



### LAND OFF OAKHURST RISE

TOWN AND COUNTRY PLANNING ACT 1990
(as amended)
Section 78 — APPEAL

PINS Ref: APP/B1605/W/20/3261154





## EVIDENCE OF JULIAN FORBES-LAIRD



ON BEHALF OF THE APPELLANT,
IN RELATION TO ARBORICULTURAL MATTERS

## Vol. 2—APPENDICES

Prepared for: William Morrison (Cheltenham) Ltd

FLAC Instruction ref: CC38-1036

Issued: February 2021

Technical Director
Patrick Stileman
BSc(Hons), MICFor ,MRICS, RC.Arbor.A, CUEW, Dip.Arb(RFS)

Operations Director Andrew Colebrook MICFor, M.Arbor.A, Dip.Arb(RFS)

Senior Associate Director
Ben Abbatt
BA(Hons), MICFor, MRICS, RC.Arbor.A, CEnv, Dip.Arb(RFS)

Dendron House
Barford Road • Blunham
Bedford • MK44 3ND
T 44 (0)1767 641648
F 44 (0)1767 660330
E enquiries@flac.uk.com
www.flac.uk.com



FLAC Instruction ref. CC38-1036 Instruction: Land of Oakhurst Rise Client: William Morrison (Cheltenham) Ltd

Document title: s.78 Appeal: Proof of Evidence (Arboriculture) PINS Ref: APP/B1605/W/20/3261154

**♣**FLAC

#### **Volume 2 Contents**

JFL1	Qualifications & experience of the author
JFL2	FLAC Tree Survey: explanatory information
JFL3	Tree Survey data
JFL4	Tree Retention/ Removal Plan, FLAC dwg no. 38-1036.02-B
JFL5	Tree Protection Plan, FLAC dwg no. 38-1036.03-G
JFL6	Planning Practice Guidance on Veteran Trees
JFL7	Natural England & Forestry Commission Standing Advice
JFL8	Topic-specific Statement of Common Ground, agreed with the Rule 6 Party
JFL9	The author's veteran tree identification method, RAVEN
JFL10	RAVEN recorder for ancient, veteran & notable trees on the Appeal site
JFL11	Estimating the Age of Large and Veteran Trees in Britain, FC 1998
JFL12	CBC Tree Preservation Order 1/ 1981
JFL13	CBC Tree Officer's consultation response on planning application ref. 20/00683/OUT
JFL14	Objection to the proposals submitted by the Woodland Trust
JFL15	The author's response to the Woodland Trust
JFL16	Objection to the proposals submitted by the Ancient Tree Forum
JFL17	The author's response to the Ancient Tree Forum
JFL18	Extract from Ancient and other veteran trees, Lonsdale D, Ancient Tree Forum 2013
JFL19	Report for Rule 6 party prepared by Barton Hyett Associates
JFL20	The author's response to Barton Hyett Associates
JFL21	Proposed Veteran Tree Management Plan
JFL22	Extract from Trees: their Natural History, Thomas, P, Cambridge 2014



## QUALIFICATIONS & EXPERIENCE OF THE AUTHOR



Technical Director
Patrick Stileman
BSc(Hons), MICFor, MRICS, RC.Arbor.A, CUEW, Dip.Arb(RFS)

Operations Director
Andrew Colebrook
MICFor, M.Arbor.A, Dip.Arb(RFS)

Senior Associate Director

Ben Abbatt

BA(Hons), MICFor, MRICS, RC.Arbor.A, CEnv, Dip.Arb(RFS)

#### JULIAN FORBES-LAIRD

#### **QUALIFICATIONS & EXPERIENCE**

Julian Forbes-Laird is Senior Director at FLAC, a small but internationally reputed arboricultural and environmental risk consultancy. He has over 30 years' experience in arboriculture, and works with a wide range of public, corporate and private clients.

Together with Alistair Baxter of Aspect Ecology, JFL is co-principal of Sylvan Consulting, which provides planning and development-related advice on ancient woodland, veteran trees and historic landscapes.

JFL started his career on the practical side of the profession, completing a transition to consultancy in 2000 after a decade 'on the tools'. After two years spent working as an independent consultant, he spent a further two years as Senior Consultant at CBA Trees, before establishing FLAC in 2004.

Having developed and lectured widely on a respected and peer-reviewed method designed to quantify the risk posed by defective trees (THREATS), JFL is a recognised authority on tree hazard assessment. He has undertaken numerous forensic accident investigations, including in relation to fatalities caused by trees, and has appeared as an expert witness in the High Court several times.

He is *Special Advisor on Tree Risk* for Network Rail Infrastructure Ltd and Consultant to *L'Union Internationale des Chemins de Fer* (the world cooperation body for railways), for whom he has drafted a new International Railway Standard *Technical Aspects of Tree Risk and Vegetation Management – Recommendations*. He now leads FLAC's collaboration with its technology partner, Airbus Defence and Space, on the development of natural hazard management systems.

JFL has published a number of articles in the arboricultural and landscape press, variously covering tree risk assessment, legal aspects of liability for hazard trees, subsidence, and the arboricultural significance of certain wood decay fungi on trees. He is the author of RAVEN, the only appeal-validated field recognition system for ancient veteran and notable trees.

In addition, JFL is a well-known figure on the international arboricultural lecture circuit, covering specialist topics such as the philosophy of tree risk assessment, retrenchment pruning of veteran trees, the use of remote sensing technology for vegetation management and infrastructure protection, and forensic entomology for tree-related accident investigation. In 2019 he developed a proof of *The Axiom of Uniform Stress* in trees.

JFL is regularly instructed in the area of tree root damage to buildings, frequently acting as an expert witness in this complex area of arboriculture.









JFL has been instructed as an expert witness on several occasions in relation to prosecutions for offences under Tree Preservation Order legislation, and has appeared for both prosecution and defence in the Crown Court. Additionally, he is author of the TEMPO system for assessing whether trees merit TPO protection; TEMPO is used by over 60 local authorities and dozens of consultants.

JFL has appeared numerous times at planning-related Public Inquiries, the majority of which have concerned ancient woodland and historic landscape issues. Occasionally, he undertakes advocacy at Inquiries on behalf of selected Rule 6 parties.

JFL was a technical editor of BS5837:2012, being responsible for preparing drafts of the clauses relating to tree survey methodology, and demolition & construction in proximity to trees.

JFL has undertaken several items of original research, including:

- Stability of trees on slopes to derive failure criteria for tree height against degrees of slope
- The use of infra-red aerial photography for tree vitality assessment
- Site-related predisposing factors for storm resilience modelling of large-scale tree populations
- Cross-correlational analysis of woodbank width as an indicator of century of formation

JFL holds the following memberships, designations and appointments:

- Chartered Arboriculturist and Registered Consultant of the Institute of Chartered Foresters
- Member of the Royal Institution of Chartered Surveyors
- Professional Member of the Arboricultural Association
- Registered Consultant of the Arboricultural Association 2004-2018
- Member of the Expert Witness Institute
- Member of the Royal Forestry Society and holder of its 'Professional Diploma in Arboriculture'
- Member of the British Standards Institution technical committee on trees, B/213
- National Special Advisor on Tree Risk for Network Rail Infrastructure Ltd
- Consultant to the world cooperation body for railways, the UIC

JFL has a Bachelor of Arts Honours Degree in Theology, and a Diploma in Greek and Roman Studies, from the University of Exeter; and read for a Masters in War Studies at King's College London.



## FLAC TREE SURVEY; EXPLANATORY INFORMATION



#### OAKHURST RISE: KEY TO TREE SURVEY DATA SCHEDULE

#### Note

This survey has been undertaken in compliance with BS5837:2012; it is not intended to be a tree safety survey. Any notes offered on structural integrity of trees are incidental, though where trees are considered to be in immediately hazardous condition (identified by red font in the *Structural condition & Notes* column, see below), our recommendations given for immediate intervention should be put in hand by the owner / site manager as soon as can be arranged.

Trees are dynamic living organisms capable of achieving considerable size and structural complexity. They are exposed to and can become damaged by the elements and by human activity, and have co-evolved with decay-causing organisms that can degrade and sometimes destroy their structural integrity. Due to genetic characteristics and local microenvironmental factors this integrity can be innately uncertain. The laws and forces of nature dictate a natural failure rate even among trees that are healthy and structurally sound. By their very nature, therefore, trees cannot be considered entirely hazard-free.

Tree surveys and / or tree inspections are, inherently, only a snapshot in time of the physiological and structural condition of the trees concerned.

Unless otherwise stated in our reporting material, all such surveys and inspections are undertaken from ground level and no internal inspections or tests have been undertaken. Any structural defects present might be not be visible, for example being masked by vegetation, whether the tree's foliage, plants growing round the base of the tree, or climbing plants growing on the stem and into the crown.

Unless otherwise states, the survey data should be considered time-limited **for planning purposes** to a maximum of three years (absent revisions of BS5837, which render pre-existing data obsolete).

#### FLAC Ref. No.

Tree numbers per FLAC dwg no. 38-1036.01 and subsequent drawings

In line with the advice of BS5837:2012, where trees occur as a cohesive group feature (prefixed TG for tree group or WG for woodland group), they are assessed as such

Size data for TG or WG are given as mean figures for trees at roughly the 80 percentile of the population concerned. Trees in the 90-100 percentile range for the group are identified on the TSP

Trees within TG/ WG boundaries that have more than one stem and which are sub-dominant within the TG/ WG (i.e. <80 percentile) are subsumed within the TG/ WG data; dominant multi-stemmed trees (i.e. >80 percentile) within TG/ WG boundaries are listed as individual trees

TG/ WG outlines follow the mapping base (typically either topographical survey or geo-rectified aerial imagery)

Hedges (domestic) are recorded prefixed H and are always excluded from the provisions of the Hedgerows Regulations 1997

Hedgerows (rural) are recorded prefixed HR and possibly fall within the provisions of the Hedgerows Regulations 1997

All numbering starts from x001 for each type of vegetation, where x identifies the surveyor (9000 series = JFL). Thus:

9000 Individual tree
TG9000 Tree group
WG9000 Woodland group
H9000 Domestic hedge
HR9000 Rural hedgerow

The addition of the FLAC instruction ref. ahead of the tree number provides a unique, non-repeated reference number for the arboricultural feature in question

Any trees omitted from the topo survey are listed on the referenced plan, though their positions are only shown indicatively. Off-site trees are included where deemed relevant, though their positions are also shown indicatively if omitted from the topo base

#### TPO Ref.

Statutory protection listing for individual trees, TG and WG

ATTENTION: SEE NOTE IMMEDIATELY BELOW

#### Note

This column is only completed in cases where FLAC has been instructed to undertake a TPO search and correlation to FLAC reference numbers. The absence of data in this column <u>must not</u> be taken to indicate that the trees concerned are not under TPO protection. Statutory protection may also arise from the trees' location within a Conservation Area. Further statutory control over tree removal may be conferred by the Forestry Act 1967

#### **Species**

Tree species as listed in the schedule by common name. Species present are:

Common name	Botanical name	Provenance	Notes
Ash	Fraxinus excelsior	Native	
Blackthorn	Prunus spinosa	Native	
Blue Atlas cedar	Cedrus atlantica 'Glauca'	Exotic	
Cherry laurel	Prunus laurocerasus	Exotic	
Crimean pine	Pinus nigra subsp. pallasiana	Exotic	
Damson	Prunus domestica subsp. insititia	Native	
Elder	Sambucus nigra	Native	
Elm	Ulmus procera	Native	
Field maple	Acer campestre	Native	
Hawthorn	Crataegus monogyna	Native	
Hazel	Corylus avellana	Native	
Holly	llex aquifolium	Native	
Holm oak	Quercus ilex	Exotic	
Lawson cypress	Chamaecyparis lawsoniana	Exotic	
Leyland cypress	x Cupressocyparis leylandii	Exotic	
Norway spruce	Picea abies	Exotic	
Pedunculate oak	Quercus robur	Native	
Red horse chestnut	Aesculus x carnea	Exotic	
Scots pine	Pinus sylvestris	Native	
Sycamore	Acer pseudoplatanus	Naturalised	

#### **Tree Count**

For trees assessed as groups (ident. prefix TG), number of trees present, according to:

2-10 trees Accurate count 11-50 trees Close estimate 51-100 trees Estimate

#### Area m<sup>2</sup>

For trees assessed as woodland (ident. prefix WG), existing area in square metres within survey envelope, derived from CAD interrogation of the completed tree survey plan

#### Ht. (m)

Tree height in metres

Either:

#### **Crown Spread**

For individual trees, measured radial crown spread in metres, listed for each of the four cardinal points

Or:

#### **MRCS**

For trees assessed as groups or woodland, an estimated mean radial crown spread in metres for trees at the 80 percentile size

#### Note

For trees assessed as woodland, sample measurements for canopy overhang beyond woodland boundary (i.e. hedgerow, fence, ditch etc.) are given on the tree survey plan

Or:

#### Mean Width

Mean width in metres of hedge or hedgerow

#### **Length**

Approximate length in metres of hedge or hedgerow

#### Ht. 1st Br.

For individual trees and trees assessed as groups or woodland, height in metres above ground of attachment point of first significant branch (cardinal point may be given indicating growing direction)

#### Ht. Can.

For individual trees and trees assessed as groups or woodland, mean height in metres of lower extent of tree canopy above ground

#### **Stem Count**

For individual trees, number of stems present below 1.5m AGL. Stem count affects diameter entry as follows:

Where the stem count is 1 the diameter should be entered into the 1 column under Stem Dia.

Where the stem count is up to 5 each stem dia. should be listed

Where the stem count exceeds 5, the mean stem diameter should be entered in the 1 column

Either:

#### Stem Dia. (mm)

Stem diameter(s) at 1.5m above ground level (see measurement system in BS5837:2012 Annex C), given in millimetres

Where entered 1:

Single measured stem diameter

Where entered 2-5:

Multiple measured stem diameters, listed per stem

Where entered >5:

For trees with more than five stems, diameter is listed as an estimated mean

Where the diameter entry for trees with 1 or 2-5 stems appears in italics, this indicates that it was estimated by the surveyor (for example, due to the presence of ivy on the stem)

It is our practice to round up when estimating stem diameters

Or:

#### Specimen Stem Dia.

For trees assessed as groups or woodland, stem diameter in millimetres at 1.5m above ground level for 80 percentile member of TG or WG. Trees with larger diameters are identified on the TSP

Or:

#### Mean Stem Dia.

Mean stem diameter in millimetres above the basal flare of hedge or hedgerow component plants

Either:

#### **RPA Rad.**

Radius in metres of the notionally circular Root Protection Area

Or:

#### Specimen RPA Rad.

For trees assessed as groups or woodland, radius in metres of the notionally circular Root Protection Area based on specimen diameter for TG or WG 80 percentile tree

Either:

#### **RPA Area**

Conversion of RPA radius to an area, given in m<sup>2</sup>, capped to a maximum of 707m<sup>2</sup> (in line with BS5837:2012)

Or:

#### Specimen RPA Area

For trees assessed as groups or woodland, conversion of specimen RPA radius to an area, given in m<sup>2</sup>, capped to a maximum of 707m<sup>2</sup>

#### Note

RPA for hedges or hedgerows is to be taken as 3m from the centreline, half the height or 2m beyond existing width, whichever is the greater

#### **Life Stage**

Life stage assessment according into:

Y Young
SM Semi-mature
EM Early mature
M Mature
OM Over-mature

#### **Phys. Condition**

An assessment of the physiological condition (i.e. health/vitality) status of the tree summarised according to:

**G**OOD Generally in healthy condition

**F**AIR Condition satisfactory though below mean species performance

**P**OOR Tree in decline/retrenching

**D**EAD Self explanatory

#### **Structural condition & Notes**

Notes on the apparent structural integrity of the tree based on visual tree assessment, including notes on form, taper, forking habit, storm damage, decay fungi, pests, etc. plus other pertinent observations

#### **Management recommendations**

Preliminary recommendations for intervention (e.g. tree surgery, felling, etc) in relation to existing context

Trees assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as practical. Where the recommendation is for further investigation, including removal of ivy and reinspection, the given retention span and quality/value grade (see below) should be treated as provisional

#### **Notes**

This is **not** intended to comprise a specification for tree work: further advice should be sought prior to implementation

Change in land use (target value) requires further assessment

#### Ret. Span

Estimated remaining retention span based on species, condition & context divided into the following bands (relates to quality and value grade achievable as stated):

Years	Best QV grade
<10	U
10+	С
20+	В
>40	Α

#### **QV Grade**

Quality & Value grade classification according to BS5837:2012 (see attached extract from BS5837:2012 'Table 1 - Cascade Chart for Tree Quality Assessment') –

Grade	Summary meaning	Ident. colour spot on TSP
U	Trees that are unretainable in viable condition	Dark red
Α	High quality & value and consequent high retention priority	Light green
В	Moderate quality and value (moderate priority for retention)	Mid-blue
С	Low quality and value (generally considered to be sacrificial)	Grey

#### Note

Trees present which we consider to be exceptional specimens are identified by the suffix \* after the A grade, e.g. A1\*

#### **Proposal**

This column identifies:

- 1. Pre-planning (Arboricultural Stages 1, Tree Survey, & 2, Design): JFL's initial view of a defensible tree retention / removal balance
- Planning submission (Arboricultural Stage 3):
   The actual tree retention / removal balance as proposed

The following codes are used:

KEI	Trees that would be retained
PRET	For tree groups (TG), woodlands (WG) & hedgerows (HR) – signifies partial retention (see below)
REM	<ol> <li>Trees defensibly removed to facilitate development</li> <li>Trees that would be removed</li> </ol>
U	Trees identified to be unsuitable for retention

#### No. of trees retained

For tree groups only

Number of trees retained out of the total recorded for the group. Outcomes are as follows:

Survey grade U Number of trees for retention defaults to 0 (can be amended by manual override)

Proposal code RET Number of trees for retention defaults to total from *Tree Count* data field

Proposal code PRET No. of trees for retention requires manual input following interrogation of relevant plans

Proposal code REM Number of trees for retention defaults to 0

#### **Trees retained %**

For tree groups only

Percentage of pre-existing TG tree count that would be retained, based on an auto-sum derived from inputs into the preceding column

#### Area retained m<sup>2</sup>

For woodlands only

Area, in square metres, of woodland (WG) proposed for retention. Outcomes are as follows:

Survey grade U Area for retention defaults to 0 (can be amended by manual override)

Proposal code RET Area for retention defaults to existing area

Proposal code PRET Area for retention requires manual input following interrogation of relevant plans

Proposal code REM Area for retention defaults to 0

#### Area retained %

For woodlands only

Percentage of pre-existing WG area that would be retained, based on an auto-sum derived from inputs into the preceding column

#### Length retained m

For hedgerows only

Length, in metres, of hedgerow (HR) proposed for retention. Outcomes are as follows:

Survey grade U Length for retention defaults to 0 (can be amended by manual override)

Proposal code RET Length for retention defaults to existing length

Proposal code PRET Length for retention requires manual input following interrogation of relevant plans

Proposal code REM Length for retention defaults to 0

#### **Length retained %**

For hedgerows only

Percentage of pre-existing HR length that would be retained, based on an auto-sum derived from inputs into the preceding column

Category and definition	Criteria (including subcategories where appropriate	e)		Identification on plan			
Trees unsuitable for retention (see Not	e)						
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul> <li>unviable after removal of other category U trees</li> <li>Trees that are dead or are showing signs of significance to the of better quality</li> </ul>	In defect, such that their early loss is expected due to collapse, including those that will become (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) ficant, immediate, and irreversible overall decline the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees ital conservation value which it might be desirable to preserve; see [BS5837:2012] 4.5.7.					
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation				
Trees to be considered for retention							
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)				
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	cultural value				
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this r conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value				

#### **FLAC Note**

diameter below 150 mm

The original contents of the column *Identification on plan* have been replaced by FLAC in the version above; spot colours to RGB codes given in BS5837:2012 Table 2



