ARBORICULTURAL IMPACT ASSESSMENT

Middle Lypiatt House

December 2020

Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Middle Lypiatt House	
Project reference:	V.3384	
Site Address:	Middle Lypiatt, Stroud, Gloucestershire	
Nearest Postcode:	GL6 7LW	
Central Grid reference:	SO 87722 04699	
Local Planning Authority:	Stroud District Council	
Relevant planning policies:	Core Policies: CP14. Delivery Policies: ES6, ES7, ES8,	
Statutory Controls:	**Tree Preservation Order**	**Conservation Area**
	No	No
Soil Type: (Source: BGS online soils map © NERC 2020)	**Superficial/Drift**	**Bedrock**
	None recorded	Great Oolite Group - Limestone.
Topographical Survey:	Survey Site Plan, ref:1843_0215	
Site Layout:	Proposed Site Plan, ref: 1843_0821	
Notes:	None	
Report author:	[redacted]	
Checked by:		
Date of issue:	7 December 2020	

Arboricultural Association Professional Member

PR: 3525

Institute of Chartered Foresters registered

Barton Hyett Arboricultural Consultants

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SECTION 1

1. INSTRUCTION

1.1. Barton Hyett Associates Ltd. have been instructed by Vision Planning on behalf of the client, [redacted] to survey trees located at Middle Lypiatt House, Middle Lypiatt, ('the site') in accordance with BS5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.

1.2. The scope of the instruction was to inspect trees relevant to a planning application at the site and to provide advice on how they should inform the proposed development at the site. The instruction also extended to providing an assessment of the potential impact of the proposed development on the site's arboricultural resource.

2. TREE SURVEY FINDINGS

2.1. A detailed tree survey in accordance with BS5837:2012 was undertaken. A total of 23 trees and seven groups of trees were identified and surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (Section 2) and within the Tree Survey Schedule (Section 4).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	23	4	12	6	1
Groups	7	-	5	2	-
Total	**30**	**4**	**17**	**8**	**1**

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

2.2. None of the surveyed trees are protected by Tree Preservation Order, and the site is not located within a Conservation Area. The main house and some outbuildings are listed.

2.3. Four high-quality (Category A) trees were identified at the site. These are the mature common beech (T1 and T2) located to the north-west of the main house and the mature lime trees (T4 and T5) located to the north-east of the house. All of these trees are large, fine specimens that contribute significantly to the setting of Middle Lypiatt House.

2.4. The majority of surveyed items were assessed as being of moderate-quality (Category B). This includes 12 individual trees and five groups of trees. Of the moderate-quality tree groups identified, two are large and prominent linear groups of sycamore (G4 and G5). Whilst these trees are prominent features in the vicinity of Middle Lypiatt House, they were downgraded from Category A due to the presence of structural defects within the constituent trees. It is believed these trees may have been planted to line a historic, informal access to Middle Lypiatt House.

2.5. The remainder of the trees and tree groups were assessed as low-quality (Category C) due to either their small size, inherent structural defects or declining physiological condition. These trees should not be considered as significant constraints to development.

2.6. A single tree (T21) was assessed as being unsuitable for retention in the current site context (Category U) and this tree is recommended for removal irrespective of the development proposals.

3. PRELIMINARY SITE INVESTIGATIONS

3.1. A preliminary location for a potential extension to the main house was identified by the client. After completion of the tree survey it was deemed necessary to undertake more detailed ground investigation in this location (adjacent T4) to ascertain more precise detail on the root distribution and morphology in this area. A separate technical note (Appendix 1) was prepared that describes the findings of this investigation. The note was supplied to Stroud District Council as part of a pre-application submission and detailed comments were received (Appendix 2). The proposals that form part of this application have been designed so that they respond to both the findings of the ground investigations and the arboricultural pre-application advice received.

4. DEVELOPMENT PROPOSAL

4.1. The proposed development has four main elements for which detailed planning consent is sought:

- The creation of a new vehicle access on to the road to the north-west of the main house
- The construction of a new garage building adjacent to the outbuilding located to the north of the main house (and conversion of the outbuilding to provide gardeners accommodation)
- The construction of a new drive linking the proposed vehicle access to the proposed garage building
- The construction of a single storey kitchen extension to the main house.

5. IMPACT ASSESSMENT

5.1. The following paragraphs provide an assessment of the anticipated impact of the proposed development on the site's arboriculture resource. It identifies trees that may require removal as well as potential harmful impacts upon retained trees. The assessment also aims to give an indication of the significance of the identified impacts in the context of tree quality and the site itself. A combined Tree Retention/Removal and Tree Protection Plan is included in Section 3.

Proposed tree removals

5.2. As shown in the following table, only 4 trees will require removal in order for the proposed development to be implemented. A further tree (T21) is recommended for removal on the basis of its poor condition and irrespective of the proposed development.

	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	**23**	0	2	2	1
Groups	**7**	0	0	0	0
Total	**30**	**0**	**2**	**2**	**1**

Table 2: Summary of trees proposed to be removed within each BS5837 quality category

5.3. The four trees requiring removal (T8, T9, T10 and T22) are all low to moderate quality trees that are either small in size or relatively recently planted fast growing species (e.g. cherry and birch). With the exception of T22, all of the trees are located with the centre of the site and close to existing buildings. As such, they are not readily visible from outside of the site. T22 is located close the lane that leads for the Bisley Road to Brimscombe. Despite this, the nature of the lane and the precise location of the tree means it has very limited public visual amenity.

5.4. Trees T8, T9 and T10 require removal to allow the construction of the proposed garage. T22 needs to be removed to allow the construction of the proposed vehicle access in the north of the site.

