

**ARBORICULTURAL
IMPACT
ASSESSMENT**

Jacks Field,
Takeley

October 2023



Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Land at Jacks Field	
Project reference:	W.4006	
Site Address:	Smiths Green, Takeley, Essex	
Nearest Postcode:	CM22 6NY	
Central Grid reference:	TL 56998 21637	
Local Planning Authority:	Uttlesford District Council	
Relevant planning policies:	Uttlesford Local Plan (January 2005): GEN2 - Design; ENV3 - Open spaces and trees; ENV7 - The protection of the natural environment - designated sites; ENV8 - Other landscape elements of importance for nature conservation.	
Statutory Controls:	Tree Preservation Order	Conservation Area
	None	No
Soil Type: (Source: BGS online soils map © NERC 2023)	Superficial/Drift	Bedrock
	Deep loam to clayey loam over Lowestoft Formation diamicton	London Clay Formation clay, silt and sand
Topographical Survey:	SJG3443 (September 2020 - as updated)	
Notes:	-	
Report author:	Richard Hyett MSc, BSc (Hons), MICFor, MArborA	
Date of issue:	11th October 2023	

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1. INSTRUCTION

- 1.1. Barton Hyett Associates Ltd have been instructed by Weston Homes Plc to survey trees located on land at Jack's Field ('the site') in accordance with the recommendations of British Standard 5837:2012 'Trees in relation to design, demolition and construction - recommendations'.
- 1.2. The scope of the instruction was to inspect trees relevant to a detailed planning application for residential development at the site and provide written advice on how they inform the feasibility and design options for the proposed development. An initial survey was undertaken in January 2021, with a further walkover update survey carried out in October 2022. A further inspection of the Jack's lane Byway was also undertaken in October 2023.
- 1.3. The instruction also required an assessment of the potential impact (the arboricultural impact assessment) of the proposed development on the site's arboricultural resource to be undertaken.

2. SITE DESCRIPTION

- 2.1. The site is formed by a single field known locally as Jack's Field. The site is located to the north of the village of Takeley.
- 2.2. Jack's Field is an arable field of circa 1.1ha and located to the east of Smiths Green with an agricultural access from it.
- 2.3. Restricted byway 48 25 follows the north-east site boundary but is not located within the site. To the south of the site is Jack's Lane and a large group of trees.
- 2.4. Bordering the site to the north and south-west are the gardens and paddocks of detached dwellings. Beyond the site to the north and west is farmland, and to the east and south are residential areas.
- 2.5. The site is relatively flat and level, with ground levels varying between 102 and 106 metres above mean sea level.

3. TREE SURVEY FINDINGS

- 3.1. A tree survey of a wider land holding was undertaken in January 2021. The findings of the survey relevant to Jack's Field are summarised in Table 1 overleaf. These include two high quality (category A) individual trees (T2 and T3) along with number of moderate quality (category B) individual trees, seven moderate quality tree groups (and one very poor quality) and five hedgerows. These survey items are shown on the Combined Tree Retention/Removal and Protection Plan (**Section 2**) and within the Tree Survey Schedule (**Section 3**)

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	17	2	13	2	-
Groups	8	-	7	-	1
Hedgerows	5	-	3	2	-
Total	30	2	23	4	1

Table 1: Summary of arboricultural features of each BS5837 quality category for the wider survey area

4. KEY ARBORICULTURAL FEATURES

- 4.1. No ancient or veteran trees, nor any ancient woodland, were identified at the site. As such, it is not necessary to consider the requirements of paragraph 180 of the National Planning Policy Framework (NPPF).
- 4.2. One of the most significant arboricultural features of the site is the predominantly wych elm, hawthorn and blackthorn group G4 (B2) which forms an off-site belt of trees following the byway along the eastern site boundary.
- 4.3. Oaks T2 and T3 are particularly prominent trees of quality category A1. T3 grows in an adjoining garden. Tree group G5 (B2) grows beyond a ditch in the south corner the site.