TREE SURVEY DATA

#### Data for individual trees

FLAC Ref. No.	1981 TPO Ref	Species	Ht.	Crown S	pread (	m) Ht. 1 <sup>st</sup>		Stem Count		Stem D	<b>ia.</b> (mn	n)	RPA	Rad. R	PA Area	Life Stage	Phys. Condition	Structural condition & Notes Management recommendations	Ret. Span	QV Grade	Proposal
			(m)	N S	w	E (m)	(m)	•	1/ mean	2	3	4 !	<b>5</b> (r	m)	(m2)	Y-SM-EM-M- OM	G-F-P-D		<10, 10+ 20+, >40	U-A-B-C	
3001		Ash	14.4	4.5	4.	5 2.6 2 NW	2.5	1	257					3.09	30	EM	F	Upright stem. Principal branch structure and unions in satisfactory condition. Some crown asymmetry after companion shelter at east. Tree of relatively low significance.	>40	C1	RET
3002	T5	Pedunculate oak	24	8.5 1:	1 9.:	9.6 3.8 W	1	1	1370					15.00	707	М	G	Very stout upright stem. Principal branch structure and unions in satisfactory condition.  Bird box at 2 metres north. High quality landscape tree.  No action required at time of survey.	>40	A1	RET
3003		Hawthorn	3.5	3.2	2 4.	5 1 1 W	0	1	180					2.16	15	EM	F	Scrubby specimen leans heavily over to north-west. Tree of relatively low significance. No action required at time of survey.	10+	C1	RET
3004	T6	Ash	9.5	5 4.3	3 5.	7 1 2.8 W	3	1	780					9.36	275	М	F	Significant basal decay and severe degradation of root buttress at west. Extensive bark loss around stem at west side. Large Inonotus hispidus fruiting bracket on stem at 4.5 metres west in zone of bark damage. Very heavily reduced but now unsightly. Very poor overall condition.	<10	U	U
3005	Т8	Crimean pine	20	10.5	2 9.:	3 2 4 E	8	1	910					10.92	374	М	G	Stem has a slight incline to north from ground level. Large limb from 4 metres east has an area of bark wounding on upper side of limb near union with stem, advise pruning to mitigate. Large scaffold limb at west has a sub-optimal union. Upper western crown contains partially fractured branches with some that have fallen to ground level.  Prune out broken/hanging branches at upper west crown and reduce branch structure associated with the western scaffold limb by 2 metres to mitigate for sub-optimal union with stem. Prune branch extents of large low limb from 4 metres east by 2 metres to mitigate potential weakening at wound near stem.	20+	B1	RET
3006		Sycamore	5	1.5 2.3	3 :	2 2.8 1.2 S	1	2	130	60				1.72	9	SM	F	Small, scrubby twin-stemmed specimen close to boundary. Low arboricultural or landscape merit.  No action required at time of survey.	20+	C1	RET
3007	Т9	Pedunculate oak	9.6	5 !	5 5	5 5.5 3 W	2.5	1	1450					15.00	707	EM	G	Veteran, relic tree. Very stout lower stem with extensive stem hollowing, cavity opening at north side reveals very large cavity providing various habitat spaces. Old, small but tough fruiting body on north side of stem at 1.5 metres, provisionally identified as either <i>Phellinus robustus</i> or extinct <i>Ganoderma</i> species. Large wound on stem at 2 metres after scaffold limb loss. Crown retrenchment extensive, now only a 3.5 metres tall stem section bearing three remnant scaffold member stubs. Dead and non-functional volumes of dead wood present within scaffold stubs providing opportunities for water pooling plus additional habitat spaces. Foliage bearing crown comprises a small number of branches on each scaffold stub adapted now as a consolidated secondary crown and in good overall vitality.	>40	A3	RET
3008	G3	Pedunculate oak	18	12.4	1	7 8 3.5 N	1	1	1130					13.56	577	М	G	Stout lower stem. Slight stem incline to south. Principal branch structure and unions in satisfactory condition. Significant crown bias to south. Good overall condition. Small pond immediately to south of stem, wet at time of survey.	>40	A1	RET
3009	G3	Pedunculate oak	14	4.5 10.5	5 (	6 7 4 S	1	1	760					9.12	261	М	G	Stem and principal branch structure and unions in satisfactory condition. Rather asymmetrical crown form due to suppression by companion trees to eat and west. Ivy impedes inspection. Satisfactory overall condition.	>40	B1	RET
3010	G3	Pedunculate oak	14	6.5 6.9	5 8	8 7 2 NW	1	1	930					11.16	391	М	F	Fistulina hepatica fruiting body on root buttress at ground level east. Laetiporus sulphureus on old branch loss wound at 2 metres south. Numerous habitat holes within branch structure indicating heartwood fungal decay is well progressed. General bias of crown structure to west. Some distal crown dieback but chiefly small diameter material. Physiological condition and vitality coupled with structural condition considered likely to limit long-term retention prospects such that th specimen is not likely to have sufficinet longevity for veteran status. Crown consolidation advised to stabilize decayed structure in the short-term.	>40	В1	RET
3011		Ash	11.5	3.5 2.5	5 :	2 2.7 1.5 N	1.8	1	255					3.06	29	EM	Р	Upright stem and structural habit. Severe decline through crown.	<10	U	U
3012		Ash	12	5 3.5	5 :	3 4 2.5 E	1	2	320	290				5.19	85	EM	F	Twin stems from close to ground level. South stem bifurcates at 2 metres with dead western scaffold member. Bark damage and loss of north stem, further decline expected. Limited potential.	10+	C1	REM
3013		Ash	12	6	5 (	6 5.5 2.5 W	1	3	360	320	220			6.36	127	EM	F	Multi-stemmed from ground level. Sub-optimal bark included unions developing between stems. Asymmetrical crown due to companion shelter at north. Tree of relatively low significance.  No action required at time of survey.	20+	C1	REM
3014	T11	Pedunculate oak	11	6.5 5.2	2 6.1	5 6.5 1.6 W	1	1	980					11.76	434	ОМ	F	Bark wounding after historic lightning strike seen as broad tongue of bark loss from ground level south extending into upper crown structure, exposed and desiccated non-functional heartwood within affected stem section comprises large volume dead wood. Scattered dead wood and smaller distal decline. Crown consolidated by pruning/tidying probably subsequent to past storm damage.	>40	В3	RET
3015	T10	Pedunculate oak	16.7	10.5 11.!	5 !	9 14.8 2 S	1	1	1460					15.00	707	M	G	Very stout lower stem. Broadly spreading crown structure. Crown bias to east. Dense ivy to 6 metres. Low limb to north shows adaptive growth at longitudinal fracture approximately 5 metres from the stem, pruning advised to stabilize. Few large dead limbs scattered through crown.  Stem and principal branch structure and unions in satisfactory condition. Some crown	>40	A1	RET
3016		Ash Sycamore	14.5	5.5	4 6.	6 8 2.5 W 5 5 2 W	1.2	1	690 500					6.00	215 113	M	G F	asymmetry after companion shelter. Satisfactory overall condition.  Stem and principal branch structure and unions in satisfactory condition. Some crown asymmetry after companion shelter to south. Satisfactory overall condition.  No action required at time of survey.	>40	B1 B1	REM

FLAC Ref.	1981 TPC	Species	Ht.		Crowi	n Sprea	ad (m)	)	-		Stem Count		Stem	Dia. (mm	)	RPA Rad	. RPA Ar	ea Life St	age i	Phys.	Structural condition & Notes Management recommendations	Ret. Span	QV Grade	Proposal
140.	Kei		(m)		N S	١	w			(m)		1/ nean	2	3	4 5	(m)	(m2)	Y-SM-EN	√-M-	G-F-P-D		<10, 10+ 20+, >40	U-A-B-C	
3018	T18	Pedunculate oak	22.	5	7.5 1	0.5	11.3	9.5 3	S	2		1760				15.0	0 7	07 M		G	Veteran tree. Very stout lower stem to bole and multiple regrown scaffold members after cessation of historic pollard management. Extensive stem and bole hollowing at east associated with major limb loss in the presence of brown rot decay fungi Fistulina hepatica. Failure of large scaffold member at north-east scaffold member leaves a large dead wood resource containing habitat spaces and including Laetiporus sulphureus fruiting body and exposed heartwood. Additional F. hepatica fruiting body also present on old branch breakout wound on central scaffold member at north.  Several wounds and associated habitat space features through structure. Range of dead wood sizes. Crown retrenchment via storm damage as described but otherwise bearing a fully regrown crown in good overall vitality.	>40	A3	RET
3019		Ash	10	6	3	8	5	3.3 4	S	4	1	560				6.7	2 1	42 M		F	Stem inclined slightly to south. Severe bark loss at north obscured by surrounding debris, probably associated with infection by <i>Armillaria</i> species. Physiological impacts of infection and damage seen as thinning to branch structure, expected to deteriorate further.	10+	C1	RET
3020		Ash	14	4	5.5	4	5	5 3	Е	2	2	380	380			6.4	5 1	31 M		F	Twin stems from ground level with bark-included union developing. Past limb removals at north. Suppressed and unremarkable specimen.	20+	C1	RET
3021		Ash	1(	0	7	5 :	11.1	8.5 2	S	0	1	1520				15.0	7 00 7	07 M		F	Veteran tree. An extensively hollow and decayed lower stem section with only a relatively thin residual wall of functional wood after decay of the large majority of the heartwood volume. A cavity opening to north side of the stem occupies the length of the remnant stem section. Crown comprises only later/recent adventitious shoots that have now become the principal limbs after past loss of all primary crown structure and is in good physiological condition so pruning is advised of this later material to manage both the weight and sail area acting upon the increasingly fragile residual stem wood.  NB currently the crown is not excessively suppressed by the surrounding younger and more vigorous trees, shading out should be avoided e.g. by pruning of the ash so that it is marginalized relative to the younger trees or by allowing younger trees to overtop the ash. Remaining dysfunctional wood within the central column of the stem is riddled by insect galleries. Fungal degradation of heartwood displays a pattern consistent with cubical brown rot mode. Varied habitat spaces present and mostly within the stem.	>40	A3	RET
3022	T16	Pedunculate oak	2:	3	9.5	11	12.3	11.5 5	E	1.5	1	1205				14.4	6 6	57 M		G	A stout, upright stem with good taper. Principal branch structure and unions in good condition. Attractive, broadly spreading crown structure. High quality landscape tree with good potential.  No action required at time of survey.	>40	A1	RET
3023	A4	Pedunculate oak	24	4	12 1	2.5	5.5	10 5.	.5 S	2	1	1365				15.0	0 7	07 M		G	Very stout upright stem. Multiple limb failures from north crown, possibly due to high wind events, residual limbs potentially exposed and vulnerable to similar failures by loss of crown integrity. Intervention pruning at remainder of north crown may prevent further crown failures.  Reduce remainder of north crown by 2.5 metres to stabilize due to apparent vulnerability to large limb failures.	>40	A1	RET
3024	A4	Pedunculate oak	2:	2	10	6	5.5	6.5 9	S	9	1	1110				13.3	2 5	57 M		G	Stout upright stem. Principal branch structure and unions in satisfactory condition.  Recent pruning management of west crown in the interests of maintenance of the relationship to the proximal dwelling to west. Bird box at 3 metres north. Good overall condition.  No action required at time of survey.	>40	A1	RET
3025	T15	Pedunculate oak	1:	8 :	10.5	9	3	7 3.	5 N	3	1	1462				15.0	0 7	07 M		F	Very stout lower stem with large scaffold member sweeping up into crown from 3 metres south and forming a substantial portion of the southern crown. Principal branch structure and unions in satisfactory condition. Recent management includes heavy crown reduction back to second order branch structure with virtually all third order branches removed, in additional to this there have been several lower limb removals up to 5 metres above ground level and limb removals of the west crown to accommodate the dwelling that is only a few metres west of the stem. General vitality after pruning is satisfactory with no subsequent decline.	>40	A1	RET
3026	T14	Pedunculate oak	1!	5	9.5	11 :	10.5	12 2.	.5 E	1	1	1660				15.0	0 7	07 M		G	Veteran tree. Very stout lower stem clearly subject to historic pollard management.  Now with a full and healthy regrown crown structure. A tree known to be important to bats. Past management treatment and subsequent regrowth provides habitat features, crevices, decay pockets, water pooling and sap run. Some minor pruning is evident, possibly to remove dead wood or broken limbs. Stable compact crown. Very good overall condition.	>40	А3	RET
3027	А3	Pedunculate oak	2:	2	13	11	10	13.5 2	NE	0.5	1	1480				15.0	0 7	07 M		G	Very stout lower stem. Principal branch structure and unions in satisfactory condition.  Large low limb to north-east and resulting crown bias. Large, broadly spreading and attractive crown form. Good overall condition. High quality landscape tree.	>40	A1	RET
3028		Pedunculate oak	10.	5	7	7.2	7	6 2.	5 W	1	1	740				8.8	8 2	48 M		G	Veteran, relic tree. Only the north-west fragment of the original stem column remains alive amounting to an estimated 20% of the stem circumference of the outermost portion of the former stem. A standing dead section remains at the south-west, this also approximately 20% of the former circumference. The eastern half of the stem has become dead and collapsed to east lying in situ (this should be retained here for habitat/ecological reasons). The former stem size can be approximately determined by measuring across the diameter in a north-south axis (1650mm). The live section currently bears a consolidated but healthy crown. Future management of the crown in the interests of preservation of the stem fragment is sensible and need only amount to periodic peripheral crown reduction pruning work.	>40	A3	RET
3029	А3	Pedunculate oak	2:	1	6.2	7	6	12 3	N	1	1	970				11.6	4 4	25 M		G	Upright stem. Principal branch structure and unions in satisfactory condition. Recent pruning of west crown in the interests of maintenance of the relationship to the proximal dwelling to west. A few pieces of small dead wood remain and may potentially affect third party land.  Remove dead wood >15mm in diameter that may affect adjacent property.	>40	B1	RET

FLAC Ref.	1981 TPO Ref	Species	Ht.	Crow	n Spread	<b>d</b> (m)	Ht. 1 <sup>st</sup>		tem ount	Ster	m Dia. (r	nm)		RPA Rad.	RPA Area	Life Stage	Phys.	Structural condition & Notes Management recommendations	Ret. Spar	QV Grade	Proposal
			(m)	N S	v	v	E (m)	(m)	1 / mea		3	4	5	(m)	(m2)	Y-SM-EM-M-	G-F-P-D		<10, 10+ 20- >40	U-A-B-C	
3030	T13	Pedunculate oak	22.5	6 1	0.2	8	7.8 4 S	4	1 150	05				15.00	707	М	F	tteran tree. Very stout lower stem. Principal branch structure and unions in tisfactory condition. Several small habitat holes throughout scaffold structure. Past nb removal wounds provide for hollowing and habitat spaces. Distal dieback crown trenchment and early senescence. Good overall condition.	>40	А3	RET
3031	T1	Pedunculate oak	13	6.3	7.6	7	6.5 4 N	1	1 164	10				15.00	707	М	G	teran tree. Clearly subject to historic pollard management. Very stout lower stem. oad flattening of secondary root development forming a large root plate likely to be laptive growth response to root decay. Cavity from ground level north reveals tensive stem hollowing. Degraded remnant fungal fruiting bracket seen as old tachment position on stem burring at 2 metres east, likely <i>Ganoderma</i> species, with oken pieces lying on ground appear to have colouring and spore tube formation nsistent with preliminary identification. Further fungal activity observed as etiporus sulphureus on old branch at 5 metres north in location of either past branch ilure or pruning. Multiple and varied habitat spaces through regrown structure seen habitat holes and crevices.	>40	A3	RET
3032	T2	Pedunculate oak	20	8.2	9.2	9.5	9.2 7 N	2	1 175	50				15.00	707	М	G	ery stout lower stem. Burring of lower stem increases diameter. Principal branch ructure and unions in satisfactory condition. Attractive specimen. High quality and scape tree.	>40	A1	RET
3033	T3	Pedunculate oak	18.4	8.6	9.3	8	9 4.5 W	2	1 117	70				14.04	619	М	G	bout stem. Fungal activity observed: Inonotus dryadeus at ground level south (with ttation droplet formation); Fistulina hepatica at 1 metre north. Large scaffold limb rm 5 metres west has a decayed section and hollowing close to stem union that may crease the failure potential of the large low limb outboard of the noted defect, uning is advised. Remainder of crown structure is in satisfactory condition.		A1	RET
3034	A1	Scots pine	18.7	6	6.7	6	4.6 8 S	4	1 74	15				8.94	251	М	F	oright stem. Typical form and structure for the species. Principal branch structure and No action required at time of survey.	>40	B1	RET
3035	A1	Blue Atlas cedar	15.4	9.3	7.4	4.7	10.3 4 E	4	1 74	10				8.88	248	М	F	oright stem. Typical form and structure for the species. Principal branch structure and slions in satisfactory condition. Crown bias to east. Foliage appears slightly thinner and an normally expected.  No action required at time of survey.	20+	B1	RET
3036	A1	Ash	19.5	7.5	8.5	8	9 5 W	4	1 73	10				8.76	241	М	F	oright lower stem becomes co-dominant from 2.5 metres with a degree of bark clusion but not significantly hazardous. Several medium sized pieces of dead wood attered through crown.  Remove dead wood >15mm in diameter.	20+	B1	RET
3037	A1	Pedunculate oak	19	11	7.5	10	7.3 4 N	3	1 176	50				15.00	707	М	G	teran tree. Very broad, stout upright stem then becoming a large bole with fully grown crown after cessation of historic pollard management. Cavity from ground vel at south-east reveals extensive stem hollowing from within root buttress to an alknown height within the stem but possibly into the pollard bole. Multiple Laetiporus liphureus fruiting brackets observed on old branch removal or branch loss wounds in gion of pollard bole at north and south-west with proximal habitat spaces via brownt decay. Crown structure has previously been reduced, possibly after natural crown trenchment but remains in good overall condition both structurally and lipsiologically, although the current crown is generally free of smaller sized dead bood, broken branches or past storm damage.	>40	A3	RET
3038	A4	Pedunculate oak	15.5	4.8	10	5.8	4.8 2.5 NW	1.5	1 112	20				13.44	567	М	F	out, upright stem. Small cavity between root buttresses from ground level at west.  / previously severed. Past heavy crown pruning presumably due to presence of oximal dwelling to west. Occasional medium sized dead wood. Satisfactory overall notition.	>40	B1	RET
3039	A4	Ash	12	2	4.8	4.2	4.7 3 S	2.5	1 25	50				3.00	28	EM	F	ender specimen with crown asymmetry due to close companion shelter. Satisfactory level condition. Tree of relatively low significance.	>40	B1	RET
3040	A4	Ash	15	5	4	8	2.5 4 W	3	1 39	00				4.68	69	EM	F	ght stem incline to west. Majority of branch structure biased to west. Satisfactory erall condition. Tree of relatively low significance.	>40	B1	RET
3041	A4	Scots pine	14	2.2	2	5.5	2 8 W	3	1 60	00				7.20	163	EM	F	ght stem incline to north. Compact crown. Satisfactory overall condition. Tree of latively low significance.  No action required at time of survey.	>40	B1	RET
3042	A4	Horse chestnut	15	10	5	3.5	6 2 N	2	1 102	20				12.24	470	М	F	ecimen situated with stem level with north-east corner of proximal residential velling with a companion chestnut to the south. Slight stem incline and general own bias to north. Crown exhibits past itterations of crown pruning and lower imb movals likely to be associated with daylight and proximity issues to the house. Large affold limb form 2 metres north. Prinicpal branch structure and unions in satisfactory nditon.	20+	B1	RET

LAC Ref.	1981 TPO	Species	Tree	Ht.	MRCS	Ht. 1 <sup>s</sup>	t Ht.	Specimen	Specimen			Phys.	Structural condition & Notes	Management recommendations	Ret. Span	QV Grade	Proposal	No. of trees	Trees
No.	Ref	орешес	Count			Br.	Can.	Stem Dia.	RPA Rad.		Y-SM-EM-M-	Conditio G-F-P-D			<10, 10+ 20+,	U-A-B-C		retained	retained
				(m)	(m)	(m)	(m)	(mm)	(m)	(m2)	OM	G-F-P-D	Dispersed linear tree group of small and unremarkable specimens of varying density.	<u> </u>	>40	U-A-B-C			%
G3001		Ash	14	7	4	4 1 N	1	. 200	2.40	1	.8 SM	F	Unremarkable both individually and collectively.	No action required at time of survey.	>40	C2	RET	14	100.0
													Off site tree group. No access. Remote inspection only. Close-set pair share companion shelter, aerodynamic form and a common crown profile. Stems located close to						
													boundary fence. Dense ivy impedes inspection. Principal branch structure and unions						
G3002		Pedunculate oak	2	15	9.5	2.5 W	1	1050	12.60	49	99 M	G	in satisfactory condition. Substantial crown overhang into site. Good overall condition. High quality tree group. Beneath the crown footprint of the two oaks there are	No action required at time of survey.	>40	A2	RET	2	100.0
													additional off site trees along the boundary comprising both conifer and broadleaved						
													species, all significantly smaller in both dimensions and constraints and all of comparative low quality and value.						
													Close-set stems share companion shelter, aerodynamic form and a common crown profile. Trio situated above ice house. Stems and principal branch structures and						
G3003	G2	Sycamore x3	3	19	13	3 2 N	,	1130	13.56	5 57	77 M	G	unions in satisfactory condition. Physiological condition fair for south and north-east	Remove dead wood >20mm in diameter.	20+	B2	RET	2	100.0
03003	GE.	Sycamore x5		13			_	1130	13.50	, ,,,	/		tree but becoming poor for south-west tree seen as thinning of distal branch structure and tip decline and development of small to medium sized dead wood. Hawthorn	Themove dead wood > 2011111111 diameter.	20.	52	1121		100.0
													scrub around base of south-west tree.						
G3004		Sycamore x4, ash x3, hawthorn x2,	25	15.5		5 2 E	1	. 360	4.32		69 EM	F	Cluster of slender upright principal trees comprising ash and sycamore with a scrubby	No action required at time of survey.	>40	C2	REM	0	0.0
		elm x6, elder x3, holly x3		10.0							2		understorey of other species. Quite dense, no management. Low arboricultural merit.	The detail required at time or survey.	1.0		112.01	J	0.0
													A former blackthorn hedge that has now become a line of trees with scrubby understorey after cessation of past hedgerow management. Trees are mostly slender						
													ash, drawn-up after close companion shelter and often multi-stemmed. <i>Inonotus</i>						
		Blackthorn 60%, ash 35%,										_	hispidus decay fungus observed within the dominant ash population likely to result in						
G3005		pedunculate oak 5%	80	19	10	) 2 E	1	. 500	6.00	11	.3 M	F	individual whole and partial tree failures due to the size (diameter) of the trees affected. Positioned internally to the site the tree group has low landscape presence in	No action required at time of survey.	>40	В3	PRET	60	75.0
													comparison with site boundary tree groups. Arboriculturally it is of relatively low merit						
													with only a few distinct trees worthy of individual description as indicated on the plan. Tree count exc. blackthorn						
													Linear tree group along low fence with four Scots pines of larger stem diameter but set						
C2006	A4	Pedunculate oak x3, Scots pine x4,	18	19		7 2 N	1	. 500	6.00	11	.3 M	F	further back from fence to south. Scots pines observed to have a few broken branches	Prune out dead wood and broken branches, the latter including	>40	D2	DET	10	100.0
G3006	A4	ash x10, hawthorn x1	10	19	,	/ 2 1	1	. 500	6.00	11	.5 101	Г	in crowns when viewed from north. Ash often slender and drawn-up after companion	branches hanging in upper north crowns of Scots pines.	>40	B2	RET	18	100.0
													shelter and several are multi-stemmed. Confers some screen function.		-				
G3007	A3	Ash 50%, sycamore, field maple,	50	16	-	7 2 E	2	400	4.80		'2 M	F	Linear tree group on west boundary of site. Often slender, drawn-up ash with scrubby understorey of other species. Although the tree group is comprised of mostly	No action required at time of survey.	>40	B2	RET	50	100.0
03007	713	hawthorn, hazel 50%		10			_	400	4.00		- "		unremarkable individuals collectively they confer useful screen function.	The decision required at time of survey.	740	52	1121		100.0
1													Rather scrubby linear tree group with broad bramble cluster running contiguously						
G3008	A3?	Damson x14, hawthorn x7	20	6	3	3 1 N	1	. 230	2.76	2	.4 M	F	along its length and thicketting to east. Low arboricultural or landscape merit. TPO	No action required at time of survey.	20+	C2	REM	0	0.0
							+						query arises as TPO map unclear; does not merit TPO and probably not included						
G3009		Sycamore x2, ash x2	4	13	6	5 2 S	2	510	6.12	11	.8 M	F	Cluster of specimens in north-west corner of site. Ash at north asymmetrical after suppression by the proximal dominant oak (3030). Includes the off site sycamore at	No action required at time of survey.	20+	B2	RET	4	100.0
													north-west for constraints mapping. Satisfactory overall condition.	,					
G3010		Ash x6, sycamore x3, pedunculate	16	15	,	5 2 N	1	. 350	4.20		5 EM	_	Dispersed linear tree group of varying density. Often scrubby individuals with asymmetry born of companion shelter. Tree group of relatively low arboricultural	No action required at time of survey.	>40	B2	RET	16	100.0
G3010		oak x7	16	15	,	5 Z IN	1	. 330	4.20		DS EIVI	Г	significance.	,	>40	DZ.	KEI	16	100.0
G3011	A1	Leyland cypress	4	10	6.5		0 1	600	7.20	16	63 M	F	Close-set linear tree group. Large specimens now displaying typical species weakness o tight but heavy branches resulting in failures at north crown. No recent management	Remove broken and damaged limbs.	20+	C2	RET	4	100.0
G3011	AI	Leyland cypress	4	19	0	'	0 1	. 600	7.20	10	os ivi	Г	evident. Limited future potential Low arboricultural merit.	nemove broken and damaged iimbs.	20+	C2	KEI	4	100.0
		Norway spruce x1, Lawson cypress											Cluster of unremarkable specimens. Norway spruce is larger than the mean dimensions with a stem diameter estimated to be 250+250mm, a height of 11 metres and crown						
G3012	A1?	x1, Lawson cypress cv x1, ash x1	4	6	3	3	0 0	200	2.40	1	.8 EM	F	radius of 4 metres. All unremarkable both individually and collectively. TPO query as	No action required at time of survey.	20+	C2	RET	4	100.0
													may be too young to have been present in 1981  Close-set trio of similar sized specimens share companion shelter, aerodynamic form						
G3013	A1	Red horse chestnut	3	11	6.8	8 6 W	3	480	5.76	10	)4 EM	F	and common crown profile. Some typical bark dysfunction but otherwise in satisfactory overall condition.	No action required at time of survey.	20+	B2	RET	3	100.0
							1						Tree group represents the northernmost trees of the wider tree group (continuing to						
C201 4	TC204.4	Holm ook		4.0	٠.	4.57	3-		7.00		11 84		south) for constraints mapping. Diameter recorded here represents the specimen 6.8	No action required at tiref	. 40	D2	DET	_	100.0
G3014	163014	Holm oak	3	16	8.5	5 4 N	2.5	650	7.80	19	91 M	G	metres to east of the existing manhole, one tree is closer but quite a bit smaller.  Typical form and structure for the species albeit some crown asymmetry due to	No action required at time of survey.	>40	B2	RET	3	100.0
							1						companion shelter. Satisfactory overall condition.						
		Scots pine		18.6		5.5 W		730	8.76	24	1 M	_	Close-set pair share companion shelter. Both trees have suffered past limb failures but	No action required at time of survey.	20+	B2	RET	2	100.0