5.5. As part of the proposed landscaping for the site a scheme of new tree planting is proposed within the paddock to the north of the main house. This will take the form of new orchard planting (designed in line with recommendations of the project ecologist) as well as re-establishing a more historic arboricultural feature in the form of a circular arrangement of walnut trees.

5.6. Approximately 30 new trees are proposed. This new tree planting will not only mitigate the proposed tree loss but also deliver an overall enhancement to the arboricultural resource of the site.

5.7. Given the nature of the trees to be removed, the site context, and the extensive new tree planting proposed it is my opinion that the arboricultural losses are acceptable. This is subject to the new trees being appropriately planted and allowed to successfully establish in the landscape.

Impacts upon retained trees

5.8. The construction of the new drive has the potential to impact upon retained trees. In arboricultural terms the drive installation will be in three sections (as shown on the plan at Section 3). The precise installation method for all sections of the drive will need be agreed with the appointed works contractor and set out in an Arboricultural Method Statement.

5.9. The first section will be through G4 and G5. Little arboricultural impact from the drive installation is expected in this location. Historically a section of ground between the trees has been excavated to approximately 150mm in depth and backfilled with a stone sub base. Although now overgrown with grass it appear this would provide a sound base for a new drive. It is recommended this stone is left in situ. The new drive construction would then only require a levelling layer of DOT Type 1 (approx 150mm) and a gravel wearing course. The final drive construction will only need to be edged with robust timber (or steel) edging held in place with steel pins or similar. The installation of the drive will need to be rolled out from the northern end so a suitable running surface for the machine installing the DOT Type 1 can be provided.

5.10. The second section of drive will run though the RPAs of T17 and T18. In this location it is recommended that a 'no dig' approach to construction is adopted. This will require the drive to be constructed above existing ground level (maximum 300mm deep) and, dependent on the soil condition and its bearing capacity, may require a 3d cellular confinement system to be used within RPAs. Again this section of drive can be edged with robust timber (or steel) edging held in place with steel pins or similar. A small topsoil fillet will be required either side of the drive to avoid an abrupt change in level.

5.11. The third section of drive runs through the RPAs of T12 and T15. A similar approach that detailed above is required in this section. However, in this section the drive will need to run across the existing gradient. Although, the existing gradients are relatively shallow it will be necessary to limit the amount of cut required into the existing slope. This can be done my maximising the cross fall of the drive (as far as possible) so it runs with the existing gradient. Where this is not possible, it will be necessary to increase the amount of fill on the down slope side to avoid cutting into the ground on the upslope side. This can be done by stacking layers of a 3d cellular confinement system on the downslope side. Tying the drive in to the existing levels in the location of the proposed garage will be possible as this is remote from RPAs of retained trees.

5.12. No foundations are proposed within the RPAs of retained trees, however, the northern elevation of the kitchen extension is close to the edge of the RPA associated with T4. The findings of the preliminary site investigations indicated that no significant roots are present at the extent of the default calculated RPA. However, it will still be necessary to carry out the foundation excavations with care. I recommend these are initially undertaken by hand and under an arboricultural watching brief. If conditions allow a small excavator may be used. Should any roots be encountered then it will be necessary to clean prune them back to the edge of the excavation. The detailed working methodology required for this operation must be set out in an Arboricultural Method Statement.

5.13. It will be necessary to form the new drive access early on in the construction process so this can be used as a construction access in conjunction with the existing access drive. Given the nature of the proposed development the construction traffic is anticipated to be relatively light and infrequent. However, the drive will need to be properly formed and tree protection barriers installed at key points along its length (see plan at Section3). It will also be necessary to form a temporary construction access from the location of the proposed garage to the are of the kitchen extension. This route is shown on the plan at Section 3 of this report. (**nb.** trees T4 and T5 are located on a higher ground level to where the temporary access will be located).

5.14. Only minor demolition is required within the site as the existing timber conservatory will need to be taken down. This can be undertaken without any impact upon retained trees if the access for demolition is in line with that detailed above.

5.15. Only minor facilitation pruning is required to T23 in order to allow the installation of the new drive. The south side of the crown will need to be raised to provide 4m of ground clearance. This will require fairly extensive pruning, but given the overall size of tree and its relatively young age it is unlikely to have any significant impact upon its condition in the long-term. Due to the proximity of the trees within G4 and G5 no crown lifting is anticipated along this section of the drive.

5.16. The services required for the new garage, kitchen extension and outbuilding conversion can be provided from the existing services to the main house and therefore there is no need to install any new services within the RPAs of retained trees. Should low level lighting be required along the new drive, then the connecting electricity supply cables should be installed within ducts incorporated into the drive construction itself. This approach will avoid the need for potentially harmful trenching works adjacent to the proposed drive (which may impact upon roots of retained trees).

5.17. With the exception of the proposed drive construction, no ground level changes are required within the RPAs of retained trees.

5.18. No new soft landscaping is proposed within the RPAs of retained trees. The existing garden arrangement under T4 and T5 will be retained.

5.19. In summary, the identified impacts of the proposed development are acceptable from an arboricultural perspective, and if carefully implemented according to an approved arboricultural method statement there would be no negative impact on the retained trees.

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

6.1. 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.

6.2. 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 pre-commencement planning condition (by agreement with the applicant).

6.3. A brief summary of the principles of tree protection on development sites is included in section 7 and a draft, 'heads of terms' for an arboricultural method statement is set out below:

- Project arboriculturist – schedule of monitoring and supervision
- Pre commencement site meeting (including agreement of protection barrier location)
- Tree removals and facilitation pruning
- Erection of tree protection barriers and temporary ground protection (and sign off)
- Main construction phase (watching brief on excavation for extension & drive installation from T12 to T17)
- Removal of tree protection barriers (upon approval of site conditions by project arboriculturist)
- Final landscaping including tree planting in paddock area.