5. CONSTRAINTS AND OPPORTUNITIES

- 5.1. As defined within BS5837:2012, trees categorised as high or moderate quality are desirable for retention and in most circumstance should be retained as part of a proposed development. Low quality trees should be retained where possible but do not necessarily pose a constraint to development.
- 5.2. The arboricultural constraints associated to retained trees within Jack's Field are relatively straightforward and comprise the Root Protection Areas (RPA's) of retained trees and their above ground canopies.
- 5.3. Detrimental impacts from development upon retained trees might include, but are not limited to, damage to roots and understorey, damage to or compaction of soil around the tree roots, direct impacts of trunks and branches.

5.4. Please see section 5 for further advice and guidance on designing new developments near to trees.

6. DEVELOPMENT PROPOSAL

6.1. Detailed planning consent is sought for the development. The proposed development is for the construction of 40 residential dwellings and associated infrastructure and landscaping. The description of development is:

'Redevelopment of the Land known as Jack's field for the provision of 40no. Dwellings, including 1-,2-,3-,4- and 5-beds, including parking and associated landscaping'

6.2. The proposed site layout is shown on the General Arrangement plan (WH202.WST.P1.ZZ.DR.PL.10.01 Rev A - GA Jacks Green) as amended and submitted.

7. IMPACT ASSESSMENT

7.1. The AIA considers the effects of any tree loss required to implement the layout design as well as any reasonably foreseeable potentially damaging activities proposed in the vicinity of retained trees. This is undertaken with reference to BS5837:2012 and considering the nature of the proposals. This 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:

7.2. All category A trees will be retained long with the majority of the boundary trees and trees groups.

7.3. Some tree removal will be required in order to implement the proposed development as described below. The proposed tree removals are shown on the Combined Tree Retention/Removal and Protection Plan in **Section 2.**

7.4. **Access** - in order to achieve an appropriate and safe highway access into the site it will be necessary to widen the existing gap in the vegetation in the location of the existing field access by the removal of the northern section of the blackthorn and hawthorn forming G7 (B2) and the removal of goat willow T17 (B1). In addition, in order to achieve appropriate visibility splays for the new access it will be necessary to prune back part of the western side of G1 and G7. These groups are primarily formed by field maple, hawthorn and blackthorn that have all been flailed along their western sides in the past. This was undertaken to prevent the canopies encroaching on to the adjacent road. The proposed pruning to achieve the visibility splays is broadly in line with the past management (and that will continue to be required irrespective of the development) and will not have any long-term detriment to the overall contribution of G1 and G7.

7.5. **Footway/cycleway link** - to create the access link through the eastern boundary of the site it will be necessary to remove some of the trees within G4 where they fall within the footprint of, or immediately adjacent to, the link. The removal of G2 (U) wych elm, is also proposed but this is on the basis of its very poor condition as category U trees should not be considered a constraint to development.

7.6. **Dwellings** - within the site interior it is proposed to remove 3 individual trees; T10 (B1) goat willow, T13 (B1) oak, and T4 (C1) oak. It is also proposed to remove the northern part of mixed species group G5 (B2). This removal is required in order clear back vegetation to the site boundary and provide appropriate clearance to the proposed dwellings.

Anticipated impacts upon on retained trees

7.7. **Demolition and site clearance** - there are no existing structures on site and so no site clearance is necessary. It is expected that the topsoil from across the site will be stripped and stockpiled prior to the construction work. Existing soil levels within RPAs of retained trees should be maintained.

7.8. **Facilitation pruning** - no significant facilitation pruning is required to allow the proposed development to be implemented. However, the minor lateral reduction of branches extending to the east of G6 (adjacent plot 31) and a very localised area of G4 (adjacent plot 2) will need to be undertaken in order to provide appropriate clearance to the proposed dwellings. The extent of pruning will need to be confirmed at the setting out stage. Trees T11 and T12 already has an average crown height of 6m and 5m above ground level, but some minor pruning (in the form of crown lifting and lateral crown reduction on their northern sides) will be undertaken if necessary.

7.9. **Service installation** - No detailed service plans have been prepared at this stage in the planning and design process. The installation of all services and utilities must be undertaken outside of the RPAs of retained trees. From an assessment of the site layout and potential service access points from the west, it appears feasible that this can be achieved. Should it become apparent that services are required within the RPAs of retained trees, further arboricultural assessment will be required. If this is the case, alternative solutions should be explored, including alternative techniques such as trenchless installation methods (e.g directional drilling, hand excavation or Airspade excavation) to allow tree roots to be retained.