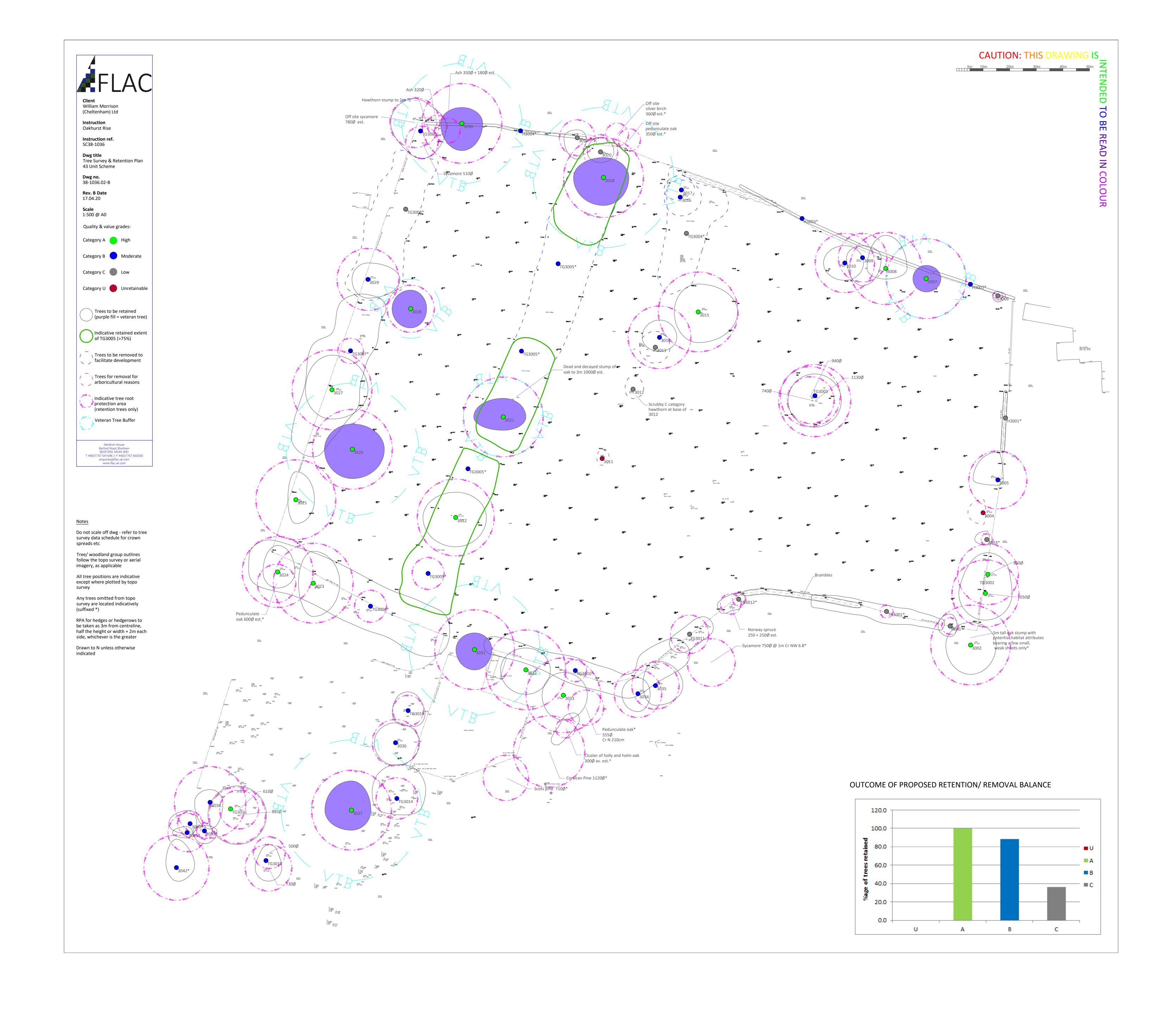
FLAC Ref. No.	1981 TP	Species	Tree Count	Ht.	MRCS	Ht. 1 <sup>s</sup>		Specimen Stem Dia.	•	Specimen RPA Area	Life Stage	Phys. Condition	Structural condition & Notes	Management recommendations	Ret. Span	QV Grade	Proposal	No. of trees retained	Trees retained
				(m)	(m)	(m)	(m)	(mm)	(m)	(m2)	Y-SM-EM-M- OM	G-F-P-D			<10, 10+ 20+, >40	U-A-B-C			%
													Close-set pair share companion shelter and aerodynamic form. Principal branch						
TG3016	A4	Ash	2	25	1:	1 6 E	2.5	885	10.62	354	M	F	structure and unions in satisfactory condition. Occasional medium sized dead wood.	Remove dead wood >20mm in diameter.	>40	A2	RET	2	100.0
													Satisfactory overall condition.						

### Data for hedges (H)

FLAC Ref. No.	Species	Ht.	Mean Width	Length	Mean Stem Dia.	Life Stage	Phys. Condition	Structural condition & Notes	Management recommendations	Ret. Span	QV Grade	Proposal
		(m)	(m)	(m)	(mm)	Y-SM-EM-M- OM	G-F-P-D			<10, 10+ 20+, >40	U-A-B-C	
H3001	Leyland cypress	3	3	22	230	М	- E	Ownership uncertain, potentially an off site item. Specimens have been heavily topped. Low arboricultural merit.	No action required at time of survey.	20+	C2	RET
H3002	Leyland cypress, cherry laurel	2.5	1	32	120	EM	G	Off site hedge. Regularly clipped. Good overall condition.	No action required at time of survey.	>40	B2	RET
Н3003	Hawthorn, holly	2.5	1	85	120	EM	F	Off site hedge. Regularly clipped. Some variation in density beneath principal trees. Good overall condition.	No action required at time of survey.	>40	B2	RET
H3004	Cherry laurel	2.2	1	65	120	М	G	Off site hedge. Regularly clipped. Good overall condition.	No action required at time of survey.	>40	B2	RET

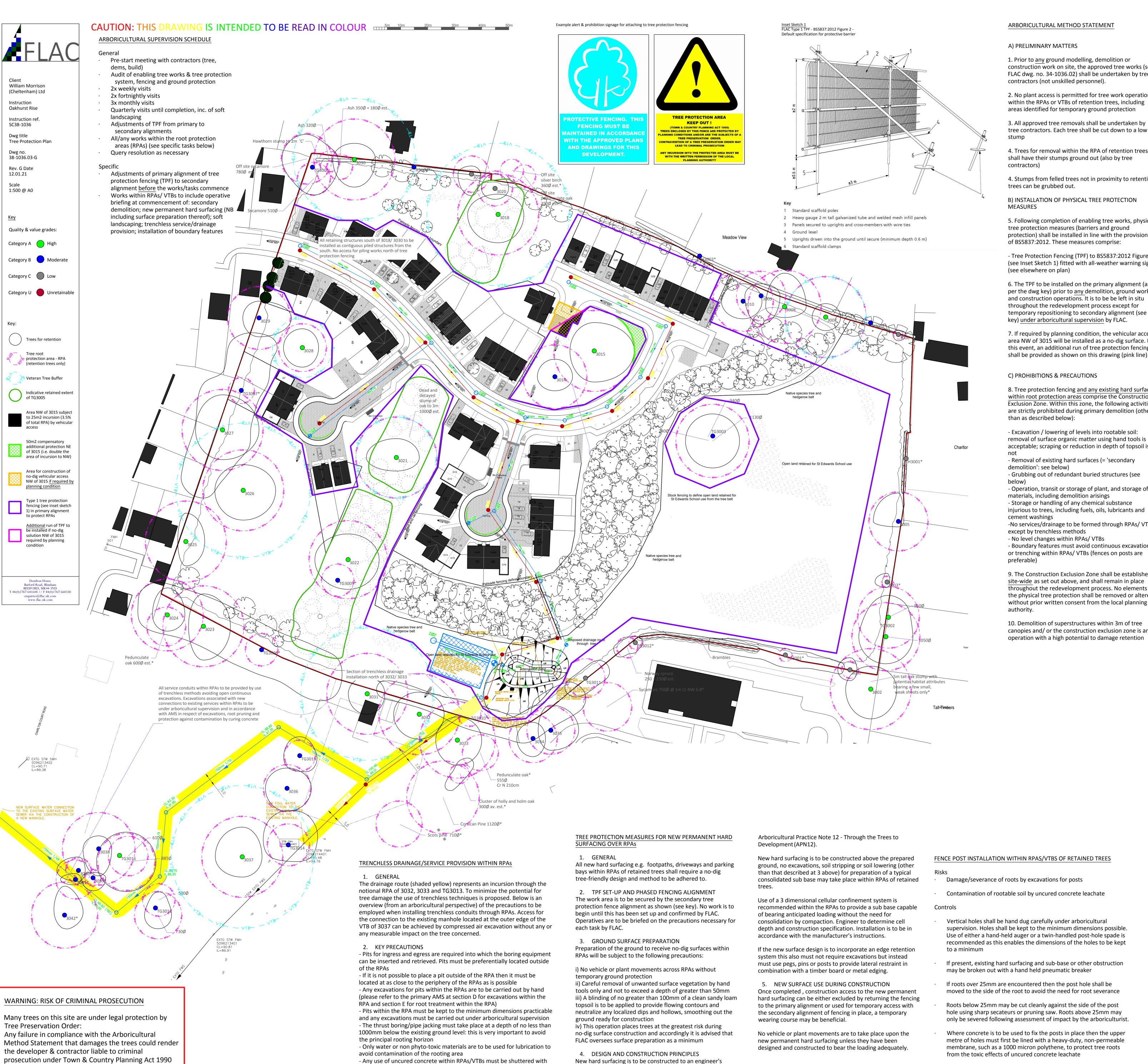


## TREE RETENTION/REMOVAL PLAN FLAC dwg no. 38-1036.02-B





TREE PROTECTION PLAN FLAC dwg no.38-1036.03-G



1000 micron polythene sheeting to protect roots from the chemical

toxification of soil by curing leachate

specification with regard to the anticipated loading. The

design must be in accordance with the principles set out in

ARBORICULTURAL METHOD STATEMENT

A) PRELIMINARY MATTERS

1. Prior to any ground modelling, demolition or construction work on site, the approved tree works (see FLAC dwg. no. 34-1036.02) shall be undertaken by tree contractors (not unskilled personnel).

2. No plant access is permitted for tree work operations within the RPAs or VTBs of retention trees, including areas identified for temporary ground protection

tree contractors. Each tree shall be cut down to a low

4. Trees for removal within the RPA of retention trees

4. Stumps from felled trees not in proximity to retention

trees can be grubbed out.

5. Following completion of enabling tree works, physical tree protection measures (barriers and ground protection) shall be installed in line with the provisions of BS5837:2012. These measures comprise:

- Tree Protection Fencing (TPF) to BS5837:2012 Figure 2 (see Inset Sketch 1) fitted with all-weather warning signs

6. The TPF to be installed on the primary alignment (as per the dwg key) prior to any demolition, ground works and construction operations. It is to be be left in situ throughout the redevelopment process except for temporary repositioning to secondary alignment (see

7. If required by planning condition, the vehicular access area NW of 3015 will be installed as a no-dig surface. In this event, an additional run of tree protection fencing shall be provided as shown on this drawing (pink line).

C) PROHIBITIONS & PRECAUTIONS

8. Tree protection fencing and any existing hard surfaces within root protection areas comprise the Construction Exclusion Zone. Within this zone, the following activities are strictly prohibited during primary demolition (other than as described below):

 Excavation / lowering of levels into rootable soil: removal of surface organic matter using hand tools is acceptable; scraping or reduction in depth of topsoil is

 Removal of existing hard surfaces (= 'secondary demolition': see below) - Grubbing out of redundant buried structures (see

- Operation, transit or storage of plant, and storage of materials, including demolition arisings

injurious to trees, including fuels, oils, lubricants and cement washings -No services/drainage to be formed through RPAs/ VTBs except by trenchless methods

 No level changes within RPAs/ VTBs Boundary features must avoid continuous excavations or trenching within RPAs/ VTBs (fences on posts are preferable)

9. The Construction Exclusion Zone shall be established site-wide as set out above, and shall remain in place throughout the redevelopment process. No elements of the physical tree protection shall be removed or altered without prior written consent from the local planning authority.

10. Demolition of superstructures within 3m of tree canopies and/ or the construction exclusion zone is an operation with a high potential to damage retention

trees ('high-risk operation'), and requires on-site arboricultural supervision by FLAC

11. Within the Construction Exclusion Zone, break-out and replacement of existing hard surfaces and decommissioning of redundant services, including drainage structures, are also high-risk operations and shall be undertaken under site supervision by FLAC

D) METHODS FOR TREE FRIENDLY WORKING

12. Redundant buried structures are preferably disconnected / backfilled and retained in situ; further advice should be sought from FLAC before consideration is given to grubbing them out. Existing hard surfaces within the Construction Exclusion Zone are to be retained and not demolished / removed until completion of primary construction (see Phasing

13. The recommendations of BS5837:2012 6.2.4.1 shall be strictly observed throughout the demolition and construction process:

BS5837:2012 6.2.4.1

Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs), in order that they can operate without coming into contact with retained trees. Such contact can result in serious damage to the trees and might make their safe retention impossible. Consequently, any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is maintained at all times. Access facilitation pruning should be undertaken where necessary to maintain this clearance

Note In some instances local planning authority consent for pruning might be required

14. No-dig new surfaces shall be constructed in accordance with the principles set out in the Arboricultural Practice Note 12 Through the trees to development (APN12) using a 3 dimensional cellular confinement system of appropriate specification to the anticipated loading. The design of the cellular confinement system is to be produced by engineers.

BS5837:2012 7.2 Avoiding physical damage to roots during demolition or construction

7.2.1 To avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ.However, limited manual excavation within the RPA might be acceptable, subject to justification. Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement.

NOTE Due to the demands that manual excavation places on a development project, and limitations arising from health and safety considerations, it is not realistic to plan for excavation using hand-held tools where there is a need for trench shoring or grading the sides of the excavation to a stable angle of repose.

15. Boundary treatments within RPAs/ VTBs shall preferably comprise timber fences fixed to posts (see risk/control methodology for fence post installation elsewhere on this drawing). Any walls within RPAs/ VTBs will require tree-friendly, non-invasive design avoiding trench footings by, for example, brickwork founded upon pile supported lintels born above the existing ground level, pile hole locations avoiding major tree roots and ground-truthed under arboricultural supervision.

D) EXCAVATIONS WITHIN THE RPAS

16. Excavations within the RPA may proceed only under arboricultural supervision. Personnel must be briefed on the precautions to be taken by the arboricultural

consultant at the start of an operation; supervision will be carried out to ensure that the method statement is understood and complied with.

17. No mechanical excavation including lowering of levels shall occur within the RPA.

18. Excavations of the top 600mm associated with any construction activities within the RPA shall be carried out carefully and by hand tools only e.g. spades, shovels, trowels etc, this may include a hand held pneumatic breaker where sub-surface structures are encountered and their removal is essential. Air excavation tools may be employed where operatives have an understanding of the use of these tools in proximity to roots and soil conditions allow. Care must be taken to avoid damage to the bark of parts of roots that will be retained.

**E) ROOT TREATMENT** 

soil is replaced.

within BS3882:2007.

19. Root pruning operations may proceed only under arboricultural supervision.

20. Typically, where roots are encountered they are first assessed primarily for size; roots over 25mm in diameter should be retained (or referred for further arboricultural advice) and those below 25mm in diameter should be pruned at 90 degrees to the direction of the root.

21. Proprietary cutting tools only shall be used to prune roots i.e. secateurs and sharp pruning saws.

22. Should any roots over 25mm be discovered they should only be severed following consultation with the arboricultural consultant with regard to the tree's health and stability.

23. Where roots are to be left exposed for any period of time they shall be protected from the drying effect of wind and sunlight, e.g. wrapped in clean dry Hessian to prevent desiccation.

24. Prior to backfilling retained roots should be unwrapped and surrounded by sharp sand (not builder's sand because of the high salt content which is toxic to tree roots) or another loose granular material before

25. Any imported topsoil for backfilling must be of good quality and free of contaminants and foreign bodies, it must be well graded and friable to promote good growing conditions and perform as a suitable rooting medium. The topsoil to be used must satisfy the requirements of a multipurpose topsoil as is described

26. All materials, including any new topsoil to replace the hard surface must be close to hand prior to commencement of the works. These works will be carried out to the recommendations of BS5837: 2012 7.2 (see below). Once the works are complete tree protection fence is to be erected around the new open

F) ARBORICULTURAL SUPERVISION & REPORTING

28. All high risk operations (i.e. intra-RPA /VTB) require arboricultural supervision. Additionally ongoing inspection of the tree protection measures shall be provided whilst works are in progress. A schedule of supervision is provided elsewhere on this drawing.

A WRITTEN & PHOTOGRAPHIC REPORT WILL BE PROVIDED WITHIN 5 WORKING DAYS OF EACH MONITORING VISIT

**OUTLINE ARBORICULTURAL MANAGEMENT PLAN** 

controlling statutory protection

The tree stock site wide shall require management in the interests of both trees and users of the surrounding land both on and off site. The overarching objectives are as

a. Discharge duty of care obligations owed to residents, visitors and neighbours imposed by both common

law and Owners and Occupiers Liability Act b. Preserve and enhance arboricultural attributes within the constraints of best practice and the

The second bullet at (b) captures all trees within the site but this necessarily includes a subset of veteran trees that shall require specific considerations (see sub-heading Veteran tree management below)

Tree risk and general management It is acknowledged at (a) above that reasonable measures must be taken to minimize the risk of tree failures resulting in harm or damage. This shall be achieved by cyclical tree inspections to provide:

c. A risk-assessed and prioritized schedule of tree works recommendations as deemed necessary to

achieve an acceptable level of risk d. A schedule of ancillary works if considered advisable in the interests of sound arboricultural management

Best practice and legislative control It is acknowledged at (b) above that statutory tree protection is in force and accordingly tree management requires adherence to legislative controls affecting tree works ordinarily by application to Cheltenham Borough Council for consent, this shall be achieved by:

e. Preparation of documentation appropriate for submission to CBC's Trees Section in pursuit of consent to undertake works to trees under statutory tree protection, as necessary

Veteran tree management

The cohort of veteran trees by virtue of their age, size and condition confer attributes of exceptional biodiversity, cultural or heritage value. Maintaining these attributes is a primary objective of the management plan, sitting alongside the general objectives listed above.