7. SUMMARY AND CONCLUSION

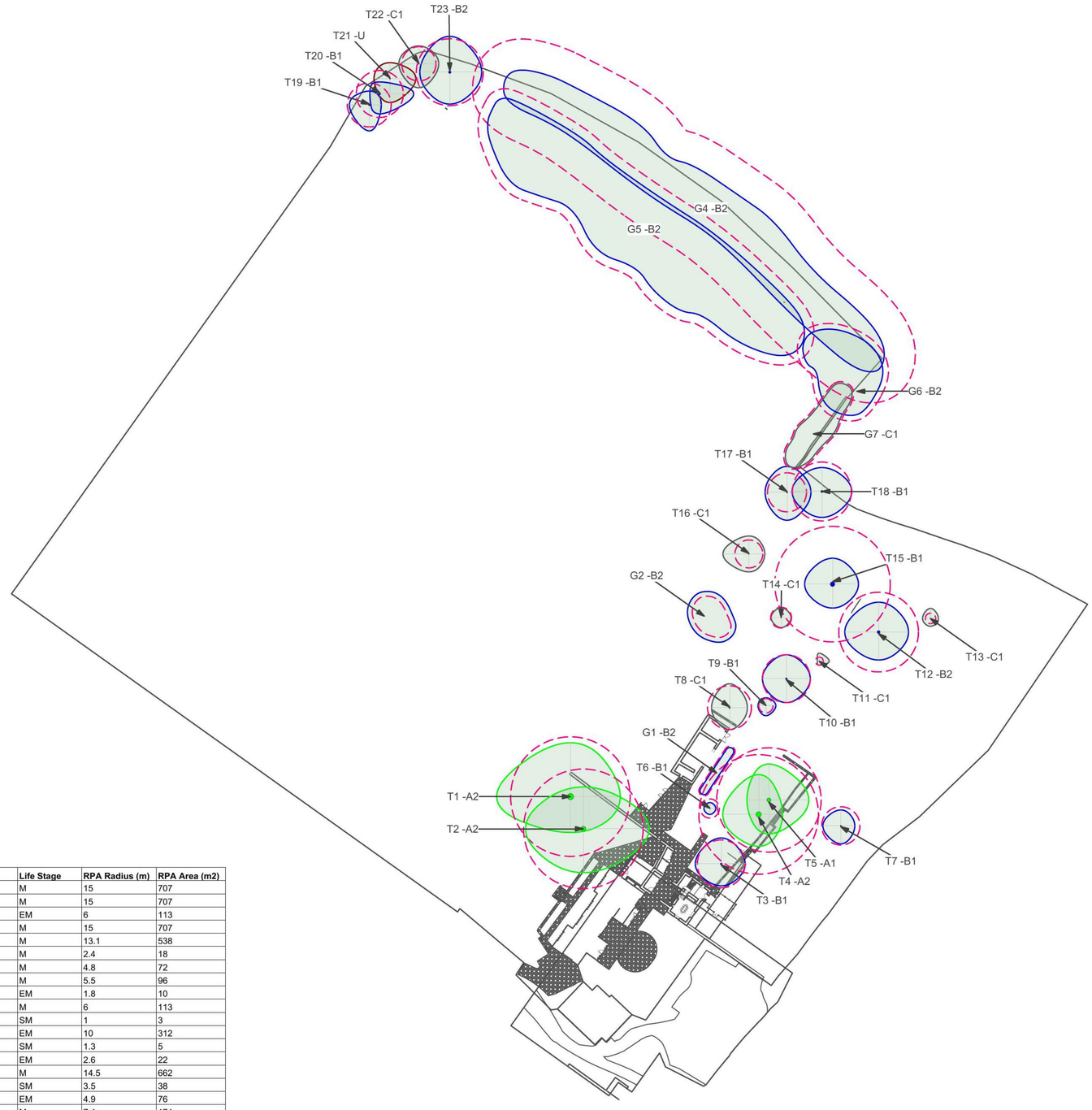
7.1. The proposed development has been designed in response to the arboricultural considerations identified within the tree survey. The proposals will require the removal of a small number of trees but an appropriate level of mitigation planting can be provided. In fact, the proposed new tree planting will provide an overall enhancement to the arboricultural resource at the site.

7.2. Retained trees can be adequately protected during the construction process in order to sustain their health and longevity. However, it will still be necessary to implement the works in an appropriate manner in order to prevent unacceptable damage occurring to retained trees.

7.3. An arboricultural method statement and finalised tree protection plan will need to be produced. Once the feasibility of the scheme has been agreed by the Local Planning Authority, this detail can be finalised and submitted via a condition of planning consent.

7.4. In conclusion, the proposals are acceptable from an arboricultural perspective, subject to the implementation of the advice and recommendations set out in this report.