7.10. **Ground level changes** - the site is broadly flat with very limited level change across its extent. As such, no ground level changes are required to allow the proposed development to be implemented and all existing ground levels within RPAs can, and should, be retained.

7.11. **Foundations** - New foundations are proposed within the RPAs of retained trees. There is a minor incursion into the RPA of G6 (plot 31), however, given the offsite location of the adjacent trees, the species, and the minor nature of the RPA incursion, no alternative foundation design is proposed. It will be necessary to carry

out the foundation excavation under a watching brief. The same is true for G4 (plot 2). The detailed approach to the watching brief will be set out in a detailed arboricultural method statement (AMS). Where foundations are proposed within the RPA of T11 (plot 38) it is not envisaged at this stage that any alternative foundation design will be utilised. It is likely that any roots encountered will be pruned back to the edge of the trench excavation. However, prior to the implementation of the works on site and as part of the AMS preparation a series of trial holes shall be excavated in this area and the findings used to inform the final approach to construction. If significant roots are encountered that cannot be successfully pruned, the approach may be to implement an alternative foundation design (eg. pile and beam).

7.12. *Hard surfacing* - the vast majority of proposed hard surfacing is located outside of the RPAs of retained trees. However, the proposed footway/cycleway link to the east of the site will be located within the RPAs of trees within G4. In this location it is proposed that a 'no dig' approach to the construction be used. This may include the construction of the parking bays on the existing ground surface and may also utilise a 3d cellular confinement system to assist in distributing loads applied by vehicles and preventing compaction of underlying soil. However, the final surfacing design needs to be prepared by the project engineer and based on a detailed ground investigation to ascertain the current condition of the soils and whether their structure is such that they could be compacted to the point where root growth is negatively affected or inhibited. The final design will also need to take into account the previous agricultural management of the land and the presence of any drainage ditches within G4 which may have inhibited root growth in this area. The final surfacing design will need to be implemented in accordance with the working methodology set out in a detailed arboricultural method statement (AMS). In addition, the revised layout indicates that small areas of private parking bays (plot 2, plot 39 and plot 40) marginally encroach into the RPAs of adjacent trees. No alternative surfacing design will be utilised. It is anticipated that any roots encountered will be pruned back to the edge of the excavation required to achieve formation level for the parking bays. This will need to be addressed within an Arboricultural Method Statement.

7.13. *Soft landscaping* - There are no anticipated impacts arising from the implementation of the proposed soft landscaping works. The extent of potential new tree and shrub planting is shown on drawing WH202.WST.P1.ZZ.DR.PL.10.00 - *Coloured Jacks Green*.

7.14. *Highway infrastructure* - no new significant highway infrastructure is proposed within the RPAs of retained trees. However, there is a minor encroachment of the road alignment into the RPA of T9. Given the level nature of the site and the likely formation depth required for the road, no alternative surfacing approach is proposed. The adjacent parking bays may be reduced dig in nature due to the potential shallower depth of construction. Again, no alternative surfacing approach is proposed. Installation of the kerb edging and parking bays at edge of RPA's must be undertaken in accordance with an Arboricultural Method Statement which will set out the approach to a watching brief on the excavations required at the back edge of the parking bays and detail the likely extent of any root pruning.

7.15. *Offsite Byway and Jacks Lane Improvements* - The existing Byway is well established. It is surfaced with well compacted soil/stone. The adjacent vegetation has been maintained in the past to provide clearance to the path. The form and quality of the vegetation either side of the paths is typical for what is expected along a path of this nature. There are no significant, high quality trees present close to the Byway. The existing compacted surfaces will likely have prevented or restricted any root growth beneath the path. It is proposed to improve the existing Byway to the east of the site as well as the pedestrian section of Jacks Lane in order to provide a link to Burgattes Road. The proposed works are relatively light touch with only the existing wearing course of the existing path being disturbed. The formation layers beneath the wearing course will be left in situ.