Heads of terms for management of veteran trees

f. Condition and maintenance of veteran tree crown radius knee-rail g. Condition and maintenance of veteran tree deterrent planting

Maintenance of land within veteran tree buffers Arboricultural risk-facing inspection and preparation of works schedule for application to CBC Assessment of veteran attributes (i.e. structural and

conditional features of ecological potential - please refer to RAVEN) including works advisable in the interests of optimizing habitat k. Assessment of works advisable in the interests of preservation, for example to prevent major mechanical failures and preserving the oldest parts

Inspection cycles, qualifications and review The first inspection shall take place immediately

of veteran trees

prior to first occupancy m. The period between inspections as described above shall be every two years

Inspections shall be undertaken by suitably qualified, trained and experienced arboriculturists (i.e. ideally qualified to level 6) with reference to suitable ecologists as appropriate. At each inspection a

detailed works specification shall be prepared as

Tree work shall be undertaken by qualified and be briefed by the project arboriculturist prior to

experienced arboricultural contractors and they shall commencing works p. Tree work shall be undertaken in accordance with

BS3998:2010 Tree work - recommendations. Care shall be taken to ensure that nesting birds and bats are not disturbed, and that bat roosts are not damaged during tree work. Pre-work surveys for bats shall be undertaken in accordance with BS8596:2015 Surveying for bats in trees and woodland - Guide

q. Cycles of inspection provide an opportunity to review the management plan particularly in light of tree condition and emerging information relating to tree management.

Damage/severance of roots by excavations for posts

Vertical holes shall be hand dug carefully under arboricultural supervision. Holes shall be kept to the minimum dimensions possible. Use of either a hand-held auger or a twin-handled post-hole spade is recommended as this enables the dimensions of the holes to be kept

may be broken out with a hand held pneumatic breaker

If roots over 25mm are encountered then the post hole shall be moved to the side of the root to avoid the need for root severance

Roots below 25mm may be cut cleanly against the side of the post hole using sharp secateurs or pruning saw. Roots above 25mm may only be severed following assessment of impact by the arboriculturist.

membrane, such as a 1000 micron polythene, to protect tree roots from the toxic effects of uncured concrete leachate

There must be no storage or mixing of concrete within the RPAs of retained trees.



### PLANNING PRACTICE GUIDANCE ON VETERAN TREES



- 1. Home (https://www.gov.uk/)
- 2. Housing, local and community (https://www.gov.uk/housing-local-and-community)
- 3. Planning and building (https://www.gov.uk/housing-local-and-community/planning-and-building)
- 4. Planning system (https://www.gov.uk/housing-local-and-community/planning-system)

#### Guidance

### **Natural environment**

Explains key issues in implementing policy to protect and enhance the natural environment, including local requirements.

Published 21 January 2016 Last updated 21 July 2019 — see all updates

From:

Ministry of Housing, Communities & Local Government (https://www.gov.uk/government/organisations/ministry-of-housing-communities-and-local-government)

#### **Contents**

- · Agricultural land, soil and brownfield land of environmental value
- Green infrastructure
- · Biodiversity, geodiversity and ecosystems
- Landscape

#### Print this page

This guidance has been updated see previous version (https://webarchive.nationalarchives.gov.uk/20190607171351/https://www.gov.uk/guidance/natural-environment)

Revision date: 21 07 2019

#### How can I find out whether a site contains ancient or veteran trees?

Ancient trees are trees in the ancient stage of their life. Veteran trees may not be very old but exhibit decay features such as branch death or hollowing. Trees become ancient or veteran because of their age, size or condition. Not all of these three characteristics are needed to make a tree ancient or veteran as the characteristics will vary from species to species. Further guidance on ancient and veteran trees is set out in the Forestry Commission and Natural England standing advice (https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences).

The Ancient Tree Inventory (https://ati.woodlandtrust.org.uk/) can help identify ancient and veteran trees, although not all known ancient and veteran trees are included. Local Records Centres and other organisations with an interest in trees may also be able to advise on the location of known ancient or veteran trees. Tree surveys and site assessments may be needed to identify the ancient and veteran trees on a site and inform planning decisions.

Paragraph: 032 Reference ID: 8-032-20190721

Revision date: 21 07 2019

## How can local planning authorities assess the potential impact of development proposals on ancient woodland and ancient or veteran trees?

Local planning authorities need to consider both the direct and indirect impacts on ancient woodland and ancient or veteran trees when assessing development proposals and the scope for avoiding or mitigating adverse impacts. Their existing condition is not something that ought to affect the local planning authority's consideration of such proposals (and it should be borne in mind that woodland condition can usually be improved with good management).

When assessing whether 'wholly exceptional reasons' exist that may justify a loss or deterioration of ancient woodland, ancient trees or veteran trees, it will not be appropriate to take any compensation measures into account. These should be considered only once the existence of 'wholly exceptional circumstances' has been ascertained.

Further guidance is set out in the Forestry Commission and Natural England standing advice (https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences).

Paragraph: 033 Reference ID: 8-033-20190721

Revision date: 21 07 2019

#### What compensation can be provided if development resulting in loss or harm is, exceptionally, permitted?

Where development that results in the loss or deterioration of ancient woodland, ancient or veteran trees is exceptionally permitted in line with the Framework, a suitable compensation strategy should be secured and implemented via planning conditions or obligations. Compensation measures need to be decided on a case by case basis and be appropriate to the scale, nature and impacts of the development, but it is desirable for them to be provided as close to the development site as possible. Appropriate compensation might include:

- Planting new native woodland or wood pasture
- Restoring or improving other nearby ancient woodland
- Improving connections between the ancient woodland and other woodlands or habitats
- Planting individual trees that could become ancient or veteran trees in future

Paragraph: 034 Reference ID: 8-034-20190721



### NATURAL ENGLAND & FORESTRY COMMISSION STANDING ADVICE



- 1. Home (https://www.gov.uk/)
- 2. Planning and development (https://www.gov.uk/topic/planning-development)
- 3. Protected sites and species (https://www.gov.uk/topic/planning-development/protected-sites-species)

#### Guidance

# Ancient woodland, ancient trees and veteran trees: protecting them from development

What planning authorities should consider for developments affecting ancient woodland, ancient trees and veteran trees.

Published 13 October 2014 Last updated 5 November 2018 — see all updates

#### From:

Forestry Commission (https://www.gov.uk/government/organisations/forestry-commission) and Natural England (https://www.gov.uk/government/organisations/natural-england)

#### Applies to:

**England** 

#### **Contents**

- · Ancient woodland
- · Ancient and veteran trees
- · Making decisions
- · Assess the impacts
- Avoid impacts, reduce ('mitigate') impacts, and compensate as a last resort
- When to contact Natural England
- When to contact the Forestry Commission
- · Further information

You should use this Natural England and Forestry Commission guidance (known as 'standing advice') to help you decide on development proposals affecting ancient woodland, ancient trees and veteran trees.

Standing advice is a 'material planning consideration'. This means you should take it into account when making decisions on planning applications. It replaces the need for each agency to give an individual response to planning consultations. It has the same authority as an individual response.

This guidance is also useful for decision-makers who are responsible for major infrastructure projects, such as road and rail schemes.

Natural England and the Forestry Commission will only provide bespoke advice as set out in the when to contact sections, or in exceptional circumstances.

#### **Ancient woodland**

Ancient woodland takes hundreds of years to establish and is defined as an irreplaceable habitat. It's important for its:

- wildlife (which include rare and threatened species)
- soils
- recreational value
- · cultural, historical and landscape value

It's any area that's been wooded continuously since at least 1600 AD. It includes:

- ancient semi-natural woodland mainly made up of trees and shrubs native to the site, usually arising from natural regeneration
- plantations on ancient woodland sites replanted with conifer or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi

They have equal protection in the National Planning Policy Framework (https://www.gov.uk/guidance/national-planning-policy-framework/11-conserving-and-enhancing-the-natural-environment#paragraph\_118) (NPPF).

Other distinct forms of ancient woodland are:

- · wood pastures identified as ancient
- historic parkland, which is protected as a heritage asset in the NPPF

Many of these do not appear on the Ancient Woodland Inventory because their low tree density did not register as woodland on historic maps.

You should give consideration to wood pasture identified as ancient in planning decisions in the same way as other ancient woodland.

'Wooded continuously' does not mean there's been a continuous tree cover across the whole site. Not all trees in the woodland have to be old. Open space, both temporary and permanent, is an important component of ancient woodlands.

#### **Ancient and veteran trees**

Ancient and veteran trees can be individual trees or groups of trees within wood pastures, historic parkland, hedgerows, orchards, parks or other areas. They are often found outside ancient woodlands. They are irreplaceable habitats with some or all of the following characteristics.

#### **Ancient trees**

An ancient tree is exceptionally valuable. Attributes can include its:

- great age
- size
- condition
- biodiversity value as a result of significant wood decay and the habitat created from the ageing process
- · cultural and heritage value

Very few trees of any species become ancient.

#### **Veteran trees**

All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value.

#### **Making decisions**

When making planning decisions, you should consider:

- · conserving and enhancing biodiversity
- reducing the level of impact of the proposed development on ancient woodland and ancient and veteran trees (see 'Avoid impacts, reduce impacts and compensate as a last resort')

You should make decisions on planning applications in line with paragraph 175C of the <u>NPPF</u> (https://www.gov.uk/government/publications/national-planning-policy-framework--2).

You should refuse planning permission if development will result in the loss or deterioration of ancient woodland, ancient trees and veteran trees unless:

- · there are wholly exceptional reasons
- · there's a suitable compensation strategy in place

#### Assess the impacts

You should use the following process to assess impacts on ancient woodland when making decisions on planning applications. The process also applies to:

- · wood pastures identified as ancient
- · ancient trees and veteran trees

#### **Consult inventories**

You can use the following inventories to help you decide whether a development will affect ancient woodland (including wood pastures identified as ancient) or ancient and veteran trees:

- Natural England's ancient woodland inventory download the data (https://naturalengland-defra.opendata.arcgis.com/datasets/ancient-woodlands-england) or view it on the Magic map system (http://magic.gov.uk/MagicMap.aspx?
   chosenLayers=ancwoodlndex,bapdecIndex,orchardIndex,bapwoodIndex,backdropDIndex,backdropIndex,europeInd
  - ex,vmlBWIndex,25kBWIndex,50kBWIndex,250kBWIndex,miniscaleBWIndex,backdropDindex,b
- ancient tree inventory (http://www.ancient-tree-hunt.org.uk/) (click on 'Tree search' and enter a postcode)
- wood pasture and parkland inventory (includes some ancient sites) (http://magic.gov.uk/MagicMap.aspx? chosenLayers=bapwoodIndex,backdropDIndex,backdropIndex,europeIndex,vmIBWIndex,25kBWIndex,50kBWIndex, 250kBWIndex,miniscaleBWIndex,baseIndex&box=207763:417195:576753:592195&useDefaultbackgroundMapping =false) (zoom in to see local detail)

Ancient woodlands smaller than 2 hectares are unlikely to appear on these inventories. You should use this guidance for all ancient woodlands and ancient and veteran trees whether they're on the inventories or not. They are updated and reviewed from time to time.

You should contact Natural England if a site has evidence of ancient woodland on it and is not on the inventory.

#### **Potential impacts**

Development can affect ancient woodland, ancient and veteran trees, and the wildlife they support on the site or nearby. You can assess the potential impacts using this assessment guide (https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/740503/FCNE\_AWSA\_AssessmentGuideFinalSept2018.pdf) to help you with planning decisions.

Direct impacts of development on ancient woodland or ancient and veteran trees include:

- damaging or destroying all or part of them (including their soils, ground flora or fungi)
- damaging roots and understorey (all the vegetation under the taller trees)
- · damaging or compacting soil around the tree roots
- · polluting the ground around them
- · changing the water table or drainage of woodland or individual trees
- damaging archaeological features or heritage assets

Nearby development can also have an indirect impact on ancient woodland or ancient and veteran trees and the species they support. These can include:

- breaking up or destroying connections between woodlands and ancient or veteran trees
- · reducing the amount of semi-natural habitats next to ancient woodland
- · increasing the amount of pollution, including dust
- increasing disturbance to wildlife from additional traffic and visitors
- · increasing light or air pollution
- · increasing damaging activities like fly-tipping and the impact of domestic pets
- changing the landscape character of the area

#### **Providing evidence**

You and the developer should work together to make sure there's enough suitable evidence to make a decision. This may include fieldwork and historic maps.

You should include proposed mitigation and compensation measures.

You should ask developers for a tree survey and an ecological survey, where appropriate. The tree survey should be in accordance with guidance in British Standard BS 5837 'Trees in relation to demolition, design and development' (https://shop.bsigroup.com/ProductDetail/?pid=000000000030213642). Ecological surveys should follow guidance approved by the Chartered Institute of Ecology and Environmental Management (CIEEM) (http://www.cieem.net/).

#### Avoid impacts, reduce ('mitigate') impacts, and compensate as a last resort

You and the developer should identify ways to avoid negative effects on ancient woodland or ancient and veteran trees. This could include selecting an alternative site for development or redesigning the scheme.

You should decide on the weight given to ancient woodland and ancient and veteran trees in planning decisions on a case-by-case basis. You should do this by taking account of the <u>NPPF</u> and relevant development plan policies.

If you decide to grant planning permission that results in unavoidable loss or deterioration, you should use planning conditions or obligations to make sure the developer:

- · avoids damage
- · mitigates against damage

compensates for loss or damage (use as a last resort)

Ancient woodland, ancient trees and veteran trees are irreplaceable. Consequently you should not consider proposed compensation measures as part of your assessment of the merits of the development proposal.

#### **Existing condition of ancient woodland**

A woodland in poor condition can be improved with good management and development proposals should enhance the condition of existing ancient woodland, where appropriate. Where a proposal involves the loss of ancient woodland, you should not take account of the existing condition of the ancient woodland when you assess the merits of the development proposal. Its existing condition is not a reason to give permission for development.

#### Mitigation measures

Mitigation measures will depend on the development but could include:

- · improving the condition of the woodland
- putting up screening barriers to protect woodland or ancient and veteran trees from dust and pollution
- · noise or light reduction measures
- · protecting ancient and veteran trees by designing open space around them
- · identifying and protecting trees that could become ancient and veteran trees in the future
- · rerouting footpaths
- · removing invasive species
- buffer zones

#### Use of buffer zones

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

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

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

Where possible, a buffer zone should:

- contribute to wider ecological networks
- be part of the green infrastructure of the area

It should consist of semi-natural habitats such as:

- woodland
- a mix of scrub, grassland, heathland and wetland planting

You should plant buffer zones with local and appropriate native species.

You should consider if access is appropriate and can allow access to buffer zones if the habitat is not harmed by trampling.

You should avoid including gardens in buffer zones.

You should avoid sustainable drainage schemes unless:

- they respect root protection areas
- any change to the water table does not adversely affect ancient woodland or ancient and veteran trees

#### **Compensation measures**

Compensation measures are always a last resort. These measures can only partially compensate for loss or damage.

Compensation measures should be appropriate for the site and for the scale and nature of the impacts on it. A compensation strategy could include the following package of measures:

- planting new native woodland or wood pasture
- restoring or managing other ancient woodland, including plantations on ancient woodland sites, and wood pasture
- connecting woodland and ancient and veteran trees separated by development with green bridges, tunnels or hedgerows
- long-term management plans for new woodland and ancient woodland
- · managing ancient and veteran trees
- · planting individual trees that could become veteran and ancient trees in future
- monitoring the ecology of the site over an agreed period

#### Plant new native woodland

Establishing new trees and woodland is not a direct replacement for lost or damaged trees or woodland. You can accept large-scale woodland planting as a compensation measure alongside other measures. This could be on soil that has been moved from the destroyed area of ancient woodland ('soil translocation'). You cannot move an ancient woodland ecosystem because:

- · it's not possible to replicate the same conditions at another site
- it's no longer an ancient woodland

New woodland creation can be effective where it links to and extends existing woodland, as long as it does not affect:

- · other semi-natural habitats
- heritage features

#### Restore or improve ancient woodland

You can partially compensate for loss or damage of ancient woodland by improving:

- and restoring plantations on ancient woodland sites
- the management of nearby ancient woodland sites and connecting them better to semi-natural habitat
- · the condition of important features of ancient woodland
- · access for management purposes

You can partially compensate for loss or damage to wood pasture by restoring soils and pasture.

Management plans should follow the UK Forestry Standard (https://www.gov.uk/government/publications/the-uk-forestry-standard). You can monitor the ecology of the site, over an agreed period, to help you advise on management measures.

#### Compensate for the loss of ancient and veteran trees

You can partially compensate by planting:

- young trees of the same species with space around each one to develop an open crown
- · new trees near to the trees they're replacing

As a last resort, you can manage nearby ancient and veteran trees (including dead and dying trees) to help prolong their life. You should get advice from a registered tree consultant ('arboriculturist') before carrying out work on veteran trees by contacting:

- the Arboricultural Association (https://www.trees.org.uk/Other-Pages/Contact-Us)
- the Institute of Chartered Foresters (https://www.charteredforesters.org/contact-us/)

Leave the intact hulk of the ancient or veteran tree where it is (preferably standing) to benefit invertebrates and fungi. If that's not possible, move it near other ancient and veteran trees or parkland in the area.

#### When to contact Natural England

Natural England is a statutory consultee (https://www.gov.uk/guidance/consultation-and-pre-decision-matters#Statutory-consultees) for proposals that affect any site of special scientific interest (http://designatedsites.naturalengland.org.uk/). For all other proposals that affect ancient woodland or ancient and veteran trees, you should use the guidance on this page.

#### **Consultation service**

Natural England
Electra Way
Crewe Business Park
Crewe
Cheshire
CW1 6GJ

Email consultations@naturalengland.org.uk

Telephone 0300 060 3900

#### When to contact the Forestry Commission

The Forestry Commission is a non-statutory consultee (https://www.gov.uk/guidance/consultation-and-pre-decision-matters#Non-statutory-consultees). You should use the guidance on this page. Contact your Forestry Commission England area office (https://www.gov.uk/government/organisations/forestry-commission/about/access-and-opening#area-offices) for individual advice that's not covered on this page.

Forestry Commission England Tree Health Team

620 Bristol Business Park Coldharbour Lane Bristol BS16 1EJ

Telephone: 0300 067 4000

#### **Further information**

Policy and standards:

- 'Keepers of time' (https://www.gov.uk/government/publications/keepers-of-time-a-statement-of-policy-for-englands-ancient-and-native-woodland) policy statement
- National Planning Policy Framework, paragraphs 11 (footnote 6), 175c, 190 (https://www.gov.uk/government/publications/national-planning-policy-framework--2)
- The UK Forestry Standard (https://www.gov.uk/government/publications/the-uk-forestry-standard)
- British Standard 5837:2012 (http://shop.bsigroup.com/en/ProductDetail/?pid=0000000000030213642) 'Trees in relation to design, demolition and construction Recommendations'
- British Standard 42020:2013 (https://www.google.co.uk/url? sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiwzqKXkYnXAhWJVRoKHbYRCuAQFg gmMAA&url=https%3A%2F%2Fshop.bsigroup.com%2FProductDetail%3Fpid%3D0000000000030258704&usg=AOv Vaw3YGxru nRV3IsPhkJrtjqT) Biodiversity. Code of practice for planning and development
- Managing ancient and native woodlands in England (https://www.gov.uk/guidance/how-to-benefit-species-and-habitats-biodiversity-in-your-woodland)

#### Other useful information:

- Natural England (2000) Veteran Trees a guide to good management (http://publications.naturalengland.org.uk/publication/75035)
- Lonsdale, D (2013) 'Ancient and other veteran trees: further guidance on management (http://ancienttreeforum.co.uk/wp-content/uploads/2015/02/ATF\_book.pdf)
- Soil translocation 'A Habitats Translocation Policy for Britain'
   (https://webarchive.nationalarchives.gov.uk/20080718180931/http://www.jncc.gov.uk/pdf/habitats\_policy.pdf)
- Corney et al (2008) Impacts of nearby development on the ecology of ancient woodland (https://www.woodlandtrust.org.uk/mediafile/100168350/Impacts-of-nearby-development-on-the-ecology-of-ancient-woodland.pdf)
- Ryan (2012) Impacts of nearby development on the ecology of ancient woodland addendum (https://www.woodlandtrust.org.uk/mediafile/100168353/Impacts-of-nearby-development-on-the-ecology-of-ancient-woodland-addendum.pdf)
- Woodland Trust: Ancient tree guides (https://www.woodlandtrust.org.uk/publications/search/? query=&sortby=date&count=10&type=100007505&subject=100007508)

#### Published 13 October 2014

Last updated 5 November 2018 + show all updates

- 1. 5 November 2018 This page has been updated to: align with the revised National Planning Policy Framework; give clearer guidance on taking account of the existing condition of ancient woodland; and give further guidance on mitigation measures, including the use of buffer zones.
- 2. 4 January 2018 The advice on the appropriate size of buffer zones (under 'Mitigation measures') has changed. The last version suggested a 50 metre (m) zone to mitigate the effects of pollution and trampling. Following queries about the 50m zone, this text has been removed. Natural England and the Forestry Commission are reviewing the feedback they've received.
- 3. 27 November 2017 Republished as part of the biennial update.
- 4. 29 October 2015 Added definitions of 'wooded continuously' and 'ancient wood-pastures', and clarified the rules about soil translocation in 'plant new native woodland'.
- 5. 3 August 2015 Clarified the purpose of this standing advice.
- 6. 29 March 2015 Guide fully updated for publication on GOV.UK after consulting with Natural England experts.
- 7. 30 January 2015 Guidance temporarily removed, pending revisions.
- 8. 30 January 2015 Guidance temporarily removed due to pending revisions.
- 9. 13 October 2014 First published.