[redacted]



Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)
T1	20	Common beech	M	15	707
T2	21	Common beech	M	15	707
T3	10	Common walnut	EM	6	113
T4	21	Common lime	M	15	707
T5	21	Common lime	M	13.1	538
T6	4.5	Chusan palm	M	2.4	18
T7	6.5	Orchard apple	M	4.8	72
T8	6.5	Cherry spp.	M	5.5	96
T9	5	Crab apple	EM	1.8	10
T10	11	Himalayan birch	M	6	113
T11	3.5	Unidentified	SM	1	3
T12	13	Common beech	EM	10	312
T13	4.5	Cherry spp.	SM	1.3	5
T14	4	Snowy mespil	EM	2.6	22
T15	11	Atlas cedar	M	14.5	662
T16	8	Willow spp.	SM	3.5	38
T17	11	Common walnut	EM	4.9	76
T18	11	Norway maple	M	7.4	174
T19	12	European larch	M	5.5	96
T20	14	European larch	M	5.9	109
T21	10	Common beech	SM	4.5	65
T22	8.5	Lime spp.	SM	4.3	59
T23	12	Horse chestnut	EM	8.4	222
G1	3	Lime spp.	SM	2.3	16
G2	7-8	Himalayan birch	SM	2.3	16
G3	4.5	Hawthorn	SM	1.3	5
G4	8-19	Sycamore, common ash, common beech	M	13.8	598
G5	13-21	Sycamore, common ash	M	8.4	222
G6	12-18	Sycamore	M	7.4	174
G7	4.5-11	Common beech, horse chestnut, wild cherry, whitebeam	SM	3.6	41

TS - 'Section 2'

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)

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

N
GRID NORTH

0 10 20 30 40 50
Metres

PROJECT TITLE
Middle Lypiatt House, Middle Lypiatt (V.3384)

DRAWING TITLE
Tree Survey & Constraints Plan

SCALE	DRAWING NUMBER
1:1250 @ A3	BHA_675_01

DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
SD	IM	-	-	10/12/2019

LAYOUT USED WITHIN DRAWING **n/a**

CLIENT **Richard Claridge**

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

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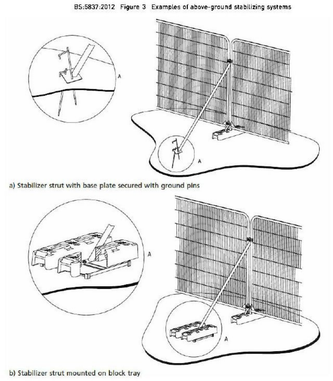
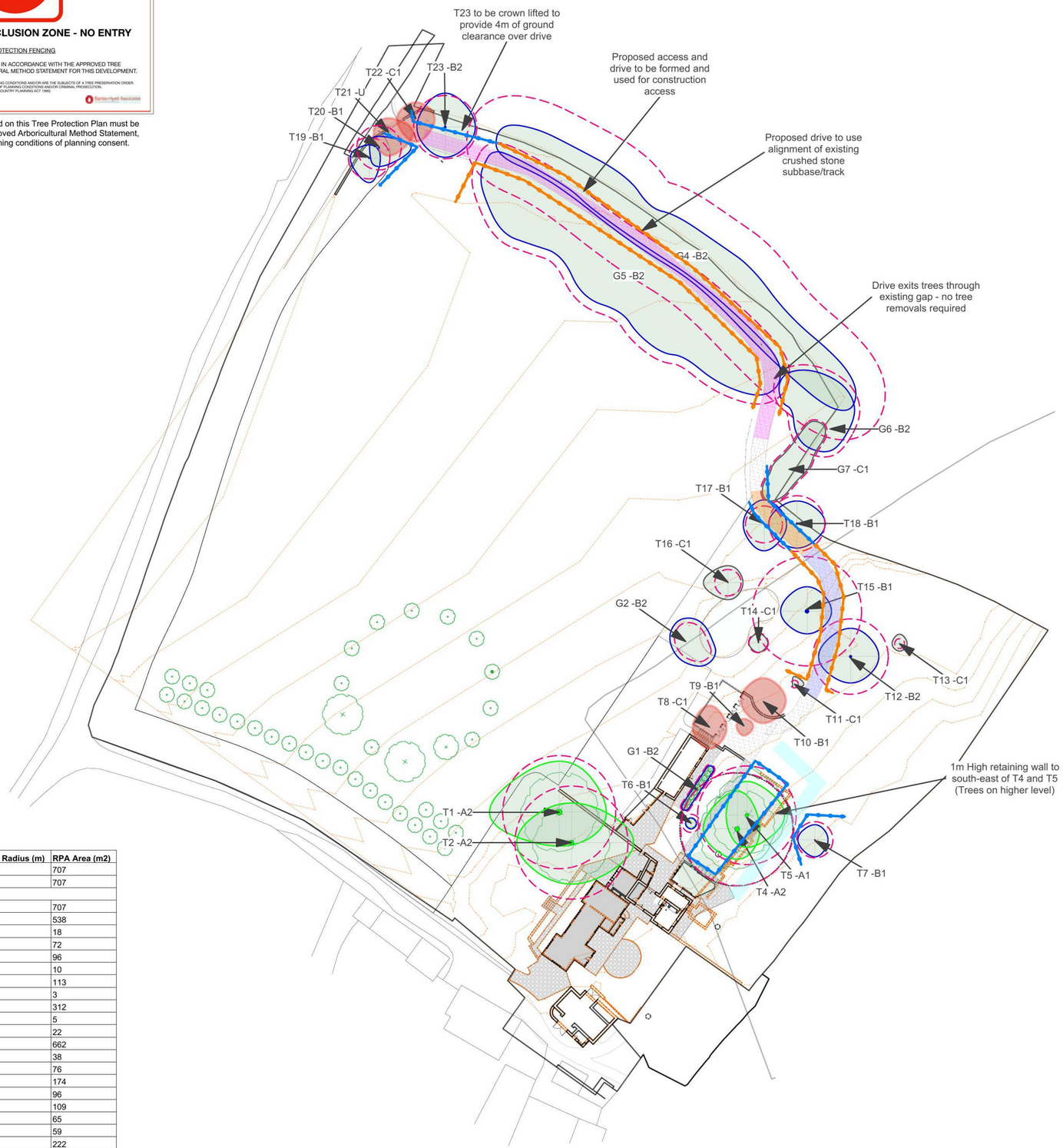


For more details refer to BS:3837:2012 'Trees in relation to design, demolition and construction - Recommendations' p.21

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.