7.16. Any tree roots that happen to be within the formation layers of the path will be left in situ and retained. Timber edging will be used/replaced if required. The new wearing course will be a fine aggregate. As a contingency, should any significant roots be encountered that must be retained, the final level of the wearing course could be locally adjusted to rise over any roots in a typical 'no dig' approach. However, it is unlikely (given the existing ground conditions) that any significant roots will be present and that any form of 3d cellular confinement system will be required. This approach can be detailed as part of an Arboricultural Method Statement.

7.17. *Lighting of offsite Byway and Jacks Lane* - It is proposed that the path to be upgraded will be lit. This will be achieved with 6m lamp columns in the positions shown on drawings WH202-22-15.21-104 and WH202-22-15.21-15. The cable required to serve the proposed lighting columns will be installed in the centre of the existing path in order to limit the potential for any roots to be encountered as part of its installation. An on-site assessment, has determined the need for this. Given the built up nature of the path, and the relatively shallow depth of the proposed cable, the trench excavation is unlikely to encounter significant roots. However, these works should still be undertaken under an arboricultural watching brief as a precautionary measure. This approach can be detailed as part of an Arboricultural Method Statement. Where the cable runs along the tarmac (vehicle access section of Jacks Lane) the cable will be located on the southern edge the tarmac surface and away from the larger more significant trees to the north.

7.18. The light column locations have been selected, in part, to avoid significant trees. No trees will need removing in order to allow the columns to be installed. The majority of columns can be installed without the need to prune any vegetation. However, pruning will be required to achieve appropriate lighting of the path. Pruning will be required at the western end of the path where it joins Burgattes Road (the end two columns), and along the Byway (3 columns in this location). The pruning will be undertaken to broadly achieve 6m of ground clearance where required. It should be noted that on the Byway there are overhead services (including a BT line) which are being disturbed by the branches of adjacent trees and that a substantial amount of pruning to achieve clearance on the lines should occur in any case and irrespective of the

proposed development. In any case the required amount of pruning will not result in any long-term detriment to the trees either side of the Byway/Jacks Lane.

7.19. In summary, the impacts arising for the proposed development is acceptable from an arboricultural perspective on the basis that appropriate new tree planting is undertaken and if the development is carefully implemented according to an approved Arboricultural Method Statement. On this basis, there would be only a low overall negative impact upon the arboricultural resource of the site in the short term (approx. 5-10 years).

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

8.1. BS5837:2012 (Figure 1) recommends that detailed/technical design of tree protection and arboricultural methodologies should be resolved and finalised following on from the approval of the feasibility of a scheme by the Local Planning Authority.

8.2. Annex B and Table B.1 of BS5837:2012, an informative, advises that arboricultural method statement 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 part of a planning condition.

8.3. In relation to the site, it is anticipated that arboricultural working methods are likely to be quite straightforward. A brief summary of the principles of tree protection on development sites is included in section 7. A draft, 'heads of terms' for an arboricultural method statement is set out below:

- Project arboriculturist – schedule of monitoring and supervision
- Ground/root investigations adjacent T11
- Pre commencement site meeting
- Tree and partial tree group removal (including visibility splay pruning and Byway lighting pruning)
- Erection of tree protection barriers and sign off
- Main construction phase - parking bay and footway/cycleway installation (under watching brief)
- Removal of tree protection barriers - following on from approval of site conditions
- Final landscaping including tree planting

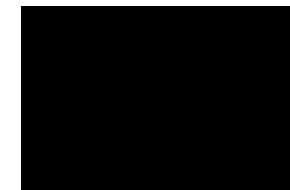
9. SUMMARY

9.1. Subject to the implementation of the advice contained within this report the proposed development can be implemented with very limited arboricultural impact. The loss of individual trees and partial removal of tree

groups could be readily mitigated through the provision of new tree and hedgerow planting as part of the detailed landscape planting proposals for the site.

9.2. The retained trees can be adequately protected during construction activities to sustain their health and longevity.