#### Related content

- Planning applications affecting trees and woodland (https://www.gov.uk/guidance/planning-applications-affecting-trees-and-woodland)
- How to benefit species and habitats biodiversity in your woodland (https://www.gov.uk/guidance/how-to-benefit-species-and-habitats-biodiversity-in-your-woodland)
- Keepers of time: a statement of policy for England's ancient and native woodland (https://www.gov.uk/government/publications/keepers-of-time-a-statement-of-policy-for-englands-ancient-and-native-woodland)
- Get consent to convert woodland to open habitats (https://www.gov.uk/guidance/get-consent-to-convert-woodland-to-open-habitats)
- Sites of special scientific interest on or near woodland (https://www.gov.uk/guidance/sites-of-special-scientific-interest-on-or-near-woodland)

#### **Detailed guidance**

 Protected sites and areas: how to review planning applications (https://www.gov.uk/guidance/protected-sitesand-areas-how-to-review-planning-applications)

#### **Explore the topic**

Protected sites and species (https://www.gov.uk/topic/planning-development/protected-sites-species)



### TOPIC-SPECIFIC STATEMENT OF COMMON GROUND, AGREED WITH THE RULE 6 PARTY

#### Town & Country Planning Act 1990 (as amended), Section 78 - Appeal

#### PINS ref. **APP/B1605/W/20/3261154**:

Land off Oakhurst Rise, King's Charlton

#### Statement of Agreed & Not Agreed Matters

Between:

Julian Forbes-Laird BA(Hons), Dip.GR.Stud, MICFor, MRICS, MEWI, Dip.Arb(RFS), FLAC For the Appellant

And:

Sally Walker, MA (Hons) Cantab, Local Resident

For the Rule 6 Party

Pursuant to the Refusal of Outline Planning Permission on 17 September 2020 by Cheltenham Borough Council in respect of its application ref. 20/00683/OUT, and further pursuant to the "Charlton Kings Friends" being granted Rule 6 status at the forthcoming Public Local Inquiry, the following matters are agreed or not agreed, as the case may be.

#### It is hereby AGREED that:

- 1. The previous application (First Appeal Scheme) was found to be in some conflict with Policies GE6, GE5 and INF3. The inspector also found that there was some degree of risk to the longevity of the trees concerned. These potential harms counted "in some measure against the approval of the scheme".
- 2. The Tree Officer appointed to review the development proposals under 20/00683/OUT at first instance did not recommend that Planning Permission should be refused, although he did qualify his decision (file note response to 10/9/20 BH report, repeated in part below).
- 3. Wendy J Burden BA DipTP, MRTPI appointed as Local Plan Inspector for Cheltenham, in her final report to Cheltenham Borough Council following inspection of the Local Plan (para 59) on 17 March 2020, stated: "I have made a minor change to the wording of modified Policy HD4 to require the protection of mature trees". The modified policy includes "requirements for development proposals for Oakhurst Rise to demonstrate the protection of key biodiversity assets and mature trees and the long term protection of mature trees and hedges".
- 4. The trees on site have been surveyed in accordance with the benchmark standard BS5837: 2012 *Trees in Relation to Design, Demolition and Construction Recommendations*.

<sup>&</sup>lt;sup>1</sup> https://www.cheltenham.gov.uk/downloads/file/8071/ed043\_final\_report\_on\_the\_cheltenham\_plan

5. The total number of trees identified for removal to facilitate the scheme as now Appealed is set out in Table 1, below.

Table 1 - Schedule of tree removal

FLAC	TPO ref.	Species	Count	Age class	BS5837	Quality
no.					grade	
3012	None	Ash	1	EM	С	Low
3013	None	Ash	1	EM	С	Low
3016	None	Ash	1	М	В	Moderate
3017	None	Sycamore	1	М	В	Moderate
TG3004	None	Mixed deciduous	25	EM	С	Low
TG3008	Possibly A3	Damson, hawthorn	20	М	С	Low

- 6. There is a Tree Preservation Order in force on the site, which covers:
  - i) A number of individual trees within the main body of the Appeal Site and around the site boundaries;
  - ii) By virtue of 2no. Group designations, trees located on top of the ice house and adjacent to the pond on the north boundary;
  - iii) Those trees within Area A3 on the TPO map which were present within the dotted line thereon at the time that the Order was made.

In total, just over 45% of trees on the site are covered by the Tree Preservation Order.

- 7. A number of trees possibly subject to the TPO (within its Area A3) are proposed for removal, as set out in Table 1. These are confined to FLAC group ident TG3008, which comprises damson and hawthorn. The extent of the coverage provided by TPO A3 with respect to TG3008 is uncertain, not least as some components of this group are not trees proper, and so would not fall under the TPO in any event. The extent and nature of this uncertainty is not considered material.
- 8. All other trees included within the TPO are identified for retention, including TPO T11 (FLAC ident 3014), which was proposed for removal under the First Appeal Scheme.
- 9. The loss of tree 3004 (TPO tree T6) is not objectionable on arboricultural grounds.
- 10. The loss of several trees from within TG3008, some of which may be included within the TPO under Area A3, is not objectionable due to their low quality.

(Note: A quantity of the trees and hedgerow protected under A3 in TG3008 was removed in 2017, in order to install a new gateway at the top of Oakhurst Rise.)

11. By reference to the FLAC tree survey numbering system, the trees listed below on the Appeal Site are agreed to be ancient or other veteran trees within the meaning and definition provided within the Glossary to the Framework, at its Annex 2:

Ancient trees 3018, 3021, 3037

Other veteran trees 3007, 3026, 3028, 3030, 3031

- 12. The ancient and other veteran trees listed in paragraph 11 would all be protected by provision within the layout of buffer zones, some of which are in accordance with the Natural England and Forestry Commission standing advice recommendations, and three of which have been reduced according to the RAVEN assessment of the trees as 'relics' (3007, 3021, and 3028).
- 13. The development proposals do not require, for their implementation, the felling of any tree meeting the criteria for the descriptor an 'ancient or veteran tree' within the meaning and definition provided within the Framework.
- 14. Tree 3016 has been identified by FLAC as a mature ash tree. It will be removed as part of this application/appeal.
- 15. Tree 3017 has been identified by FLAC as a mature sycamore tree. It will be removed as part of this application/ appeal.
- 16. Both trees 3016 and 3017 were also identified for removal under the previous application.

#### It is hereby NOT AGREED that:

- 17. The requirement in Policy HD4 for 'protection' of mature trees applies to <u>all</u> mature trees, including on this site 3016 and 3017. CKF contend that it should, and therefore the removal of these two trees is in contravention of that policy.
- 18. The concerns raised and professional judgements (over which there is dispute, particularly over the use of the Relic definition to reduce protected habitat around veteran trees compared with standard guidance) mitigate, or not, risk to veteran tree habitats and high value trees, in compliance with policy.
- 19. Mature trees would be inadequately protected (CKF Statement of Case at its 3.8) from both loss and from damage. Mature trees on the Appeal Site include those that the Woodland Trust and Ancient Tree Forum consider to be veteran trees (disputed by the appellant and not raised further by CKF), and trees that have previously been identified as being of significant local amenity and visual impact in planning appeals.

#### 20. In particular:

i) There is a risk of harm to mature trees and veteran and ancient tree habitat due to alterations of soil hydrology arising from the Appeal Scheme; and that

- ii) The concept of the "relic tree" is invalid, such that trees 3007, 3021 and 3028 should be afforded larger buffer zones than presently shown, in accordance with Natural England's standing advice.
- 21. Comments by the CBC tree officer weigh in favour of the Appeal being dismissed, specifically:
  - There was a divergence of opinion as to identification of veteran trees.
  - Veteran trees had not been afforded the full Natural England buffer zone due to their being classed by FLAC as "relic trees", and that there is no concept of a "relic" veteran in the NPPF.
  - The current proposed design does respect, "in the main, tree protection guidance".
  - Assuming successful establishment of new trees, there should (in the long term) be a net gain in canopy cover.
  - There is incursion into the RPA of T3014 but that he considered it to be marginal (T3014 is not identified as a veteran tree, though has some characteristics thereof).
  - The "relic reasoning makes logical sense but is not strictly in line with the official formal guidance".
  - And that in his opinion, development of the land would cause changes to veteran trees from construction pollution, end-use light pollution, changes in soil ecosystems and changes in soil hydrology. But that "in his experience", such changes should be minimal and not significant.
- 22. The presence of springs across Battledown is the most relevant criterion when assessing soil hydrology and trees, not precipitation (though CKF accept that there is no evidential support for their position on this point, beyond the detailed experiences of residents (including infrastructure specialists).
- 23. As claimed by the Appellant, the traditional arrangements for site management are to the detriment of trees, or that there is any credible risk to future management of the trees, absent any development.

Signed for the Appellant

Julian Forbes-Laird, 2 February 2021

Signed for the Rule 6 party

Mrs Walker was unwilling to sign this Joint Statement in the absence of an agreed Statement on ecological matters, however her email to JFL following confirms agreement.

#### **Julian Forbes-Laird**

01767 641648 07813 786283

SF Walker <sfw74@icloud.com> From: Sent: 11 February 2021 07:12 To: Julian Forbes-Laird Cc: Gina Parle; Peter Frampton Re: URGENT - Joint Statement **Subject:** So sorry Julian I thought we had agreed the statement and I had separately been in correspondence with Mr Frampton as to how to sign off the whole bundle as I am still waiting for responses on ecology and heritage from the appellants' consultants; obviously I cannot sign off the trees until the ecology has been finalised. Trust that is satisfactory to you. I shall let you know as a matter of urgency if there were any discrepancy arising as a result of Aspects position. I have had no responses to correspondence despite requests to get everything finalised by the end of the week. Perhaps you could add to the request for priority? Thank you Sally Sent from my iPhone On 10 Feb 2021, at 22:53, Julian Forbes-Laird <jfl@flac.uk.com> wrote: <image001.png> **OAKHURST RISE** Dear Sally, You undertook to revert on Monday regarding our joint Statement. I have not seen an email from you and wonder whether you have replied and it has gone astray. Either way, I'm afraid that I shall have to advise our Counsel that we have not been able to reach agreement if I do not hear back from you by close tomorrow (Thursday), so that he can let the Inspector know. Best wishes, Julian. Julian Forbes-Laird BA(Hons), Dip.GR.Stud, MICFor, MRICS, MEWI, Dip.Arb(RFS) • Chartered Arboriculturist • Chartered Surveyor • Member of the Expert Witness Institute Senior Director, FLAC



THE AUTHOR'S VETERAN TREE IDENTIFICATION METHOD, RAVEN



#### Recognition of Ancient, Veteran & Notable Trees – R A V E N

#### Step One—Size Assessment

#### Tree has very large girth for species

Note—pollarding & senescence reduce stem increment: girth may be deceptive – assess stem girth relationship with life-stage accordingly

Refer to Ancient and other veteran trees: further guidance on management (Lonsdale, ATF 2013) at Fig. 1.3: Chart of girth in relation to age and developmental classification of trees

IF GIRTH NOT VERY LARGE FOR SPECIES, STOP HERE!

Step T	wo—Additional Primary Features
At leas	t one of the following should be present, or refer to Step Three
	Extensive decay, especially brown rot or exposed stem heartwood in relevant species
	Extensive hollowing
	Crown senescence
	Retrenchment
Step T	hree—Secondary Features
If no ac	dditional Primary Feature is present, tree should have at least four Secondary Features
	Large quantity of dead wood in crown, especially where large-sized
	Major storm damage/ breakout wounds
	Habitat spaces: decay holes and/ or crevices/ branch splits sheltered from direct rainfall
	Aerial rooting
	Sap run/ slime flux
	Water pool
	Bark loss inc. due to lightning strike
	Fungi
	Other epiphytic plants, including significant presence of lichens
Step F	our – Identification Guide
	ANCIENT
	Veteran tree with extremely large girth: age likely > 50% of estimated species maximum E.g. pedunculate oak, 2m stem dia, average site: ca. 460 years old, ca. 50% of species max
	VETERAN
	Very large girth for species and qualifies under either Step Two or Step Three
	NOTABLE
	Very large girth for species but does not qualify under either Step Two or Step Three

IF A TARGET IS PRESENT, ASSESS RISK USING THREATS



# RAVEN RECORDER FOR ANCIENT, VETERAN & NOTABLE TREES

ON THE APPEAL SITE





#### Guide to column headings

Tree No. Refer to accompanying plan

Species Listed by common name

Form Key factors that influence significance of stem size and age

Form Key factors that influence significance of stem size and age estimation

Pollard Whether the tree bears a pollard form, even if now long grown out

Relic Tree assessed as bearing <75% of former maximum crown volume

Required primary feature
Additional primary features
Secondary features
Extensive decay
Exposed HW

Tree must be large relative to others of its kind to qualify for assessment; refer to Lonsdale 2013

Features of principal importance for identifying A/V trees. In each case, feature should be present significantly Less important though still valuable features that aid identification, especially where present in numbers Exposed decay areas should exceed 400cm2

HW refers to heartwood; applicable to relevant species only

DW>150mm dia
Maj. Storm damage
Dry habitat space
Water pool
Signif. bark loss/ LS
Notable fungi
Other epiphytic plants

Dead wood present in the crown, with diameter over 150mm
Breakout wounds or broken spars exceeding 30cm dia
Potential for faunal use where not subject to rain entry
Offers niche habitat for specialist inverts, even where transient
Bark loss exceeding 400cm2. LS refers to lightning strike
Refers to species with known associations to old-growth trees
Should be either rare or present in significant quantity

Age estimate Computed using FC White Method, form & senescence weighting added

Ancient Veteran trees beyond ca. 50% of species' maximum life expectancy

Material & Reimann on Secondary footures as listed.

Veteran Trees with Required & Primary or Secondary features as listed

Notable Trees that are large and/ or becoming old for species, but which lack qualifying features

Non-special All other trees

Note - Stem dia. for 3028 reflects estimated former maximum, used here for dating purposes; current dia. 740mm

Tree no.	Species	F	orm	REQUIRED PRIMARY FEATURE		Either: ADDIT	TIONAL PRIMA	ARY FEATURES -	at least one of			Or: SECONDARY FEATURES - at least four of										AGE ES	STIMATE	RAVEN ASSESSMENT				NOTES			
		Pollard	Relic	Large stem dia.		Extensive decay	′	Hollowing	Senescence	Retrenchment	DW>150mm dia	Maj. Storm Damage	Dry habitat space	Aerial roots	Sap run/ slime flux	Water pool	Signif. bark loss/ LS	Fungi		Othe	er epiphytic pla	ants	Years	Origin	Ancient	Veteran	Notable	Non-special			
				(mm)	Brown rot	Exposed HW	Other											Notable O	ner	Lichens	Ferns	Other									
3007	Pedunculate oak		Х	1450			Х	х	х	Х	х	Х	Х				х		(				325	1694		Х					
3008	Pedunculate oak			1130																			181	1838			Х		Just qualifies by size & age, but lacks veteran features		
3010	Pedunculate oak			930																			138	1881				Х	Meets none of the criteria for veteran status		
3014	Pedunculate oak			980		х							Х				Х						148	1871			Х		Some veteran features present but size & age insufficient to merit veteran descriptor		
3015	Pedunculate oak			1460							Х												268	1751			Х		Qualifies by size & age, but lacks sufficient veteran features for descriptor to apply		
3018	Pedunculate oak	Х		1760	Х			Х		Х	Х	Х	Х					Х					427	1592 X Laetiporus			Laetiporus sulphureus & Fistulina hepatica present				
3021	Ash		Х	1520	Х	х		Х	Х			Х	Х	Х			Х	х					354	1665	Х				Fungi not identifed due to absence of fruitbodies, but brown rot very unusual on ash		
3022	Pedunculate oak			1205																			200	1819			Х		Just qualifies by size & age, but lacks veteran features		
3023	Pedunculate oak			1365								Х											242	1777			Х		Qualifies by size & age, but lacks sufficient veteran features for descriptor to apply		
3025	Pedunculate oak			1460																			268	1751			Х		Just qualifies by size & age, but lacks veteran features		
3026	Pedunculate oak	Х		1660			Х						Х		Х	Х							392	1627		Х			Approaching ancient status		
3027	Pedunculate oak			1480																			274	1745			Х		Just qualifies by size & age, but lacks veteran features		
3028	Pedunculate oak		Х	1650		х		Х	Х	Х	Х		Х										389	389 1630 X Approaching ancient status		Approaching ancient status					
3030	Pedunculate oak			1505				Х	Х	Х			Х										314	1705		Х					
3031	Pedunculate oak	х		1640				Х		х			х					х				386 1633 X Approaching ancient status. L.sulpureus & G.resina		Approaching ancient status. L.sulpureus & G.resinaceum likely present							
3037	Pedunculate oak	х		1760	Х			Х					Х					х					427	1592	Х				Laetiporus sulphureus present		

2



ESTIMATING THE AGE OF LARGE AND VETERAN TREES IN BRITAIN, FC 1998



231 Corstorphine Road Edinburgh EH12 7AT

http://www.forestry.gov.uk

# Estimating the Age of Large and Veteran Trees in Britain

#### INFORMATION NOTE

ISSUED BY FORESTRY PRACTICE

NOVEMBER 1998

BY IOHN WHITE\*

#### SUMMARY

A method of age estimation is proposed that avoids any damage to vulnerable specimen trees. It relies upon comparison with lists of measurements of known date. From these the likely performance of various species in different locations on particular site types can be evaluated. Cross-referencing between individual specimens is credible because trees develop predictably through well-defined patterns of growth. Age can be calculated largely from annual ring areas within the stem, as determined by a simple girth measurement.

#### INTRODUCTION

- 1. Large trees of historical or conservation significance cannot be cut down or weakened in any way by boring holes in them to count the annual rings. Age can only be estimated by external measurement and then by direct comparison with other trees of similar species, size, and known planting date on comparable sites elsewhere. Accurate comparisons of this kind can only be made after a considerable amount of data from a wide range of situations has been accumulated. A lot of detective work must then be carried out on the trees to be dated. Detailed site notes are essential. Some knowledge of landscape archaeology (Rackham, 1990a) will provide useful information about how a location in which trees now stand has changed over time. Only through very detailed observation can we interpret much of what ancient trees are telling us.
- 2. Direct comparison with other trees is practical in Britain because there is a wealth of recorded data and historical information to draw on. The Forestry Commission's National Tree Register (Mitchell and White, unpublished) contains numerous measurements and ages of trees gathered over a period of 40 years from 1952. It also incorporates earlier published measurements. New records of tree size continue to be accumulated on TROBI, the Tree Register of the British Isles (Alderman, database manager, TROBI unpublished). English Nature, through its Veteran Tree Initiative, is at present in the process of listing ancient trees on a huge scale. Patterns of growth and ultimate sizes of trees, particularly very large specimens, have emerged from all these databases.

Hundreds of ring counts relative to stem diameter measurements have also been made on cut or broken stumps. From all of this evidence, tables of expected growth relative to stem size have been formulated for a number of commonly planted species.

#### THE PATTERN OF GROWTH

- 3. Trees progress through three phases of growth: a formative period, middle age or the 'mature state', and senescence. Planted trees and young natural seedlings may take a few seasons to become established, but soon growth picks up as crown size and consequently leaf area increases year by year. The increment of new wood, nourished by ever more foliage, will inevitably increase each season until the canopy is fully developed. This may or may not be hindered by adjacent trees or other physical obstructions. The growth of new wood in the stem generally produces more or less constant ring widths during this period. However, annual rings of equal width progressively increase in area as the stem diameter expands.
- 4. Once optimum crown size is reached, usually after 40 to 100 years, annual production of plant food from the foliage is likely to stabilise and remain uniform except for the occasional effects of weather and defoliators such as caterpillars (Rackham, 1990b). The current annual increment of new wood (CAI) will also remain more or less constant in terms of volume. This is laid down each year as a fresh layer over the entire under-bark surface of the tree. As the size of the tree increases it is spread ever more thinly over a

larger area. This produces annual rings in the stem which are of the same cross-sectional area but they progressively decline in width (Figure 1). In old age the crown of a tree may sustain damage, branches begin to fall off or die back. The leaf area that can be supported decreases and annual production of new wood is reduced. Ring width, often thinly distributed anyway, declines further. Most species can barely survive when rings are reduced to 0.5 mm (20 rings to one centimetre).

5. Some species groups such as oak and chestnut keep faithfully to the three phases of growth format outlined above. However other trees do not. Pioneers such as poplar, willow and alder frequently have a productive but short formative period and then go straight into senescence. Birch, which is relatively short-lived, tends to have an extremely brief middle age period. Yew, on the other hand, lives a charmed existence. It can return to formative rates of growth at almost any stage in its very long life. It may be stimulated by a boost of plant food from branch layering, or by vigorous regeneration after catastrophic damage. For this reason it is the most difficult of trees to date with any degree of confidence.

#### **MEASUREMENTS**

- 6. There are several features of a tree that can be measured. Height and crown spread are perhaps the most apparent. Unfortunately, after middle age these dimensions are an unrealistic guide to age. Thickness of the stem is a constant non-reversible feature of tree growth in so far as it has to increase each year that the tree lives. By good fortune stem girth is easy to measure and consequently it can be recorded with great precision.
- 7. Provided there are no branches, swellings, buttresses or abnormal lumps, girth should be measured with a tape at breast height (1.3 m or 4 ft 3 in above ground level). Girth is the single parameter which sums the infinite number of diameters in an irregular cross-section (Mitchell *et al.*, 1994). Diameter at breast height (dbh) is the measurement on which the estimation of age suggested here depends. Conversion of girth measured in centimetres to diameter is achieved by dividing girth by π. Some recorders still prefer to measure in feet and inches. This can be converted to diameter centimetres as follows:

(feet  $\times$  12 + additional inches)  $\times$  0.80857.

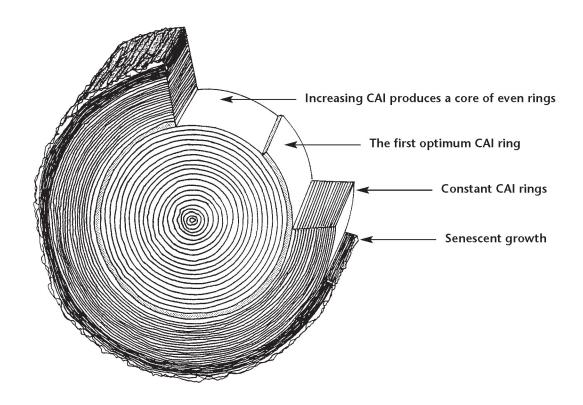
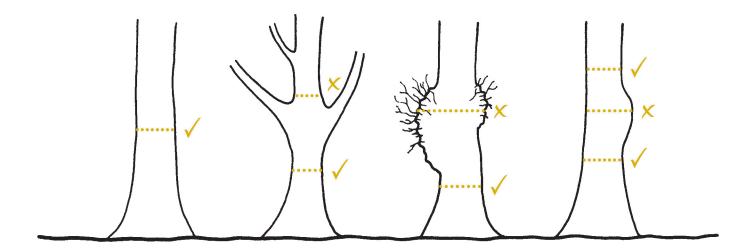


Figure 1. Diagrammatic cross-section of a tree

Figure 2. The correct positions at which to take measurements



Traditionally timber merchants measured standing trees five feet above ground level rather than at breast height. For the purposes of age calculation for very large trees this makes little difference. Where deformities, branch swellings and other irregularities occur the narrowest part of the trunk should be measured and its height above ground noted (Figure 2). If a grove of similar sized trees exists, a mean diameter measurement ultimately gives a more realistic estimate of age.