Tree No	Ht (m)	Species	Life Stage	RPA Radius (m)	RPA Area (m2)
T1	20	Common beech	M	15	707
T2	21	Common beech	M	15	707
T3	TREE ALREADY REMOVED				
T4	21	Common lime	M	15	707
T5	21	Common lime	M	13.1	538
T6	4.5	Chusan palm	M	2.4	18
T7	6.5	Orchard apple	M	4.8	72
T8	6.5	Cherry spp.	M	5.5	96
T9	5	Crab apple	EM	1.8	10
T10	11	Himalayan birch	M	6	113
T11	3.5	Unidentified	SM	1	3
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T22	8.5	Lime spp.	SM	4.3	59
T23	12	Horse chestnut	EM	8.4	222
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G4	8-19	Sycamore, common ash, common beech	M	13.8	598
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G6	12-18	Sycamore	M	7.4	174
G7	4.5-11	Common beech, horse chestnut, wild cherry, whitebeam	SM	3.6	41

TRR/P - 'Section 3'

KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
- Category U Tree - Very low quality (Mostly unsuitable for retention)
- Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Shrub mass/offsite tree/out of scope (OOS)
- Tree / Hedgerow / Group to be removed
- Approximate location of temporary construction access (nb. trees T4 and T5 are located on a higher ground level to where the access wil be located).

Protection Measures

- Tree Protection Barrier to Figure 3 of BS5837:2012
- Euromesh/hazard netting fence secure in place with road pins
- Section of proposed drive to be installed using the existing crushed stone sub-base. Sub-base to be brought up to level with DOT type 1 and final gravel wearing surface (with timber edging). Any cables for lighting to be installed within drive construction. See AIA report for further details.
- Section of proposed drive to be installed using 'no dig' techniques and 3d cellular confinement system - subject to detailed soil assessment engineers design. See AIA report for further details.
- Section of proposed drive to be installed using 'no dig' techniques and 3d cellular confinement system - subject to detailed soil assessment engineers design. Adjustment in levels for cross gradient sections of drive to be carried out in line with the methodology set out in a detailed Arboricultural Method Statement. See AIA report for further details.

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

N
GRID NORTH

0 10 20 30 40 50
Metres

PROJECT TITLE
Middle Lypiatt House, Middle Lypiatt (V.3384)

DRAWING TITLE
Tree Retention, Removal & Protection Plan

SCALE		DRAWING NUMBER			
1:1250 @ A3		BHA_675_02			
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE	
SD	IM	A	-	03/12/2020	

LAYOUT USED WITHIN DRAWING **1843_0811 Proposed Site Plan**

CLIENT **Richard Claridge**

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

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TREE SURVEY SCHEDULE

MIDDLE LYPIATT HOUSE

PROJECT NO: V.3384

SURVEYOR: RH & IM

CLIENT: MR RICHARD CLARIDGE

SURVEY DATE: 07/11/2019

Barton Hyett Arboricultural Consultants

INDIVIDUAL TREES

Ref	Species	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 m²
T1	Common beech	20	1	-	1610	13.5-12.5-9-18.5	2.5	3	W	M	None	Heavily buttressed root plate with water pool. Two vertical stems from 4m with large limb leader from 3m to west. Branch loss wounds and stubs.	Good	Good	40+	A2	15	707
T2	Common beech	21	1	-	1290	10.5-16.5-11-14.5	2.5	5.5	E	M	None	Heavily buttressed root plate. Single upright stem with large limbs. Decayed branch loss wounds and stubs.	Good	Good	40+	A2	15	707
T3	Common walnut	-	-	-	-	-	-	-	-	-	-	Felled	-	-	-	-	-	-
T4	Common lime	21	1	-	1380	10-6-8-9	4.0	2	NW	M	None	Not on topo. Position approximate but measured on site. Branch loss wounds and stubs. Deadwood.	Good	Good	40+	A2	15.0	707
T5	Common lime	21	1	-	1090	9-10-8.5-5.5	4.0	3.5	E	M	None	Not on topo. Position approximate but measured on site. Branch removal wounds and stub. Minor deadwood.	Good	Good	40+	A1	13.1	538
T6	Chusan palm	5	1	-	200	1.5-1.5-1.5-1.5	3.0	3	n/a	M	None	No significant defects.	Good	Good	20+	B1	2.4	18
T7	Orchard apple	7	1	-	400	4-3.5-4.5-4.5	3.5	2.5	SW	M	None	Basal decayed cavity to west. Decayed branch removal wounds.	Good	Good	20+	B1	4.8	72
T8	Cherry spp.	7	1	-	460	6-4.5-5.5-4.5	3.0	2	n/a	M	None	Large stub pruning and lower branches lopped.	Good	Fair	40+	C1	5.5	96
T9	Crab apple	5	3	-	150	2-2.5-2.5-2	2.0	2	E	EM	None	Basal shoots removed.	Good	Good	40+	B1	1.8	10
T10	Himalayan birch	11	1	-	500	6-6-6-6	2.5	2.5	SE	M	None	Good form.	Good	Good	40+	B1	6.0	113
T11	Unidentified	4	1	-	80	2-2.5-1-0.5	1.5	1.5	S	SM	None	Branch tear wounds.	Good	Fair	10+	C1	1.0	3
T12	Common beech	13	2	-	830	7.5-7.5-7-8.5	1.5	1.5	SW	EM	None	Not on topo. Position approximate but measured on site. Partially girdling root. Three stems from 1.5m with included bark unions.	Good	Fair	20+	B2	10.0	312
T13	Cherry spp.	5	2	-	100	2.5-2-2-2	2.0	1.5	S	SM	None	Basal wounding and bark loss.	Poor	Poor	<10	C1	1.3	5

