthorn; hawthorn; hazel; holly;	On	1.0	2	80	0.0	SM	Heavily flailed hedgerow.	Good	Good	40+	B2	1.0
H16	Holly; hazel; hawthorn; beech	On	1.5	1.5	110	0.0	SM	Flailed hedgerow on top of earth wall/mound.	Good	Good	40+	B2	1.3
H17	Holly; hazel; hawthorn; beech	On	1.5	1.5	110	0.0	SM	Flailed hedgerow on top of earth wall/mound.	Good	Good	40+	B2	1.3
H18	Holly; hazel; hawthorn; beech	On	1.5	1.5	90	0.0	SM	Flailed hedgerow on top of earth wall/mound.	Good	Good	40+	B3	1.1

- The tree survey was carried out with reference to the methodology set out in BS 5837:2012 '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.
- 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.
- OOS: The recorded Out Of Scope trees and features refer to either a dead-standing or failed tree; a stump or minor shrubs; where trees are inaccessible or located off-site and unlikely to be affected by the development or, it is found that the trees are undersized according to BS 5837:2012, which stipulates a minimum recordable diameter of 75mm.

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 root protection area (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. Note: 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, expressed both as the existing height above ground level of the 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, e.g., due to inaccessibility, 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 a 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 on the local landscape and environment. Semi-mature are still capable of being transplanted without preparation, up to 300mm 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 on 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, its 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 epicormic shoot growth).

Poor: Significant stress or disease noted; larger areas of dieback than above.

Dead: (or Moribund).

STRUCTURAL CONDITION:

Features affecting the structural stability of the tree include decay, significant deadwood, 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 feature(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.

The term '*notable*' carries no weight within the National Planning Policy Framework (NPPF), but is a term that recognises a mature tree which may stand out in the local environment because it is large in comparison with other trees around it.

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 BS 5837:2012; summary definitions as follows (see BS 5837 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 the number 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 150mm diameter.

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

- C1: Unremarkable trees of very limited merit or 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 benefits.

CATEGORY U: VERY LOW QUALITY

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 the 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 where 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

Paragraph 6.4.43 of the Planning Policy Wales - Edition 12, February 2024 (PPW) states in relation to Ancient Woodland:

'Ancient woodland, semi-natural woodlands, individual ancient, veteran and heritage trees and ancient hedgerows are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees, woodlands and hedgerows are to be afforded protection from development which would result in their loss or deterioration unless very exceptionally there are significant and clearly defined public benefits; this protection must prevent potentially damaging operations and their unnecessary loss¹³⁹. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory, work to improve its completeness and use it to ensure the protection of trees and woodland and identify opportunities for more planting as part of the Green Infrastructure Assessment, particularly in terms of canopy cover'.

The PPW goes on to state:

'The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally-specific strategies and policies, through imposing conditions when granting planning permission, and/or by making Tree Preservation Orders (TPOs)¹⁴⁰. They should also be incorporated into Green Infrastructure Assessments and plans'.

STATUTORY CONTROLS

Statutory tree protection

Works to trees that 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 in 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.

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 of this report.

Trees that 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 of 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 the relevant Statutory Nature Conservation Organisation (SNCO): Natural England, Scottish Natural Heritage or Natural Resources Wales.

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 indicates 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	BS 5837:2012
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 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 relating to future tree growth and orientation.

Tree constraints

Root Protection Areas:

With reference to BS 5837:2012, 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”**.

BS 5837:2012 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 for England (included here as it is regarded as good practice):

‘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, appropriately 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 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 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 need to be recommended.

Recommended Buffer to development - similar to the Recommended 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 are 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 mature over time.