### HOW AGE IS CALCULATED FROM DBH

8. The process is split into either two or three parts depending upon the phase of the tree (paragraph 3) and each requires a different approach. First there is the rapid formative expansion period up to optimum crown development (core development). Second there is the more constant middle age period (the mature state). Finally, there is the period after crown decline (senescence).

#### Core development

9. Core size and the speed of early growth is fairly predictable within a given species group on a particular site type. The information in Table 1a has been compiled from numerous annual ring and stump measurements. Such information is not usually available directly from large or old trees of the sort for which age is being estimated. They are likely to be

hollow or completely rotten in the centre. Hard data from younger trees on comparable sites have to be used. There are indications that in spite of climatic changes, core growth in some species of old trees has not varied much for many hundreds of years. Ancient bog oak at Wicken Fen in Cambridgeshire, for example, has ring widths similar to young oaks growing nearby in East Anglia today.

- 10. There is obviously some gradation of ring width from core development to the next more stable growth phase. Trees do not suddenly stop expanding their crowns and annual wood production at a given age. However, most species do appear to change from evenly spaced core rings to diminishing 'middle age' rings within a relatively short period. Table 1a is compiled from average maximum core ages. If it is feasible to do so, it is better to compile a local site table to replace Table 1a if enough evidence from broken or cut stumps or half-rotten wood from stem cavities is available (see Table 1b).
- 11. Great care is needed when deciding which site category to use in order to determine core size (Table 1a). This is critical because all the subsequent calculations of age depend on the core age and ring width indicated. Observed conditions at the site of the tree must be thorough but treated with caution. These probably did not prevail many years ago when the tree in question was young. Much will have changed since then. Determination of site history is often a matter of some speculation. Evidence of big low branches or old branch scars may indicate open isolated early growth.

Table 1a. Tree age and ring width when mature state is reached (based on dendrological records)

						Ag	e (yea	ırs)/rii	ng wie	dth m	m (fir	st 'ma	ature	state′	ring)					
Core development category	Common/sessile oak	Turkey oak	Red oak	Beech	Sweet chestnut	Walnut	Black mulberry	Ash	Common lime	Horse chestnut	Plane	Yew (see para 5)	Robinia	Araucaria araucana	Pinus nigra	Tulip tree	Cedrus deodara	Cedrus libani	Holly	Sycamore
Champion tree potential (ideal site conditions)	70/5	30/10	60/6	80/6					100/5		100/6			60/5	60/6	70/7	40/8			
Good site, open grown, sheltered	80/4	40/6	70/5	70/5	70/5	55/4	40/3	50/5	80/5	50/5	60/6		70/5	45/5	70/5	50/6	50/7	60/6		80/6
Average site, garden, parkland	100/35	50/5	80/4	70/4	60/5	50/4	30/3	70/4	70/5	40/5	70/5	60/4	80/4	60/4	70/5		50/6			60/6
Churchyard		40/6		60/4		50/4			80/5	50/5	70/5	55/3	80/4							60/6
Poor ground and/or some exposure	120/3			60/4	40/5	50/3						40/3	50/3	60/3	60/5	50/4		80/4	80/3	60/5
Woodland boundary pollard, or open woodland	100/3.5							20/5												
Inside woodland	70/2.5			120/3	100/3			100/3				30/3							60/4	

Notes: This table has been compiled from variable amounts of information presently available. It is incomplete and will be subject to revision as further trees of known date are measured. Individual local category additions can be compiled in the light of special investigations (see Table 1b).

The absence of any low branches might indicate dense woodland in the formative years. Ancient woodland ground flora may or may not be present, even if woodland as such has now gone. Artefacts such as tiles, bricks or pottery might give clues about sites and the age of extant trees. Ground disturbance, ridge and furrow cultivation for example, can be dated accurately. This will usually indicate a maximum time that trees could have been present. A building or a ruin of known age may serve a similar purpose for all but ancient wildwood species that might predate it. Designed period landscapes are also good indicators of maximum tree age. Old stumps, of oak usually, may remain in place for up to 200 years after cutting. They give helpful clues to the minimum length of time a site has been under woodland.

#### Development to maturity

12. At the nominal completion of the core development phase the area of a single annual ring is measured. This ring area (mature state CAI) is then assumed to remain constant until senescence sets in. The ring areas suggested in Table 2 are based on Table 1a

- averages of many assessments. This to some extent irons out possible anomalies due to periods of good or bad growth but it also detracts from precision. The possibility of more permanent fluctuations of growth due to local environmental changes has not been taken into account. Only adjacent stump ring counts and designated CAI calculations can indicate such changes.
- 13. It has been found that very old trees which retain a reasonable head of branches do actually maintain their mature state CAI very well. A senescent growth amendment to the calculation is not usually needed until dead wood mounts up or serious crown damage has occurred.

#### Senescent growth

14. If serious crown disintegration occurs through pest predation or disease, environmental extremes, or simply old age, the CAI might be reduced to almost nothing. Ring widths of less than 0.5 mm are likely. Stem diameter may not reflect this small annual increase if parts of the trunk have died or fallen away. On a very large stem it is likely that the ordinary

mature state CAI basal area formula will be producing outer rings of the expected absolute minimum sustainable width (20 rings per cm), in which case no action to change the calculation procedure need be taken. On smaller diameter trees it may be necessary to estimate how long the crown has been in decline, calculate how many centimetres of diameter it would account for (say 20 years per cm) and exclude this from the basal area calculation. Then add the number of years since decline set in to the calculation. For dead trees follow the same procedure without reducing the perceived basal area.

15. To calculate the number of rings in the outermost centimetre of a stem subtract 2 cm from the dbh and calculate a new basal area (BA) (see paragraph 16, calculation 3a). Then subtract this from the total BA and divide by the indicated mature state CAI (see paragraph 16, calculation 2d).

Table 1b. (Example) Staverton Estate

Core development category	Age/mm (fist 'mature state' ring)
Common oak Staverton 'Thicks' Mean of best stems	80/2
Common oak Staverton deer park Mean of best stems	100/2
Holly Staverton Park	60/2
Beech Staverton Estate Butley Road	70/4
Moccas Knoll Oak	80/5
Moccas Woolhope Oak	90/6

Additional Table 2 data for the above core development categories:

60/2 = 12 cm radius = 452 cm basal area = 15.0 cm CAI 80/2 = 16 cm radius = 804 cm basal area = 20.0 cm CAI 100/2 = 20 cm radius = 1257 cm basal area = 25.0 cm CAI

Notes: Tables such as this can be compiled from stem analysis. Even tiny fragments of semi-rotten wood can provide vital information if their position (radius) in the stump or stem is measurable.

**Table 2.** Core development, age and ring width when optimum crown size is reached, and the associated mature state CAI

Age/ring mm	Core radius	Basal area	CAI
(from Table 1a)	cm	cm <sup>2</sup>	cm <sup>2</sup>
70/2.5	17.5	962	27.3
30.3	9	254	16.7
40/3	12	452	22.3
50/3	15	707	28.0
55/3	16.5	855	30.8
60/3	18	1018	33.6
80/3	24	1810	45.0
100/3	30	2827	56.3
120/3	36	4072	67.6
100/3.5	35	3848	76.6
40/4	16	804	39.7
50/4	20	1257	49.8
55/4	22	1521	54.8
60/4	24	1810	59.8
70/4	28	2463	69.9
80/4	32	3217	79.9
40/5	20	1257	62.0
45/5	22.5	1590	69.9
50/5	25	1963	77.8
60/5	30	2827	93.5
70/5	35	3848	109.2
80/5	40	5027	124.9
100/5	50	7854	156.3
40/6	24	1810	89.3
50/6	30	1827	112.0
60/6	36	4072	134.6
76/6	42	5542	157.2
80/6	48	7238	179.8
90/6	54	9161	202.4
100/6	60	11310	225.1
50/7	35	3848	152.4
60/7	42	5542	183.2
70/7	49	7543	214.0
40/8	32	3217	158.8
30/10	30	2827	185.4

Notes: This table circumvents the need to calculate BA and CAI for the categories listed in Table 1a. CAI has been calculated by subtracting one ring width from the radius, to give a new basal area, and subtracting this from the full core basal area indicated.

### MEASUREMENT AND CALCULATIONS

- **16.** The sequence of data capture and calculation is as follows. See also Appendix 1.
  - 1. On the site:
    - a. Identify the tree.
    - b. Take situation notes (with reference to the core development category in Table 1a).
    - c. Measure girth (paragraph 7).
    - d. If several trees occur together, measure all of them.
    - e. If crown decline or damage is found, estimate how long ago (paragraph 14).
    - f. Enquire about the history of the location.
  - 2. Using a calculator and Tables 1a and 2:
    - a. Determine the age when optimum crown development occurred and possible average annual ring width up to that point (Table 1a or 1b).
    - b. Calculate core radius (age x ring width) or refer to Table 2.
    - c. Calculate basal area of this central core of wood:

$$\left[\frac{\text{dbh}}{2}\right]^2$$
 x 3.14159 (or refer to Table 2)

- d. Calculate CAI of the outer annual ring on the core (mature state CAI). Subtract one ring width from the core radius (2b), calculate a new basal area (as in 2c). Subtract this from basal area 2b (or refer to Table 2).
- 3. Using a calculator and following the assessment sequence (Appendix 1) determine the age of the tree as follows:
  - a. Calculate basal area of the whole tree:

$$\left[\frac{\text{dbh}}{2}\right]^2$$
 x 3.14159 (or refer to Table 2)

- b. Subtract basal area of core (2c from 3a).
- c. Divide remaining basal area by the mature state CAI (2d), to give the age of this outer section.
- d. Add 2a (age of core) to 3c to obtain total age of tree (subject to 4 below).
- 4. After crown decline, annual rings on most species can be presumed to be in the region of 0.05 cm (20 rings per cm). For the estimated duration of decline a separate calculation is required (see paragraph 14) and diameter at 3a reduced accordingly. If a tree is dead the time since death has to be estimated (or determined) and simply added to the calculated age.

#### **ACKNOWLEDGEMENTS**

Thanks are due to the Forestry Commission for allowing this revision to be made, especially to Dr Peter Freer-Smith (Chief Research Officer) and Paul Tabbush (Head of Silviculture) at Alice Holt Lodge. Great appreciation also goes to The Trustees of TROBI for access to data.

#### REFERENCES

MITCHELL, A. F., SCHILLING, V. E. AND WHITE, J.E.J. (1994).

Champion trees of the British Isles.

Forestry Commission Technical Paper 7.

Forestry Commission, Edinburgh.

RACKHAM, O. (1990a).

Trees and woodland in the British landscape.

J. M. Dent and Sons Ltd, London.

RACKHAM, O. (1990b).

The history of the countryside.

J. M. Dent and Sons Ltd, London.

First published as Research Information Note 250 in July 1994; revised November 1998.

Research Information Notes are available free on request and can be ordered via the Publications catalogue on the Forestry Commission's web site at www.forestry.gov.uk or from the Research Communications Officer, address below.

Enquiries relating to this publication should be addressed to:

The Research Communications Officer Forest Research Alice Holt Lodge Wrecclesham Farnham Surrey GU10 4LH

Tel: 01420 22255 Fax: 01420 23653

E-mail: j.parker@forestry.gov.uk

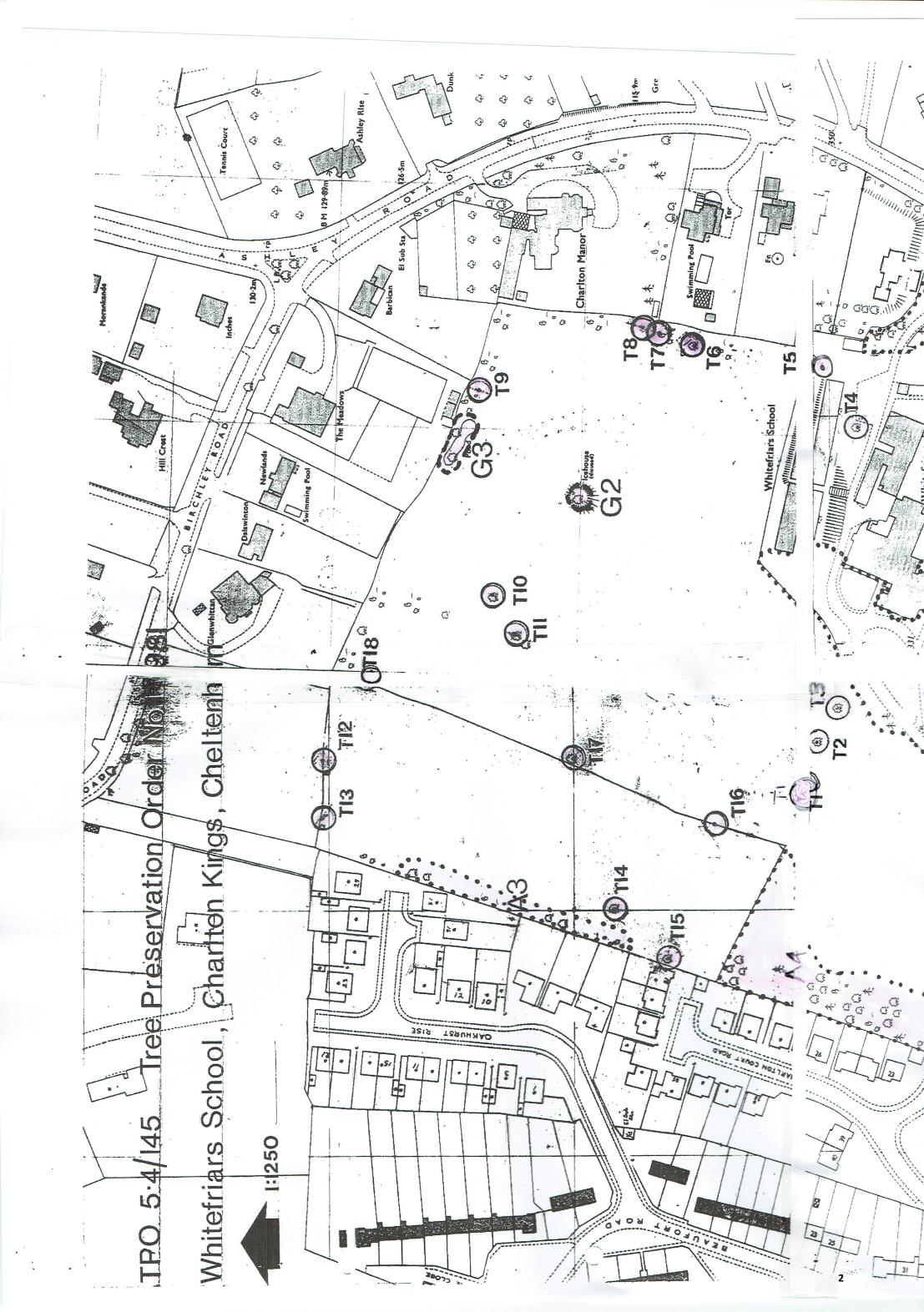
### APPENDIX 1 - ASSESSMENT SHEET (worked example)

Tree age estimation from stem diameter measurement

Tree name:		Scientific name:								
Shaden Tuft Oak		Quercus sp.								
Location:		Grid reference:								
Forest of Dean		S0 630 092								
Stem girth/cm:	Stem diameter/cm:	Stem radius (r)/cm: Total basal area (BA)/cm <sup>2</sup> :								
575	183	91.5	26302.176 (rxrx3.14159)							
Core category (Table 1a):			(1 X 1 X 3.14139)							
Woodland boundary pollare	d									
Core age/years:		Core ring width/mm:								
100		3.5								
Core basal area (Table 2 or para	agraph 16, 2c)/cm²:	3848								
Area (CAI) of outer core ring (T	able 2 or paragraph 16, 2d)/cm²:	76.6								
BA excluding the core (total BA	a minus core BA)/cm²:	22454.176 (26302.176 – 3848)								
Age of outer section of the ster	n/years:	293 (above divided by CAI of outer core ring)								
Add core age/years:		100								
Add years of decline (see parag	raph 16.4)/years:	Nii								
Total of last 3 entries (= estimates	ted age of tree/years):	393								
Planting year (date measured n	ninus estimated age):	1599								
Additional notes:										
Tree now in plantation. Imm	ediate area recently cleared o	of conifers.								
Date measured: 1992										



CBC TREE PRESERVATION ORDER 1/1981





NOTE: Any person contraving the provisions of this Order by cutting down, uprooting or wilfully destroying a tree, or by wilfully damaging, topping or lopping a tree in such a manner as to be likely to destroy it is guilty of an offence and liable on summary conviction to a fine not exceeding £1,000 or twice the sum which appears to the Court to be the value of the tree, whichever is the greater, or on indictment to a fine. The penalty for any other contravention of this Order is a fine not exceeding £200 on summary conviction and, in the case of a continuing offence when the contravention is continued after conviction, a person is liable on summary conviction to an additional fine not exceeding £5 for every day on which the contravention is so continued.

If a tree other than one to which an Order applies as part of a woodland is removed, uprooted or destroyed in contravention of an Order or is removed, uprooted or destroyed or dies at a time when its cutting down or uprooting is authorised only by Section 60(6) of the Town and Country Planning Act, 1971, relating to trees which are dying or dead or have become dangerous, it is the duty of the owner of the land, unless on his application the local planning authority dispenses with the requirement, to plant another tree of appropriate size and species at the same place as soon as he reasonably can. Except in emergency, not less than 5 days previous notice of the removal etc. should be given to the authority to enable the latter to decide whether or not to dispense with the requirement.

### FIRST SCHEDULE TREES SPECIFIED INDIVIDUALLY (encircled in black on the map)

No. on Map	and the second	Description	Situation
T1		Oak	
T2		Oak	
Т3		Oak	
T4		Ash	
T5		Oak	
Т6		Ash	
Т7		Pine	
Т8		Pine	
Т9		Oak	Within the Grounds of Whitefriars
T10		Oak	School, Charlton Kings, Cheltenham.
T11		Oak	
T12		Ash	
T13		Oak	-
T14		Oak	
T15		Oak	
T16		Oak	
T17		Oak	
T1,8		Oak	

#### TREES SPECIFIED BY REFERENCE TO AN AREA

(within a dotted black line on the map).

No, on Map Description Situation A1 An area of trees mainly comprising the following species:-**Norway Spruce** Plane Portugese Laurel Willow Birch Sequoia Prunus Pissardii Cedars (various) Holm Oak Yew Within the grounds of Whitefriars School, Charlton Kings, Beech Holly Cheltenham. Lime Scotts Pine Cypress Ash Sycamore Horse Chestnut Oak Douglas Fir An area of trees mainly comprising Α2 the following species:-Ash Plane Beech Birch Douglas Fir Within the grounds of Whitefriars School, Charlton Kings, Lime Cheltenham, Cypress Horse Chestnut Field Maple An area of trees mainly comprising А3 the following species:-Oak Within the grounds of Whitefriars Ash School, Charlton Kings, Sycamore Cheltenham. An area of trees mainly comprising A4 the following species:-Within the grounds of Whitefriars Oak School, Charlton Kings, Pine Cheltenham.

Sycamore Birch Ash

### GROUPS OF TREES (Within a broken black line on the map)

No. on Map.	Description	Situation
G1	A group of trees comprising:	
	12 Poplars 2 Ash	•
G2	A group of trees.comprising:-	
	3 Sycamore	
G3	A group of trees comprising:	Within the grounds of Whitefriars School, Charlton Kings, Cheltenham.
	3 Oak	One (Community
G4	A group of trees comprising:-	
	5 Scotts Pine	

#### SECOND SCHEDULE

This Order shall not apply so as to require the consent of the authority to

- (1) the cutting down of any tree on land which is subject to a forestry dedication covenant where
- (a) any positive covenants on the part of the owner of the land contained in the same deed as the forestry dedication covenant and at the time of the cutting down binding on the then owner of the land are fulfilled;
- (b) the cutting down is in accordance with a plan of operations approved by the Forestry Commission under such deed.
- (2) the cutting down of any tree which is in accordance with a plan of operations approved by the Forestry Commission under the approved woodlands scheme or other grant scheme under section 4 of the Forestry Act, 1967 except a scheme which applies to a forestry dedication covenant;
- (3) the cutting down, uprooting, topping or lopping of a tree
- (a) in pursuance of the power conferred on the Post Office by virtue of section 5 of the Telegraph (Construction) Act 1908 and section 21 of the Post Office Act, 1969, or by or at the request of the Post Office where the land on which the tree is situated in operational land as defined by the Post Office Operational Land Regulations and either works on such land cannot otherwise be carried out or the cutting down, topping or lopping is for the purpose of securing safety in the operation of the undertaking
- (b) by or at the request of
  - (i) a statutory undertaker where the land on which the tree is situated is operational land as defined by the Act and either works on such land cannot otherwise be carried out or the cutting down, topping is for the purpose of securing safety in the operation of the undertaking;
  - (ii) an electricity board within the meaning of the Electricity Act 1947, where such tree obstructs the construction by the board of any main transmission line or other electric line within the meaning respectively of the Electricity (Supply) Act, 1919 and the Electric Lighting Act, 1882 or interferes or would interfere with the maintenance of working of any such line;
  - (iii) a water authority established under the Water Act, 1973, a drainage board constituted or treated as having been constituted under the Land Drainage Act, 1930, or the Greater London Council, where the tree interferes or would interfere with the exercise of any of the functions of such water authority, drainage board, or Council in relation to the maintenance, improvement or construction of watercourses or of drainage works; or
  - (iv) the Secretary of State for Defence, the Secretary of State for Trade, the Civil Aviation Authority or the British Airports Authority where in the opinion of such Secretary of State or Authority the tree obstructs the approach of aircraft to, or their departure from, any aerodrome or hinders the safe and efficient use of aviation or defence technical installations;
- (c) where immediately required for the purpose of carrying out development authorised by the planning permission granted on an application made under Part III of the Act, or deemed to have been so granted for any of the purposes of that Part;
- (d) which is a fruit tree cultivated for fruit production growing or standing on land comprised in an orchard or garden;

#### THIRD SCHEDULE

Provisions of the following parts of Part III of the Town and Country Planning Act, 1971 as adapted and modified to  $app^{3}\gamma$  to this Order.