TREE SURVEY SCHEDULE

MIDDLE LYPIATT HOUSE

PROJECT NO: V.3384

SURVEYOR: RH & IM

CLIENT: MR RICHARD CLARIDGE

SURVEY DATE: 07/11/2019

Barton Hyett Arboricultural Consultants

Ref	Species	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 m²
T14	Snowy mespil	4	20	-	220	2.5-2.5-2.5-2.5	2.0	0.5	S	EM	None	Multi-stemmed.	Good	Good	20+	C1	2.6	22
T15	Atlas cedar	11	1	-	1210	6.5-6.5-6-7	3.0	2	S	M	None	Multi-stemmed by 2m. Crown lift wounds. Minor twig dieback.	Good	Good	40+	B1	14.5	662
T16	Willow spp.	8	1	-	290	4.5-4-4.5-6.5	2.0	2	S	SM	None	Crown dieback.	Poor	Fair	10+	C1	3.5	38
T17	Common walnut	11	1	-	410	6.5-6-7-5.5	3.0	2.5	NE	EM	None	Wound at attachment of branch to stem at 5m north, seen from west.	Good	Good	40+	B1	4.9	76
T18	Norway maple	11.0	1	-	620	6-7.5-6.5-7.5	4.0	3	W	M	None	Unoccluded crown lift wounds. Minor deadwood.	Good	Good	40+	B1	7.4	174
T19	European larch	12.0	1	-	460	3.5-3-6.5-5	1.5	4	N	M	None	Minor deadwood.	Good	Good	20+	B1	5.5	96
T20	European larch	14.0	1	-	490	3-8.5-5-2.5	1.5	4.5	SE	M	None	Minor deadwood. Branch loss stem wound at 5m.	Good	Good	20+	B	5.9	109
T21	Common beech	10.0	1	-	380	4-6.5-6-4	1.5	2	N	SM	None	Major squirrel damage throughout structure.	Good	Poor	10+	U	4.5	65
T22	Lime spp.	8.5	1	-	360	4.5-5-6-5	0.0	2	S	SM	None	Occluding stem bark wound at 0.5-1.2m.	Good	Fair	20+	C1	4.3	59
T23	Horse chestnut	12.0	1	-	700	9-8-8-7.5	0.5	1.5	S	EM	None	Fractured branch. Included bark unions.	Good	Fair	20+	B2	8.4	222

GROUPS OF TREES

Ref	Species	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	Lime spp.	3	9	-	190	0.2	2.0	SM	None	Pleached line.	Good	Good	40+	B2	2.3
G2	Himalayan birch	7-8	5	-	190	3.5	1.5	SM	None	Established planting.	Good	Good	40+	B2	2.3
G3	Hawthorn	4.5	2	-	100	1	1.0	SM	None	Bark loss. Strimmer damage.	Fair	Fair	<10	C1	1.3

TREE SURVEY SCHEDULE

MIDDLE LYPIATT HOUSE

PROJECT NO: V.3384

SURVEYOR: RH & IM

CLIENT: MR RICHARD CLARIDGE

SURVEY DATE: 07/11/2019

Barton Hyett Arboricultural Consultants

Ref	Species	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)
G4	Sycamore, common ash, common beech	8-19	29	-	1150	6	3.0	M	None	Predominantly sycamore with one ash and s3mi-mature scattered beech, field maple and whitebeam. Approximately 11 sycamore and one ash have basal decay cavities.	Good	Fair	20+	B2	13.8
G5	Sycamore, common ash	13-21	14	-	700	6	3.0	M	None	Twelve sycamore and two ash. Approximately 50% of the sycamore and one ash have basal decay wounds or cavities, but with generally strong buttressing. Smaller scattered hawthorns and whitebeams below.	Good	Fair	20+	B2	8.4
G6	Sycamore	12-18	7	-	620	6	3.0	M	None	Mature sycamore, two of which have basal decay cavities. Two young beech planted below.	Good	Fair	20+	B2	7.4
G7	Common beech, horse chestnut, wild cherry, whitebeam	4.5-11	8	-	300	3.2	1.0	SM	None	Squirrel damage in beech.	Good	Fair	10+	C1	3.6

SELECT IMAGES FROM THE TREE SURVEY

PROJECT NO: V.3384

SURVEYOR: RH & IM

Barton Hyett
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PHOTO 1: Looking north towards G4 and G5 beyond. These trees form a avenue leading from the site to the road that is north-west of the site.

PHOTO 2: Looking north-west between G4 and G5. The grass area at centre frame is relatively recent grass growth that has grown on an area of excavated ground and with compacted stone sub base.

PHOTO 3: Looking north-east across the northern part of the garden. T16 is to the left of frame and G4 and G5 can be seen in the background to the right of frame.