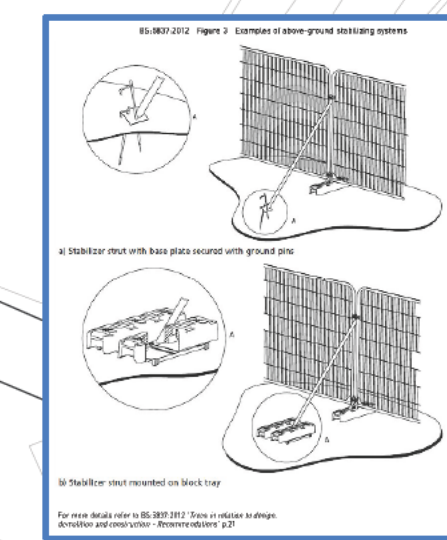
9.3. An Arboricultural Method Statement and finalised tree protection plan will need to be produced. Where the feasibility of a scheme has been agreed by the Local Planning Authority, this detail can be agreed and submitted at a later as part of a pre-commencement planning condition (by agreement with the applicant).



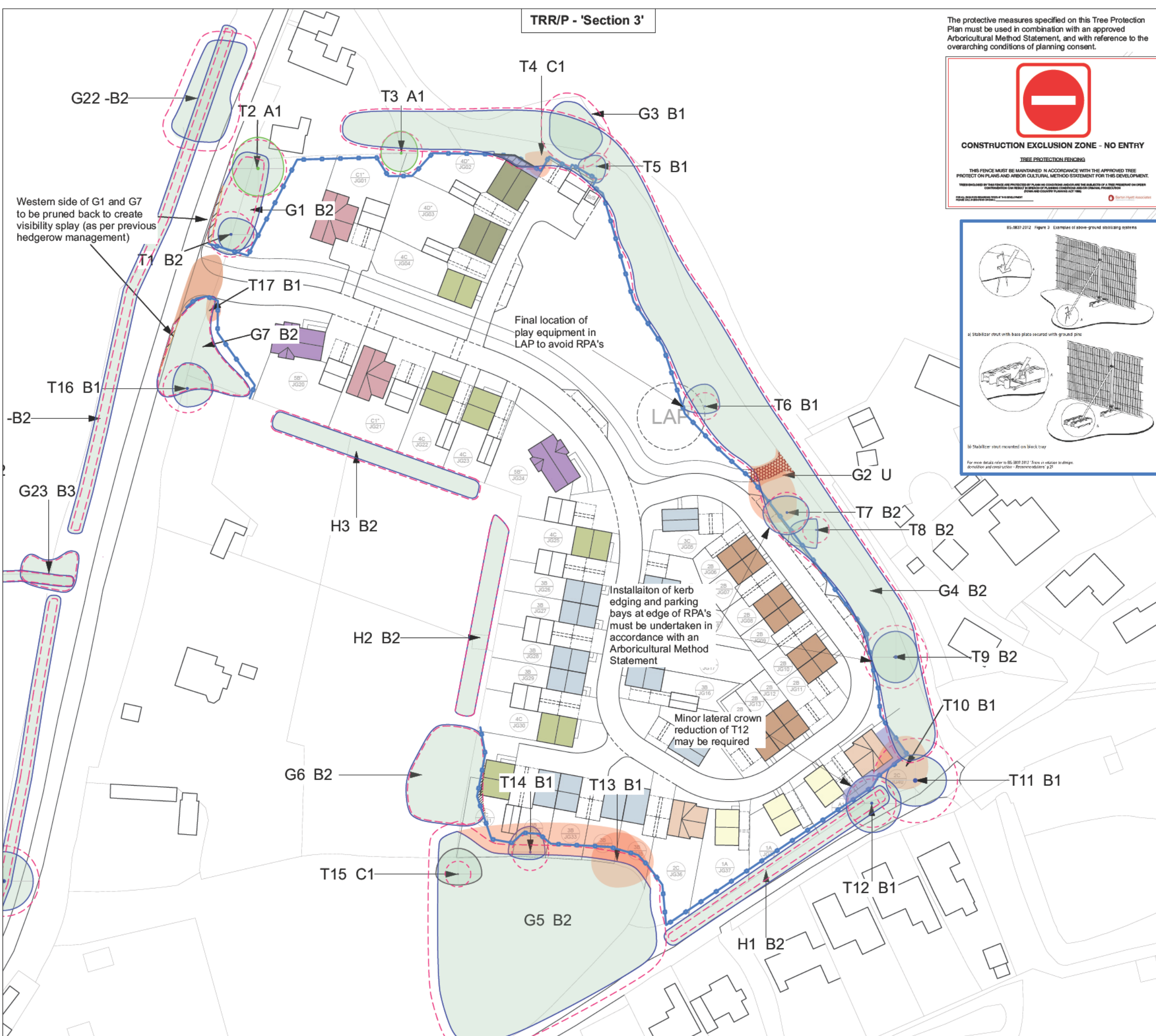
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Chartered Arboriculturist