- 33. (1) Without prejudice to the following provisions as to the revocation or modification of consents, any consent under the Order, including any direction as to replanting given by the authority on the granting of such consent, shall (except insofar as the consent otherwise provides), enure for the benefit of the land and of all persons for the time being interested therein.
- 35 (1) The Secretary of State may give directions to the authority requiring applications for consent under the Order to be referred to him instead of being dealt with by the authority.
- 35 · (2) A direction under this section may relate either to a particular application or to applications of a class specified in the direction.
- 35 (3) Any application in respect of which a direction under this section has effect shall be referred to the Secretary of State accordingly.
- 35 (4) Where an application for consent under the Order is referred to the Secretary of State order than those the provisions of Articles 4 and 5 of the Order shall apply as they apply to an application which fails to be determined by the authority.
- 35 (5) Before determining an application referred to him under this section the Secretary of State shall it either the

applicant or the authority so desire, afford to each of them an opportunity of appearing before, and being heard by, a person appointed by the Secretary of State for the purpose.

- 36 (1) Where an application is made to the authority for consent under the Order and that consent is refused by that authority or is granted by them subject to conditions, or where any certificate or direction is given by the authority, the applicant, if he is aggrieved by their decision on the application or by any such certificate, or the person directed if he is aggrieved by the direction, may by notice under this section appeal to the Secretary of State.
- 36 (2) A notice under this section shall be served in writing within twenty-eight days from the receipt of notification of the decision, certificate or direction, as the case may be, or such longer period as the Secretary of State may allow.
- 36 (3) Where an appeal is brought under this section from a decision, certificate or direction of the authority, the Secretary of State, subject to the following provisions of this section, may allow or dismiss the appeal, or may reverse or vary any part of the decision of the authority, whether the appeal relates to that part thereof or not, or may cancel any certificate or cancel or vary any direction, and may deal with the application as if it has been made to him in the first instance.
- 36 (4) Before determining an appeal under this section, the Secretary of State shall, if either the appellant or the authority so desire, afford to each of them an opportunity of appearing before, and being heard by, a person appointed by the Secretary of State for the purpose.
- 36 (6) The decision of the Secretary of State on any appeal under this section shall be final.
- 37. Where an application for consent under the Order is made to the authority, then unless within two months from the date of receipt of the application, or within such extended period as may at any time be agreed upon in writing between the applicant and the authority, the authority either
  - (a) give notice to the applicant of their decision on the application; or
  - (b) give notice to him that the application has been referred to the Secretary of State in accordance with directions given under section 35 above;

the provisions of the last preceding section shall apply in relation to the application as if the consent to which it relates had been refused by the authority, and as if notification of their decision had been received by the applicant at the end of the said period of two months, or at the end of the said extended period, as the case may be.

- 45 (1) If it appears to the authority that it is expedient to revoke modify any consent under the Order granted on an application made under Article 3 of the Order, the authority may by Order revoke or modify the consent to such extent as they consider expedient.
- 45 (2) Subject to the provisions of sections 46 and 61 of the Act an Order under this section shall not take effect unless it is confirmed by the Secretary of State; and the Secretary of State may confirm any such Order submitted to him either without modification or subject to such modifications as he considers expedient.
- 45 (3) Where an authority submit an Order to the Secretary of State for his confirmation under this section, the authority shall furnish the Secretary of State with a statement of their reason for making the Order and shall serve notice together with a copy of the aforesaid statement on the owner and on the occupier of the land affected, and on any other person who in their opinion will be affected by the Order, and if within the period of twenty-eight days from the service thereof any person on whom the notice is served so requires, the Secretary of State, before confirming the Order, shall afford to that person, and to the authority, an opportunity of appearing before, and being heard by, a person appointed by the Secretary of State for the purpose.
- 45 (4) The power conferred by this section to revoke or modify a consent may be exercised at any time before the operations for which consent has been given have been completed:

Provided that the revocation or modification of consent shall not affect so much of those operations as has been previously carried out.

- 45 (5) Where a notice has been served in accordance with the provisions of subsection (3) of this section, no operations or further operations as the case may be, in pursuance of the consent granted, shall be carried out pending the decision of the Secretary of State under subsection (2) of this section.
- 46 · (1) The following provisions shall have effect where the local planning authority have made an Order (hereinafter called "such Order") under section 45 above revoking or modifying any consent granted on an application made under a tree preservation order but have not submitted such Order to the Secretary of State for confirmation by him and the owner and the occupier of the land and all persons who in the authority's opinion will be affected by such Order have notified the authority in writing that they do not not object to such Order.
- the period (not less than twenty-eight days from the date on which the advertisement shall specify the period (not less than twenty-eight days from the date on which the advertisement first appears) within which persons affected by such Order may give notice to the Secretary of State that they wish for an opportunity of eppearing before, and being heard by, a person appointed by the Secretary of State for the purpose and (b) the period less than 14 days from the expiration of the period referred to in paragraph (a) above) at the expiration of which, if no such

notice is given to the Secretary of State, such Order may take effect by virtue of this section and without being confirmed by the Secretary of State.

- 46 (3) The authority shall also serve notices to the same effect on persons mentioned in subsection (1) above.
- 46 (4) The authority shall send a copy of any advertisement published under subsection (2) above to the Secretary of State, not more than three days after the publication.
- 48 · (5) If within the period referred to in subsection (2) (a) above no person claiming to be affected by such Order has given notice to the Secretary of State as aforesaid and the Secretary of State has not directed that such Order be submitted to him for confirmation, such Order shall at the expiration of the period referred to in subsection (2) (b) of this section take effect by virtue of this section and without being confirmed by the Secretary of State as required by section 45 of the Act.
- 46 (6) This section does not apply to such Order revoking or modifying a consent granted or deemed to have been granted by the Secretary of State under Part III, Part IV or Part V of the Act.

Given under the Common Seal

of the CHELTENHAM BOROUGH COUNCIL

the HIM day of March in

the year inneteen hundred and Eighty-one

Sgd K.J.S. Hammons Mayor

Kommon Seal

sgd RA-Scarl Borough Secretary

The above order was confirmed on 5°. June 1981

47

**Dated** 

5 n March

THE BOROUGH OF CHELTENHAM (WHITEFRIARS SCHOOL) TREE PRESERVATION ORDER NO. 1. 1981.

### TOWN AND COUNTRY PLANNING ACTS

1971 - 74

### TREE PRESERVATION ORDER

**RELATING TO** 

Numerous trees of various species situate within the grounds of Whitefriars School, Charlton Kings, Cheltenham, Gloucestershire.



CBC TREE OFFICER'S CONSULTATION RESPONSE ON PLANNING APPLICATION ref. 20/00683/OUT Comments were submitted at 11:07 AM on 26 May 2020 from Mr Christopher Chavasse (<a href="mailto:chavasse@cheltenham.gov.uk">chris.chavasse@cheltenham.gov.uk</a>) on behalf of Tree Officer.

#### **Application Summary**

Reference: 20/00683/OUT

Address: Land Adjacent To Oakhurst Rise

Cheltenham Gloucestershire

Outline application for 43

**Proposal:** dwellings including access, layout

and scale, with all other matters reserved for future consideration

Case Officer: Mrs Emma Pickernell

Click for further information

#### **Comments Details**

The CBC Tree Section does not object to this application.

Whilst the nature of the part of the site proposed to be built upon will change forever and trees are to be removed as a part of the development process, it is proposed to retain most significant trees as well as trees protected by a Tree Preservation Order. There is also a proposal to plant what is planned to become a significant belt of trees to act as a buffer between the school and the proposed development as well as plant many other trees within this site.

All of the high quality category "A" trees (as per BS5837 (2012)) within the site are shown as being retained and indeed only a 14 meter high ash and a similar sized sycamore are shown as being part of removal plans of "moderate" or category "B" trees leaving an overall 90% of total category B tree stock. There are trees of lesser "low quality" "C" grade trees to be removed. Such trees have been classified because they are unremarkable, are in impaired condition or have a primary "collective value". Experience has shown on active development sites elsewhere that whilst trees are shown as being retained, situations can arise where trees previously marked for retention have to be removed (for whatever reason). However in this situation, a combination of a particularly robust described tree protection plan combined with arboricultural supervision at appropriate sensitive junctures as well as building development proposals generally being situated well away from trees, it is anticipated that such occasional unplanned collateral damage will be limited. However, much of the success of the development of the site will rely on the "buy in" by the site supervisor

and other site employees during the course of construction. To address this, procedures have been recommended within the submitted tree protection details so that not only site management but also all site operatives will be aware of the importance of trees to this site and the risks involved with

Comments:

non-compliance to all tree protection measures.

Whilst the planting mitigation strategy appears generous, it will take many years (decades) before maturity. However apart from some low quality boundary and mid site hedge self-sown trees, there are very few existing new trees currently succeeding into maturity. This may be as a result of wild deer or other animals eating/destroying all new growth. Proposed landscape strategy includes deer-proof fencing which must be maintained if such native tree planting is to succeed. Much of the area within the site is to be used be St Edward's School in the future and the tranquil nature of this south eastern area should remain. It appears as though this area is to be

left undeveloped. This would be a good location to plant new potentially very large "landmark" trees for the future. It is noted that there are several such trees close to the school-Sequoia, pine, beech etc. It is strongly recommended that similar trees are planted here for the future benefit of the school as well as landmarks for the proposed nearby residents. Please could planting plans be adjusted accordingly.

The majority of existing successfully established new trees are ash. Sadly they have a very uncertain future with the prospects of ash die-back likely to kill most ash trees. Any planning permission to be granted must include details of tree planting pit design for all large trees to be planted, species, size, location, root type, maintenance and watering regime etc to be submitted and agreed. Similarly, all hedgerow and woodland planting as well as succinct details of veteran tree "buffer" planting must be submitted and agreed prior to the commencement of any on site works. Please note that the nature of the soil in this area is clay and that it is important the clay tolerant species are planted so as to minimise tree establishment difficulty.

The heads of terms for the landscape management plan are acceptable and such a detailed 10 year management plan should be conditioned as a part of any Reserve Matters. The hedge bisecting the site which is chiefly comprised of ash is likely to become somewhat thread-bare if/when the anticipated ash dieback kills such existing ash trees. The retention of the hedge and new planting briefly discussed as not being for amenity and as such selective planting will include deterrent planting (ie spiny/prickly) species. Whatever is planted, it is considered likely that children will find access and begin to play within this hedge line. Consequently it is likely that parts of it may suffer-however such outdoor play is a part of childhood in such a peri-urban situation and it is unrealistic to consider that the hedge line and growth within it will remain completely undisturbed. However the deterrent planting and proposed knee rails around and under the drip lie of veteran trees must be successful. Such trees have an increased heritage and ecological value and their continued survival and prosperity is essential as they continue to mature. Succinct details of such deterrent tree and shrub planting must be submitted as a part of Reserve Matters. Such details must be assessed by CBC Trees and Landscape Design officers prior to

Tree VT3028 is especially vulnerable to damage and as such it is recommended that a permanent barrier preventing such access is erected around the tree. Such a barrier (metal fence) should not be possible to be climbed over. This will "frame" the tree highlighting it's importance to adjacent householders and users of the open space. Obviously, access should be possible with padlock and key when absolutely necessary. Such a an appropriate and tasteful metal fence will make it's long term retention more certain.

Again the "buy-in" by any new residents and owners of the soft landscaping within this site is essential if the overall landscape led design of the site is to succeed. Such activities to be described within a management plan will not likely be cheap to afford by residents (especially as it is noted that there are to be several "affordable housing" plots). Nevertheless such a "buy-in" is critical if the site is to successfully retain it's current primary natural features (the veteran trees) as well as the proposed new tree planting. The possibility of covenants enforcing such landscape features on owners should be explored. Similarly Retention of existing and proposed hedgerow" planning conditions should be issued along with any permission to be granted.

All tree planting near to proposed dwellings must be sympathetic in terms of

proposed tree size (in maturity) and species. It is unrealistic the consider that new occupants will accept living adjacent to inappropriate trees (taking into account overall future size, tree "litter", shade, propensity to shed limbs and branches, leaf, fruit and flower drop annually etc) and as such tree planting regimes must take account of this when planting. The relationship between new properties and such existing retained veteran trees as well as new planting must be harmonious in terms of structural compatibility as well. The site appears to be comprised chiefly of shrinkable clay soil. It is imperative that new dwellings/structures' foundations are constructed in such a manner as to take account of this soil and not suffer from subsidence related damage as a result of tree root water extraction. Such successful subsidence claims inevitably lead to demands for tree removal or heavy pruning (removing much of the amenity of the trees) so as to reduce water demand. Such a situation must not arise in the first instance. Piled foundation structures are mentioned in the Tree Protection Plan but detailed foundation design which takes account of current, and future water demand must be submitted as a part of Reserve Matters. The proposed "no-dig" solution to parking adjacent to tree T3015 detailed within the Tree protection Plan is necessary and should be included in Reserve Matters.

Drainage connection to the south of the site must not enter into the Root Protection Area of any tree or thrust bore drainage techniques must be a minimum 1 meter below the soil horizon so as to minimise damage to existing trees-all as detailed in the FLAC Tree Protection Plan of 17th April 2020.

Provision for pedestrian and vehicle access into the proposed open spaces is essential so as to facilitate maintenance to the meadow as well as trees. Details of how such access is facilitated should be submitted and agreed.



## OBJECTION TO PROPOSALS SUBMITTED BY THE WOODLAND TRUST



Cheltenham Borough Council Municipal Offices Promenade Cheltenham GL50 9SA

12<sup>th</sup> June 2020

Dear Ms Pickernell,

Planning application: 20/00683/OUT

Proposal: Outline application for 43 dwellings including access, layout and scale, with all other matters reserved for future consideration | Land Adjacent To Oakhurst Rise, Cheltenham, Gloucestershire

## Objection - damage and deterioration of veteran trees

The Woodland Trust is the UK's leading woodland conservation charity. The Trust aims to protect native woods, trees and their wildlife for the future. We own over 1,000 sites across the UK, covering around 24,000 hectares (59,000 acres) and we have 500,000 members and supporters.

The Trust objected to a previous application (18/02171/OUT) for a housing development on this site on account of impacts to a number of veteran trees. We were also involved in the consideration of this previous application at appeal. While some positive changes have been made compared to the previous application, namely the retention of T3014, there are still some outstanding areas of concern that we consider have not been resolved since the previous application.

As such, the Trust **objects** to this application on the basis of adverse impacts to veteran trees. Below is a table outlining the trees of concern and their respective numbers on the Ancient Tree Inventory (ATI).

Tree no.	ATI no.	Species	<b>ATI Categorisation</b>	<b>Grid reference</b>
3010	167742	Oak	Veteran	SO9658821654
3014	167746	Oak	Veteran	SO9652021628
3015	167745	Oak	Veteran	SO9653121639
3018	167747	Oak	Veteran	SO9650321690
3022	167756	Oak	Veteran	SO9644021558
3027	167751	Oak	Veteran	SO9639621605
3030	167748	Oak	Veteran	SO9644521702

The Woodland Trust Kempton Way Grantham Lincolnshire NG31 6LL

Telephone 01476 581111 Facsimile 01476 590808 Website woodlandtrust.org.uk

### **Ancient and Veteran Trees**

- There are a number of trees within this site that are listed on the Ancient Tree Inventory (ATI), most being classified as veteran, though with a couple of ancient specimens as well.
- Planning Policy Guidance (PPG) for the 'Natural environment', which is intended to clarify and interpret the NPPF, and was updated on 21<sup>st</sup> July 2019, states<sup>1</sup>: "Veteran trees may not be very old but exhibit decay features such as branch death or hollowing. Trees become ancient or veteran because of their age, size or condition. Not all of these three characteristics are needed to make a tree ancient or veteran as the characteristics will vary from species to species."
- Natural England's standing advice for ancient woodland, ancient trees and veteran trees<sup>2</sup> states: "Ancient and veteran trees can be individual trees or groups of trees within wood pastures, historic parkland, hedgerows, orchards, parks or other areas. They are often found outside ancient woodlands. They are irreplaceable habitats with some or all of the following characteristics."

"An ancient tree is exceptionally valuable for its: great age, size, condition, biodiversity value as a result of significant wood decay habitat created from the ageing process, and cultural and heritage value." It states further: "All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value."

Veteran features are not necessarily a product of tree age or size; they also develop as a result of a tree's life or environment. This is particularly emphasised within the PPG, in which the key characteristics of size, age or condition are considered separately. However, this is not taken into account in the applicant's 'RAVEN' system<sup>3</sup>. The applicant's surveys impose a requirement for 'very large size' on trees before they can be further assessed for veteran features. The basis for this is ecologically unsound and, unfortunately, facilitates removal of trees or their inadequate protection.

A key function of the term 'veteran' is to capture trees that have exceptional habitat value as well as those with cultural and heritage value. The term is not a true ecological grouping, and serves to help us to identify trees which are important for biodiversity in their own right, and as part of a wider assemblage; veteran trees are important for the accumulation of features that are unable to be replicated within our lifetime. Identifying and evaluating veteran features requires the application of knowledge, experience and judgement. We acknowledge that government definitions do not provide precise, measurable parameters against which to easily recognise veteran trees. However, Natural England's standing advice, planning policy

<sup>&</sup>lt;sup>1</sup> https://www.gov.uk/guidance/natural-environment

<sup>&</sup>lt;sup>2</sup> https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences

<sup>&</sup>lt;sup>3</sup> https://www.flac.uk.com/wp-content/uploads/2018/08/RAVEN.pdf

guidance, and expert reference texts<sup>4</sup> do provide clear instruction that tree girth should not be used as the main qualifier for veteran classification.

A particular example of this is tree T3014, an oak tree that has not been identified as a veteran tree by the applicants and so a Veteran Tree Buffer (VTB) zone has not been applied to this tree. We had the opportunity to assess this tree in August 2019. At that time, we noted a number of veteran features despite the tree girth not reaching a very large size<sup>5</sup>. This oak tree features a historic lightning strike, exposed heartwood, decay cavities, evidence of invertebrate use and presence of fungal fruiting bodies (please see Appendix 1 for further details and images).

## **Planning Policy**

National Planning Policy Framework (NPPF), paragraph 175 states: "When determining planning applications, local planning authorities should apply the following principles:

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

- Exceptional reasons are defined in Footnote 58 as follows: "For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat."
- We consider that the impact of the development on veteran trees does not fit these criteria and as such should be refused on the grounds it does not comply with national planning policy.
- Paragraph 5.4.12 of the Gloucester, Cheltenham and Tewkesbury Joint Core Strategy 2011-2031 supports paragraph 175c of the NPPF stating: "Ancient woodland and veteran trees will be protected in accordance with the NPPF."

Cheltenham Borough Council has recently submitted the new Local Plan for inspection to the Planning Inspectorate. Within the Cheltenham Plan 'Policy GI3: Trees and Development' the following is stated: "Development which would cause permanent damage to trees of high value (Note 1) will not be permitted." Note 1 is defined in the following manner: "'High value' means a sound and healthy tree with at least 10 years of safe and useful life remaining, which makes a significant contribution to the character or appearance of a site or locality." The fact that veteran trees recorded on the ATI have not been recognised by the applicant and afforded appropriate buffer zones means that they are not being adequately protected, and that the proposals are therefore contrary to this policy.

<sup>&</sup>lt;sup>4</sup> Lonsdale, D. (ed.) (2013). Ancient and other veteran trees: further guidance on management. The Tree Council, London 212pp.

<sup>&</sup>lt;sup>5</sup> FLAC impose a requirement for 'very large girth for species' on trees before they can be further assessed for veteran features.

### **Impacts on Veteran Trees**

Ancient and veteran trees are a vital and treasured part of the UK's natural and cultural landscape, representing a resource of great international significance. The number of ancient and veteran trees on this relatively small site, makes the site and the assemblage of trees taken together particularly valuable for wildlife. The existing values will not be able to be sustained if the site is developed to this intensity as we consider that existing ancient and veteran trees will deteriorate and it will not be possible to provide for the continuity of appropriate trees that could become veterans of the future.

The trees listed in the above table are all recorded on the ATI as veteran specimens.

However, the applicant has not recognised these trees as veterans and therefore not afforded them buffer zones; in line with Natural England's standing advice veteran trees should be afforded a buffer zone of 15 times the stem diameter or 5m beyond the crown, whichever is greater. Therefore, it is apparent that numerous elements of the development, such as buildings, roads and gardens will encroach on their RPAs. It is, however, helpful to see that trees which are recognised as veterans by the applicant have now been afforded buffer zones without encroachment from the proposed development.

Trees can be vulnerable to the changes caused by nearby construction/development activity.

Development within the RPAs and/or canopy of ancient and veteran trees can result in adverse impacts as the tree's root system is adversely affected by soil compaction and direct root damage. The potential direct and indirect impacts of development on ancient and veteran trees are clarified in Natural England's standing advice, including:

- damaging roots and understorey (all the vegetation under the taller trees)
- damaging or compacting soil around the tree roots
- polluting the ground around them

19

- changing the water table or drainage of woodland or individual trees
- increasing the amount of pollution, including dust
- increasing disturbance to wildlife from additional traffic and visitors

Furthermore, new development close to such trees increases the targets and risks associated with people and property in proximity to them, thereby compromising their long-term retention.