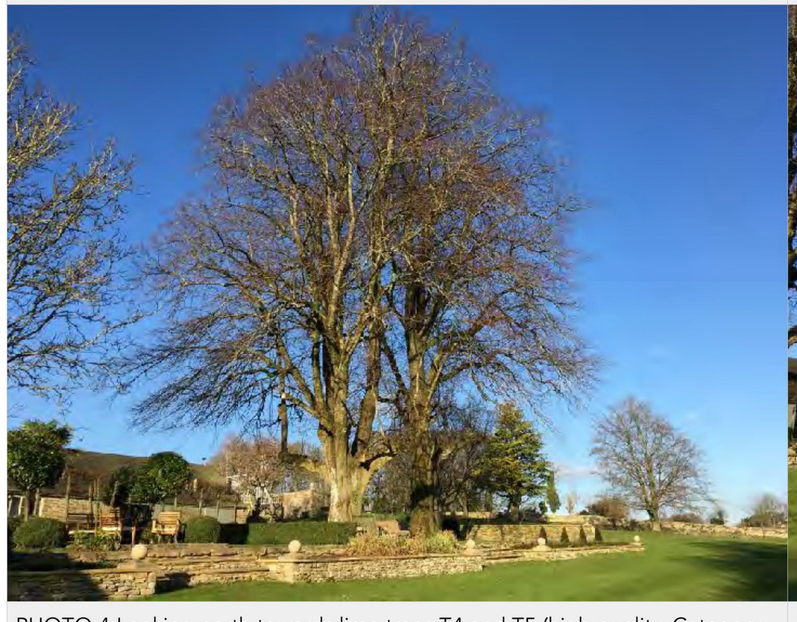

PHOTO 4:Looking north towards lime trees T4 and T5 (high-quality, Category A)

PHOTO 5: Looking north towards T7. The proposed drive will cross the grass area in the background. The proposed garage will be located in front of the glass house.

PHOTO 6: Looking north towards T15 (Atlas cedar) and T12(common beech) to the right of frame. The proposed drive will past between these trees.

TREE SURVEY METHODOLOGY

- 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 (eg 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/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 (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, are measured in metres. They are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD are taken at the four cardinal points to derive an accurate representation of the tree crown. They are 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 (eg 2.5m-N), and also in terms of the overall canopy. 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 & 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 & 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 & 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 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)

REMAINING USEFUL LIFE EXPECTANCY:

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.

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:

(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 U: UNSUITABLE:

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.

It may also include trees that should be removed irrespective of any development proposals.)

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 highly 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: MINOR VALUE:

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.

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, but 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

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2019 (NPPF paragraph 175) states that:

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

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and an
'Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'

STATUTORY CONTROLS

Statutory tree protection

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

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

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

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

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

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

Statutory Wildlife Protection

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

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

PRINCIPLES FOR TREE PROTECTION ON DEVELOPMENT SITES

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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, teleporters, 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

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APPENDIX 1

SITE INVESTIGATIONS - TECHNICAL NOTE

Barton Hyett Associates
Arboricultural Consultants

Arboricultural Briefing Note

Airspade investigation at Middle Lypiatt House, Stroud, GL6 7LW (*BHA_V.3384*).

13th December 2019 & 25TH February 2020

This briefing note has been prepared by Barton Hyett Associates Ltd on the instruction of Vision Planning on behalf of [redacted] *the owner of Middle Lypiatt House. This note relates to investigations undertaken to confirm the presence or absence of roots (as well as their significance) in order to inform the footprint and design of a proposed extension. It provides a summary of findings from an Airspade investigation in the area adjacent to the subject tree (a mature lime).*

SCOPE OF WORKS

The Airspade investigations are required to help inform the design decisions made associated to a proposed extension at Middle Lypiatt house. I understand the proposal is to carry through the existing floor level within the existing building and extend it towards the subject tree to within approximately 5m of its stem. This would require the removal of approximately 800mm of material from the existing garden area.

Whilst there are some generally accepted guides on where tree roots are likely to extend it is often not possible to accurately predict the presence or absence of roots without physically looking below the ground. In this case the presence of a retaining wall to the south of the subject tree (and the absence of a retaining wall further to the east) that appears to be of relatively recent appearance suggested the potential for some historic ground level changes adjacent the subject tree. This may have resulted in the absence (or reduced amount) of roots present in the area of the proposed extension. This is the main matter the investigations are designed to explore.

An Airspade is a high-pressure, hand-held air tool that emits a jet of air to excavate and carefully remove soil from around roots whilst leaving them intact. An Airspade is the most appropriate, tool to allow the presence or absence of roots to be confirmed without damaging them. This is particularly relevant where trees are mature, aged or protected (e.g. a Tree Preservation Order). The trial trench investigation was undertaken at a suitable location within the existing lawn. The trench was 5.5m west of the stem of the subject tree. The trench ran perpendicular to the retaining wall that runs east west to the south of the subject tree.

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AIRSPADE FINDINGS – 13TH DECEMBER 2019

The following pages provide a photographic record of the investigations, followed by a text summary of the findings.

Image 1: Showing the location where the trial trench was excavated. The image shows the proximity of the adjacent lime to the area where the new extension is proposed (approx. 5.5m between stem and closest edge of the trial trench).

The trench was carefully excavated over 6m from the retaining wall. The trench was excavated in 4 approximately 1.5m long sections. The trench was terminated once sufficient information had been collected.

An average trench depth of 500mm was attained. This varied slightly, and in areas where soil conditions allowed over 500mm was achieved. However, at the southernmost end the depth of excavation was locally restricted to 300mm by densely compacted made-ground/brick rubble at the rear of the retaining wall. A summary of each trench section is provided below:

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Section 1 - *Excavated to max depth of 600mm. Very stony soil - most likely made ground. Length 1.5m. 4No. roots of max 35mm diameter. Most roots are 20mm diameter and below and centered around 300mm depth. Significant fibrous root growth (<1mm to 3mm diameter) were observed.*

Image 2: Showing 'Section 1' of trench open. The retaining wall to the wider lawn area is located out of sight but at the top of the frame.