TRR/P - '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.

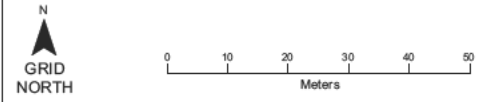


- KEY**
- Category A Tree - High quality (Retention highly desirable)
 - Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
 - Category B Tree - Moderate quality (Retention desirable)
 - Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
 - 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 not on site
 - Tree / Hedgerow / Group to be removed
 - Area of tree canopy to be pruned back
 - Tree Protection Barrier to Figure 3 of BS5837:2012
 - Cellular Confinement System path construction as part of final landscaping (see AMS report for specification)
 - Area of temporary ground protection (see AMS report for specification)



NB: The tree identification numbers on this plan are part of a larger tree survey and so are not consecutive

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				
Jacks Green, Takeley				
DRAWING TITLE				
Tree Retention, Removal & Protection Plan				
SCALE		DRAWING NUMBER		
1:1000 @ A3		BHA_1030_03		
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
IM	RH	-	1/1	10/10/2023
LAYOUT USED WITHIN DRAWING				
WH202.WSTP1.ZZ.DR.PL.10.01 Rev A GA Jacks Green				
CLIENT				
Weston Homes				
COORDINATE SYSTEM / DATUM				
British National Grid / Newlyn Datum (AOD)				
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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	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²
T1	Field maple	On	9	3	#	520	4.5-7-4.5-3.5	0.0	0.5	n/a	M	None	Growing to west of ditch. Height traduced below power line.	Fair	Good	40+	B2	6	122
T2	English oak	On	12	1	-	650	8.5-7-7.5-7	2.5	3.5	W	M	None	Crown reduced/lifted to west for power line.	Good	Good	40+	A1	8	191
T3	Field maple	Off	11	1	#	480	6-4.5-5-5.5	4.5	2.5	N	M	None	Unoccluded branch removal wounds on bole.	Good	Good	40+	A1	6	104
T4	English oak	On	5	1	-	260	1-3-6-4.5	1.0	2	S	SM	None	Growing in ditch. Poor suppressed form.	Good	Fair	20+	C1	3	31
T5	Field maple	On	8	1	#	300	3-2.5-4.5-5	0.5	1	W	EM	None	No significant defects.	Good	Good	40+	B1	4	41
T6	Field maple	Off	8	3	#	310	6-4-2-6	1.0	1.5	W	SM	None	Growing on east ditch bank.	Good	Good	40+	B1	4	43
T7	Goat willow	On	9	3	#	460	4.5-6-6-6.5	1.5	1	SW	EM	None	Low crown over site.	Good	Good	40+	B2	6	96
T8	Wych elm	Off	9	1	#	300	3-0.5-5-7	2.0	3	W	SM	None	Tree to south-east appears to be moribund.	Good	Good	20+	B2	4	41
T9	Common ash	Off	11	4	#	720	7-6-7-6.5	6.0	6	W	M	None	Multi-stemmed from ground.	Good	Good	20+	B2	9	235
T10	Goat willow	On	9	2	-	680	8.5-6-6-8	1.5	2.5	NW	M	None	Growing in ditch.	Good	Good	40+	B1	8	209
T11	English oak	Off	16	1	-	960	7-8.5-7-8	6.0	3.5	E	M	None	Innonotus dryadeus fungal brackets on stem base.	Good	Good	40+	B1	12	417
T12	English oak	On	12	1	-	550	7.5-8-8-7	5.0	3.5	N	EM	None	Growing at top of steep bank.	Good	Good	40+	B1	7	137
T13	English oak	Off	16	1	#	700	8-10-7-7	4.0	4	N	M	None	Vertical stem wounds on west of stem.	Good	Fair	40+	B1	8	222
T14	Field maple	Off	10	8	#	420	7-4-2-6	1.5	0.5	N	EM	None	Multi-stemmed.	Good	Good	40+	B2	5	80
T15	Common ash	Off	11	1	#	290	7-6.5-3-6	4.5	4.5	N	SM	None	Exudate low on bole.	Fair	Good	10+	C1	4	38
T16	Field maple	On	9	1	-	550	7-7-5-4	3.0	1	n/a	M	None	Pruned away from power line.	Good	Good	40+	B1	7	137
T17	Field maple	On	6	1	#	250	4-3-3-1	2.0	-	n/a	SM	None	No significant defects.	Good	Good	40+	B1	3	28

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. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G1	Field maple	On	3-8	20	-	180	3.5	0.0	SM	None	Field maple with blackthorn scrub below reduced below power line.	Good	Good	20+	B2	2.2
G2	Wych elm	On	8-9	2	-	320	3.0	-	SM	None	One dead and one dying tree.	Dead	Dead	<10	U	3.8
G3	English oak	Off	14-15	2	-	730	6.5	5.0	EM	None	Multi-stemmed trees.	Good	Good	40+	B1	8.8
G4	Wych elm, hawthorn, field maple, hazel, elder, common ash	On	3.5-9	100	-	300	3.0	1.0	SM	None	Predominantly wych elm with hawthorn and blackthorn. Some DED symptoms but mostly healthy appearance.	Fair	Good	40+	B2	3.6
G5	English oak, common ash, field maple, blackthorn, hawthorn, wych elm	Off	4-12	45	#	590	4.5	1.5	EM	None	Predominantly growing to south of ditch.	Good	Good	40+	B2	7.1
G6	Common ash, Leyland cypress, hawthorn	Off	4-12	5	#	550	7.0	1.5	M	None	One ash has bole decay cavity.	Good	Good	20+	B2	6.6
G7	Blackthorn, hawthorn, field maple	On	3-4.5	35	-	140	2.0	0.0	EM	None	Scrubby group, partially cleared below power line.	Good	Good	40+	B2	1.7
G8	Field maple, hazel, English oak, blackthorn, hawthorn, spindle.	On	4-8.5	50	-	500	5.0	0.0	SM	None	Predominantly field maple and hazel.	Good	Good	40+	B2	6.0

HEDGEROWS

Ref	Species	On / off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. Canopy Height (m)	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Field maple, hazel, hawthorn, wych elm, common ash, blackthorn, dog rose	On	7	7	200.0	0.5	EM	Historically topped at 1m.	Good	Fair	40+	B2	2.4
H2	Leyland Cypress, hawthorn	Off	6	6	250.0	0.5	EM	Unmaintained linear planting forming hedge screen within paddocks.	Good	Good	40+	B2	3.0
H3	Hawthorn, blackthorn, spindle	Off	5	5	240.0	0.5	EM	Unmaintained linear planting forming hedge screen within paddocks. Some gaps.	Good	Good	40+	B2	2.9
H4	Blackthorn, hawthorn, field maple	Off	4	5	150.0	0.5	EM	Predominantly blackthorn to south of boundary fence.	Good	Good	20+	C2	1.8
H5	Blackthorn, hazel, hawthorn field maple	Off	5	6	180.0	0.0	EM	Predominantly off-site planted hedgerow with scrub developing in site.	Good	Good	20+	C2	2.2



IMAGE 1: View of the field entrance at Jacks, looking north-east from Smiths Green.



IMAGE 2: View of the frontage of Jacks with Smiths Green, looking south.



IMAGE 3: View from within Jacks, looking north-east.



IMAGE 4: View along G4, looking south-east.



IMAGE 5: View from G4, looking south.



IMAGE 6: View of H2 looking north from T14.

- 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.

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

STATUTORY CONTROLS

Statutory tree protection

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

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

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

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

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

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

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 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 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.

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 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 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