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Section 2 - *Excavated to max depth of 500mm. Upper soil horizons are stony with friable soil below. Approximately 1.2m in length. Significant root of 80mm diameter encountered at approx. 200mm down (and 2m from retaining wall). Significant fibrous root growth (<1mm to 3mm diameter) were observed.*

Image 3: Showing 'Section 2' of the trench open. The first significant root was encountered in this section of trench - as highlighted by the red rectangle.

Section 3 - *Excavated to max depth of 600mm. First 1m of trench contains 6No. roots at 200-300mm down. Each of these in the range 10-40mm diameter. Significant fibrous root growth (<1mm to 3mm diameter) at 300mm.*

Image 4: Showing 'Section 4' of the trench open with the brick rubble removed and 6No. roots at 200-300mm down. Each of these in the range 10-40mm diameter.

Image 5: Showing 'Section 4' of the trench open with the brick rubble removed and a dense area of fibrous root growth.

Image 5: Showing the area of the proposed extension with the redline indicating the most easterly extent of the building that is likely to be acceptable in arboricultural terms (NB: this location will still require some further investigation work to confirm).

AIRSPADE FINDINGS – 25TH FEBRUARY 2020

In light of the previous air spade excavation in which significant roots were encountered along the line of the trench, the conclusion was drawn that amn extension requiring excavation on, or near to the line of the trench excavated on the 13th December (5m from the stem of the tree) would have significant physiological impact upon the tree and possibly effect the structural stability of the tree.

A second trench was therefore excavated at a distance of 10m away from the stem to confirm the presence or absence of roots (as well as their significance).

The second trench was carefully excavated over a 6m length from the retaining wall in two sections. The first being approx 3m in length and in the location of a previously paved and gravelled landscape feature which was removed for the purposes of the

investigations. The trench was terminated once sufficient information had been collected.

An average trench depth of 500mm was attained. This varied slightly, and in areas where soil conditions allowed over 500mm was achieved. A summary of each trench section is provided below:

Image 6: Showing the location where the second trial trench was excavated as part of further investigation. The image shows the proximity of the adjacent lime to the area where the new extension is proposed (approx. 10m between stem and closest edge of the trial trench).

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Section 1 – *Excavated to max depth of 500mm. Very stony soil - made ground. Previously the location of a paved and graveled landscape feature. Length 3m. Most roots are 20mm diameter or less and at not too significant a density.*

Image 7: Showing the southern section of the trench with the retaining wall visible at the bottom of the image. 'Section 1' of the trench open with the gravel and top 400mm of soil removed showing a sparse concentration of fibrous root and some small diameter (10mm) feeder roots present.

Image 8: Showing the northern portion of 'Section 1' of the trench open with much of the stony and made up ground removed with a single slightly more significant feeder root of 30mm and the associated fibrous root growth present.

Image 9: Showing the full extent of the first 3m trench fully excavated to approx. 500mm. A lower density of fibrous and feeder root than the initial trench with only one more significant root visible at the northern end of the trench which was approx 50mm diameter.

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Section 2 - *Excavated to a max depth of 500mm. Approx 2.5m in length. Upper soil horizons are very stony made ground. One significant feeder root (<1mm to 3mm diameter) at 200mm. No significant roots observed below or at the northern end of the trench.*

Image 9: Showing 'Section 2 of the trench open with much of the stony and made up ground removed and a root of 25mm and some fibrous root growth present.

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SUMMARY AND ADVICE

13th December 2019:

- Significant roots were encountered along the line of the trench, suggesting no historic ground level changes have occurred.
- A proposal that requires excavation on, or near to the line of the excavated trench would have significant physiological impact upon the tree. Beyond this is it possible the severance of the larger roots encountered will initiate some structural instability in the tree.
- A planning application that proposes a building of traditional foundation construction that extends to the location of the excavated trench is very unlikely to gain the support of the Stroud Tree Officer. I do not think that a 'no dig' alternative approach is feasible given the existing site levels.
- In addition, a planning application that shows the position of the extension too close to the tree will also likely result in a Tree Preservation Order being served on the tree, as well as possibly elsewhere on the site. This could cause issues with other parts of the proposals on site.
- I recommend that the footprint of the extension extend no closer to the trees that the redline shown in Image 5. Although this is still subject to some further investigation to confirm. There would be no arboricultural reason why the footprint area could not be maximised by extending the southern elevation southwards into the lawn area.

25th FEBRUARY 2020:

- No significant structural roots were encountered along the line of the trench at 10m from the stem. One root of approx. 50mm diameter was exposed along with some feeder roots, and a relatively low density of fibrous root.
- It is anticipated that the impact of severing roots at this distance off the main stem would remain low given the extent of the root encountered in relation to tree species and age. However, the extent of the excavation has been limited to depths that were obtainable and it cannot be completely discounted that further larger diameter roots may still be present.
- On the basis of the combined findings an extension that extends no more than 11.5m from the existing building will likely be acceptable and the design should work on this basis.
- At this stage of the process it would be advisable to approach the tree officer at Stroud District Council in order to get some informal feedback on what we can expect his opinion to be of the anticipated impacts. This can then guide further designs for the proposals. I will require confirmation that I can approach SDC in this manner.

Barton Hyett Associates
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This note should be used to inform the project teams discussion on the best way to ensure an appropriate design can be prepared and implemented.

Should any questions arise regarding the contents of this briefing note, please feel free to contact me.

APPENDIX 2

SDC PRE-APPLICATION RESPONSE (TREE OFFICER)

[redacted]