The British Standards guidelines 'Trees in relation to design, demolition and construction (BS5837:2012)' clarify that construction work often exerts pressures on existing trees, as do changes in their immediate environment following construction works. Root systems, stems and canopies, all need allowance for future growth and movement, and should be taken into account in all proposed works on the scheme through the incorporation of the measures outlined in the British Standard. However, it is important to also consider the guidance within Natural England's standing advice when specifically taking the protection of ancient and veteran trees in to consideration. This standing advice identifies mitigation measures that can

be implemented where nearby development may result in impacts on ancient and veteran trees, including:

- putting up screening barriers to protect woodland or veteran trees from dust and pollution
- a buffer zone at least 15 times larger than the diameter of the tree, or 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter
- protecting veteran trees by designing open space around them
- identifying and protecting trees that could become veteran trees in the future
- The need to ensure that ancient and veteran trees are afforded appropriate space for their long-term health is supported by the BS5837 guidelines which states in paragraph 5.2.4 that "particular care is needed regarding the retention of large, mature, over-mature or veteran trees which become enclosed within the new development" and that "adequate space should be allowed for their long-term physical retention and future maintenance".
- Veteran trees typically feature significant deadwood habitat of great value for biodiversity,
  e.g. retained deadwood in the crown, broken/fractured branches and trunk cavities/wounds.
  The level and type of usage of such a high density residential development will increase the health and safety risks associated with these trees leading to a requirement to manage them more intensively resulting in loss of habitat and/or consequential decline or removal.
- Our concerns regarding the increased risk that veteran trees can pose when more exposed to human contact is supported by the guidance within David Lonsdale's 'Ancient and other

  Veteran Trees: Further Guidance on Management' (2013), which states in paragraph 3.5.2.1

  "...avoid creating new or increased targets: as happens for example following the construction of facilities (e.g. car parks or buildings) which will bring people or property into a high risk zone. Not only does this create targets, it also harms trees and therefore makes them more hazardous".
- The Trust requests that the council's tree officer and planning officer take our comments and government guidance into consideration and ensures that the applicant is applying suitable buffers to those veteran trees identified as such on the ATI. Where development encroaches on the RPAs of these trees the layout of the development should be altered to prevent such impacts. If this is not possible then the proposals should be refused planning permission as the encroachment and subsequent impact of the development on the trees' root systems would directly contravene local and national planning policy and government guidance.
- The significant concentration of ancient/veteran trees within the development site means that damage to veteran trees could lead to their failure and ultimately a reduction in the available habitat for species reliant on dead and decaying wood habitat, i.e. saproxylic invertebrates, bats and certain species of birds. In its current form the development would result in damage to a number of veteran trees on the site, which would be highly deleterious to the wider environment of mature and veteran trees that may harbour rare and important species.

### Conclusion

- Ancient and veteran trees are irreplaceable; the habitat that they provided cannot be recreated. Development resulting in the damage or long-term deterioration of such trees is unacceptable and contrary to national planning policy.
- In summary, the Woodland Trust **objects** to this application on the basis of damage and deterioration of seven veteran trees.

While the applicant has recognised some of these trees as veteran we do not consider that they have fully recognised the qualities and importance of all the trees on site and appropriately categorised them as veterans. As such, a number of trees have not been afforded the suitable RPA that their veteran status warrants, leaving them vulnerable to adverse impacts. We ask that measures continue to be explored to ensure that veteran trees are fully recognised and that adverse impacts to such trees are avoided in line with Natural England's standing advice.

We hope you find our comments to be of use to you. If you are concerned about any of the comments raised please do not hesitate to get in contact with us.

Yours sincerely,

Jack Taylor Lead Campaigner – Woods Under Threat

# Appendix 1. Veteran features of tree 3014 identified in August 2019

- A) Wide view of tree 3014, showing condition of crown, with some large diameter dead wood and potential for retrenchment of upper crown.
- B) Historic lightning strike resulting in significant portion of exposed heartwood.
- C) Decay holes/ dry habitat space developing between sapwood and exposed heartwood.
- D) Large, accessible cavities high within tree crown
- E) Evidence of invertebrate activity including 'exit holes' in heartwood and accumulating decaying wood/ litter
- F) Fungal fruiting bodies of Stereum gausapatum, a heart rot species.





Image A Image B





Image C Image D





Image E Image F



**JFL 15** 

THE AUTHOR'S RESPONSE TO THE WOODLAND TRUST



# FLAC Instruction ref. SC38-1036 OAKHURST RISE

# Cheltenham Borough Council Planning Application ref. 20/00683/OUT: Woodland Trust (WT) comments of 12.06.20

## Project Arboriculturist's Response

#### Note

The WT comments are difficult to reference in their original form due to lack of page and paragraph numbering: this response should be read in conjunction with a marked-up version of the WT document, to which paragraph numbers have been added.

Responses below are enumerated in like numbering to the paragraphs to which they refer.

For reference, we insert here the NPPF definition for ancient and other veteran trees:

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.

- 1. No response required.
- 2. No response required.
- 3. In this paragraph, the WT allege that seven trees on the "Ancient Tree Inventory" (ATI) are considered to be at risk as a result of the development proposals. Four points arise:
  - i) The ATI is neither based on professional assessment of veteran status, nor on alignment to the definition for veteran trees provided in the NPPF (included above).
     As such, it can be expected to and does contain numerous false positive inclusions and is not fit for purpose as a decision-making aid in the planning context;
  - ii) Specifically, 3010, 3014, 3015, 3022, 3027 do not meet the criteria for the application of the veteran descriptor in the NPPF (per the definition above), and so are not ancient or other veteran trees;
  - iii) Trees 3018 and 3030 do meet the criteria and accordingly have been identified by us as ancient and veteran respectively.
  - iv) All of the trees listed by the WT would be retained and protected in line with BS5837:2012, and both 3018 and 3030 would additionally be provided with the full Natural England-recommended buffer zone.



- 4. We disagree that any tree has been wrongly excluded from the list of those identified as veterans. The WT is here rehearsing the central allegation it put unsuccessfully before Inspector Sims last year (PINS ref. APP/B1605/W/19/3227293), namely that our ancient, veteran and notable tree recognition system (RAVEN) is not fit for purpose. This matter was ventilated at length at the 2019 Inquiry, further to which Inspector Sims concluded in his Decision Letter (paragraph 58) that RAVEN was suitable, and accordingly all ancient and other veteran trees had indeed been correctly identified.
- 5. 1) In this paragraph, the ATF considers guidance in addition to that found in the NPPF, specifically the PPG where it states:

Veteran trees may not be very old but exhibit decay features such as branch death or hollowing. <u>Trees become ancient or veteran because of their age, size or condition.</u> <u>Not all of these three characteristics are needed to make a tree ancient or veteran as the characteristics will vary from species to species.</u> Our underlining.

- 2) It will be apparent that the underlined text is not consistent with the definition in the NPPF, with three divergences being present:
  - i) The PPG omits the requirement for veteran trees to be *old relative to other trees of the same species*;
  - ii) The PPG rewords the NPPF so as to change the additive construct of the latter (age and size and condition), to an alternative construct (age or size or condition);
  - iii) Finally, the PPG then states explicitly that not all three criteria have to be present for the veteran descriptor to apply.
- 3) From the foregoing it is apparent that there is a tension between what is said in the guidance and the policy. The policy, read objectively, is to be given precedence. Insofar as this was the settled conclusion of the recent appeal on this site, we have, unfortunately, been here before.
- 6. This paragraph is based on extracts from the Standing Advice on irreplaceable habitat trees and woodland published jointly by the Forestry Commission and Natural England. This text has the same flaw as the PPG: it is not aligned to the NPPF definition and, crucially, it omits to note the requirement that veteran trees are trees which are *old relative to other trees of the same species*. Like the PPG, the Standing Advice is subordinate to the NPPF and accordingly the attempted re-definition of what comprises a veteran tree must fail.
- 7. 1) In this paragraph the WT seeks to claim that our approach is *ecologically unsound* because it allegedly fails to recognise that veteran features are not a product of tree age. This is not claim that we actually make.



- 2) Instead, our approach (encapsulated by the RAVEN method, which is now in widespread use in both the public and private sectors of arboriculture) is fully aligned to: a) the NPPF definition, which explicitly references the age and size of trees as gateway requirements for the veteran descriptor to apply; and b) to the overriding purpose of this part of the NPPF, namely the protection of <u>exceptional</u> value.
- 3) If the WT approach were to be adopted, this would elevate the commonplace to the special: this would be simultaneously without logic and grossly contrary to the clear intention of national policy.
- 8. 1) However, in this paragraph, the WT does at least accept that the value should be "exceptional". Further, the WT acknowledges that:

Government definitions do not provide precise, measurable parameters against which to easily recognise veteran trees.

It is precisely for this reason that we designed RAVEN, and presumably the clarity it brings to this area is why it is proving so popular (though admittedly not with tree-related activist pressure groups).

2) At the end of this paragraph, the WT states:

Expert reference texts... provide clear instruction that tree girth should not be used as the main qualifier for veteran classification.

It then provides a reference to Lonsdale 2013<sup>1</sup> somewhat opaquely citing "212pp". It is unclear whether it intends to refer to the reference comprising 212 pages, or to cite page 212 in particular. Either way, as the book only comprises 202 pages we are none the wiser.

3) It is, however, worth looking at this text, on which the WT seeks to rely on the question of tree girth. Whilst Lonsdale does state that veteran trees need not be chronologically very old (e.g. p.4), he also provides this advice (1.2.3 p.6):

In order to qualify as a veteran, the tree should show crown retrenchment <u>and</u> signs of decay in the trunk, branches or roots... Our underlining.

It is clear from this that a gateway criterion identified by Lonsdale is crown retrenchment, with this also being one of the primary qualifying factors in RAVEN. None of the five trees alleged by the WT to be additional veteran trees show crown retrenchment, and so they do not meet Lonsdale's understanding of veteran trees.

-

<sup>&</sup>lt;sup>1</sup> Ancient and other veteran trees, Lonsdale D, Ancient Tree Forum 2013, pub. The Tree Council



4) Moreover, on page 5 of Lonsdale, he provides a chart (Fig. 1.3) titled *Chart of girth in relation to age and developmental classification of trees*. This chart also appears in the Ancient Tree Forum Ancient Tree Guide Number 4, called *What are ancient, veteran and other trees of special interest*. We reproduce this chart as our Figure 1.

KEY Girth (m) 3 4 5 8 11 12 13 14 15 Tree species ■ I Very ancient Yew Ancient Chart showing Veteran/notable .... Sweet chestnut typical relationship ■ I Locally notable Oak between girth and Lime tree species Sycamore growing in average Ash conditions. Beech ••• Alder ш Field maple Rowan Hawthorn

Figure 1 - Chart from page 4 of ATF leaflet 4, with FLAC mark-up (dashed red line)

- 5) This chart (which is also Lonsdale Fig 1.3) shows that the unbreakable biological link between stem size and age is taken forward into tree developmental classification.
- 6) Insofar as the five allegedly omitted veteran trees are all pedunculate oak, it is instructed to look at the entry in the chart for this species. To aid interpretation, we have added a dashed red line at the onset threshold for veteran stem size, which is around 3.7m stem girth, or 1178mm diameter. Based on the accepted tree dating computation published by the Forestry Commission known as the White Method, for an average site a pedunculate oak of this size would be just under 200 years old, or ca. 25% of the low end of the species maximum in the UK (800-1000 years being the typical maximum longevity range). This is the stem size and estimated age threshold used by RAVEN which is, therefore, in full agreement with the chart.
- 7) Finally, despite the claim by the WT that RAVEN "requires" very large stem size prior to veteran assessment, an explicit note on the method makes clear that there are cases where this would not apply. Thus, where tree condition includes factors which have significantly stunted growth, the stem size requirement is considered flexibly.
- 9. In this paragraph, the WT confirms that, despite alleging that <u>five</u> trees are omitted veterans, it only takes forward one tree to any level of detail, namely 3014. We agree that this tree has features of interest, but it does not meet two of the three criteria set out in the NPPF: it is not large and being less than 150 years old it is not old relative to others of its kind. The features which it exhibits cannot be said to comprise "exceptional" biodiversity value, a claim which even the WT does not make. It would, therefore, be both inaccurate and disproportionate to apply the protective policy at NPPF 175c to this tree.



- 10. No response required.
- 11. No response required.
- 12. Whilst we disagree that the NPPF policy and related footnote are relevant to any trees other than those identified by us as veterans, we note in passing that the WT is here seeking to make a planning judgment on the public benefits of housing delivery.
- 13. No further response required.
- 14. No response required.
- 15. 1) This paragraph appears to be a generalised and in-principle objection to the proposed development. The WT reaches this conclusion based on *the number of ancient and veteran trees present*. However, as it incorrectly inflates this number by five, when it then goes on to assess what it terms the *intensity of the development*, it is not possible to know whether its concerns would remain as stated if it had used the correct list of veteran trees. This seems difficult to imagine, as all those trees correctly identified as veterans would be provided with the buffer zone recommended by Natural England.
  - 2) The WT also alleges that it will not be possible to provide for the continuity of appropriate trees that could become veterans of the future. Whilst noting that nowhere is this a requirement of planning policy, this statement is also factually incorrect: the site hosts seven notable pedunculate oak which will all be retained and protected, and which will provide continuity of succession habitat. Moreover, the proposals are subject to a generous new planting provision, from amongst which, in due course, other veteran trees may well arise.
  - 3) It is our assessment of the existing veteran trees that they will provide several centuries of irreplaceable habitat, with new veterans arising within the timeframe 50-100 years from the successor trees, and then 200 years onwards from the new landscaping. A conservative forward projection would be for 500 years of veteran tree population on this site.
- 16. No further response required.
- 17. The WT's allegation of development-related harm to veteran trees can only relate to those which it mis-identifies as veterans, as all those correctly so identified would be subject to the generous buffer zone provision recommended by Natural England.
- 18. The scheme has been specifically designed based on our advice as regards target reduction, and would not, in our view, give rise to unacceptable hazards to site end-users.
- 19. We are well aware of the guidance referred to in this paragraph, and the proposals have been progressed with it fully in mind.



- 20. We are well aware of the guidance referred to in this paragraph, and the proposals have been progressed with it fully in mind.
- 21. In this paragraph the WT alleges that the development is "high density", which is a term that it appears to have misinterpreted. It further alleges that the design would give rise to the need for safety-critical tree work which would reduce the habitat value of the trees. This is by no means the case, as the scheme has been designed specifically to avoid the emergence of this potential difficulty. Further, it is open to the Council to apply a planning condition to ensure that access under the crowns of the veteran trees is deterred or excluded.
- 22. No further response required.
- 23. This paragraph contains the implicit allegation that buffer zones are not provided, which is incorrect as regards the genuine veteran trees, and the explicit allegation that root protection area (RPA) incursions would occur in relation to veteran trees. Once again, this comment derives from the WT's flawed understanding of which trees are veterans, as none of the genuine veteran trees would be subject to RPA incursion.
- 24. None of the alleged ill-effects contained in this paragraph are foreseeably likely to occur. The statements it contains are without foundation and not supported by any evidence put forward by the WT
- 25. No response required.
- 26. No response required.
- 27. No further response required.

Forbes-Laird Arboricultural Consultancy 26 June 2020



# **JFL 16**

# OBJECTION TO THE PROPOSALS SUBMITTED BY THE ANCIENT TREE FORUM

# **Ancient Trees Forum (Neutral)**

Comment submitted date: Mon 15 Jun 2020

The Ancient Tree Forum (ATF) is a charity which has pioneered the conservation of ancient and veteran trees and their associated habitats such as ancient wood pasture and parkland. The ATF seeks to secure the long-term future of ancient and veteran trees and associated habitats through advocacy of no further avoidable loss, good management, the development of a succession of future ancient and veteran trees, and seeking to raise awareness and understanding of their value and importance.

The ATF objects to this application because the way veteran trees have been identified means that trees, which should be protected by planning policy and meet the criteria set out by the guidance (National Planning Policy Framework glossary (2018), Standing Advice (2019) and Planning Policy Guidance (2019)), have been wrongly excluded. They are a significant factor in considering this application.

We set out our rationale for identification of ancient and veteran trees in relation to

- NPPF in Annex 1. In line with the government guidance, it is our view that for a tree to be categorised as a veteran, it should primarily have key decay features (including branch death or hollowing) and such features should be substantial by volume (in proportion to the size of the tree), long-lasting and/or significant (in terms of quality). NPPF glossary states that a veteran tree does not need to be old enough to be ancient but does not define any specific size or age criteria to be met. However, it is our interpretation of the guidance, that for the condition of the tree (decay features of branch death or hollowing) to be judged as irreplaceable habitat, a veteran tree will usually be in either a mature or ancient life-stage owing to the time taken and complexity of the habitat to develop.
- The ATF therefore interprets the guidance to mean that trees which have the appropriate key decay features and are also mature or ancient should be considered as irreplaceable habitat and are the trees to which the policy in para 175c of the NPPF applies.
- We strongly disagree with the categorisation methodology used in the tree survey. The first step of the applicant's tree consultant's methodology is to eliminate trees which do not have a "very large girth" before consideration of veteran characteristics. In our view this step is not justified by NPPF or other government guidance.
- It is our view that at least two trees should be re-categorised as irreplaceable veterans and protected from harm by appropriate buffer zones. They are the mature trees numbered T3010 and T3014
  - The Tree Survey states that T3010 is mature tree and has "Fistulina hepatica fruiting body on root buttress at ground level east. Laetiporus sulphureus on old branch loss wound at 2 metres south. Numerous habitat holes within branch structure indicating heartwood fungal decay is well progressed." Decay or hollowing evidenced by heart-rot
- 7.1 decay fungi is a clear criterion for veteran categorisation and the applicant's tree consultant accepts this too. Although it is the view expressed in the tree survey that this tree may not survive long term, there is no indication why it is judged not to be able to survive long-term nor what time period that might be. There is no reference to life expectancy/longevity of the tree in the NPPF and therefore this should be disregarded in categorising a tree as a veteran. The extra protection that a buffer zone would provide, and should be allocated to this tree, would mitigate the possibility of deterioration

resulting from development pressures - the very purpose for which it is intended.
According to Standing Advice the Buffer Zone should be "at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter." Due to the proximity of this tree to proposed buildings the Buffer Zone may need to be greater than the minimum to avoid future intervention on the grounds of risk.

Tree number 3014 is recorded as OM/over-mature in the survey. It is recorded as having a stem diameter of 930mms and in the Raven assessment as 148 years old and not of an 'age or size to merity veteran descrptor'. We assume the OM label is a erro.r However, it is recorded as mature and having "bark wounding after historic lightning strike seen as broad tongue of bark loss from ground level south extending into upper crown structure, exposed and desiccated non-functional heartwood within the affected stem section comprises large volume dead wood Scattered dead wood and smaller distal decline." It is quite clear from this description and images on the Ancient Tree Inventory that the trunk of this tree is hollowing and has a large volume of deadwood in the trunk. This tree definitely has substantial and long-lasting veteran characteristics which accord with Standing Advice, it is mature and therefore is a veteran tree and should be given proper protection by an appropriate Buffer Zone.

Other mature trees on site may also be veteran trees but we do not have enough information on which to confirm their status but the LPA must be assured one way or another. The Ancient Tree Inventory is a citizen science project and has not required surveyors to assess trees according to NPPF as it started in 2005 which is well before the planning policy changes in 2018. The tree records on it however are good indicators of whether trees are ancient or veteran. For example, T3015 is listed as a veteran on the Ancient Tree Inventory and the record states that it has hollowing branches - substantial enough features on such a large tree to be good veteran characteristics. In addition, the Tree Survey, provided with the application, confirms that there are "large dead limbs scattered through the crown". Dead branches are given as a key veteran tree criterion in Standing Advice. It is very likely that this mature oak is a veteran for the purposes of NPPF and therefore should be given the protection of an appropriate buffer zone.

We would strongly recommend that the trees on site are resurveyed to identify whether other veteran trees have been overlooked.

Annex 1: The Ancient Tree Forum's interpretation of the application of National Planning Policy Framework's protection measures for ancient and veteran trees.

- The National Planning Policy Framework (NPPF) in England refers to ancient and veteran trees in three places:
  - 1) in Conserving and enhancing the natural environment document, para 175c:

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;

2) and in Annex 2: Glossary:

8

9

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.

Irreplaceable habitat: Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees,?

- In terms of applying the NPPF to a development proposal and to relevant trees, the first step must be to identify if a tree is ancient or veteran. The glossary, to be used in this context, describes three characteristics i.e. age, size and condition, which contribute to the stated values of biodiversity, cultural and heritage value of both ancient and veteran trees. There is no guidance on the parameters of age (except that veterans can be younger than ancient trees), or size or the meaning of condition.
- In relation to ancient trees, the ATF considers ancient is a life-stage indicated by the chronological age of the trunk, using trunk girth only as a guide. Trees in this ancient life-stage usually also have well-developed key veteran decay features as a consequence of ageing. It is ATF's view that all ancient trees are exceptional and irreplaceable for their cultural and heritage values, but specifically, for the application of NPPF policy 175c, they all have irreplaceable habitat.
- In relation to veteran trees, the NPPF glossary only distinguishes by age those trees that 'are not old enough to be ancient, but are old relative to trees of the same species.'
  Planning Policy Guidance (2019 and FC & NE Standing Advice (2018) give some further guidance in relation to age (see bold below) and also condition (see underlined below):

PPG: Ancient trees are trees in the ancient stage of their life. Veteran trees may not be very old but exhibit decay features such as branch death or hollowing. Trees become ancient or veteran because of their age, size or condition. Not all of these three characteristics are needed to make a tree ancient or veteran as the characteristics will vary from species to species.

Standing Advice: A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity

- Both of the above documents provide examples of relevant features relating to condition i.e branch death and hollowing. But, neither these nor the NPPF glossary, give guidance or information on the amount, volume or quality of these features. In line with the available guidance, the ATF consider, that a tree to be categorised as a veteran for the application of NPPF policy 175(c) should have key decay features (including branch death or hollowing) which should be substantial by volume (in proportion to the size of the tree), long-lasting and/or significant (in terms of quality).
- For a tree to have developed decay features of branch death or hollowing which could be judged to be irreplaceable habitat, it will usually be in either a mature or ancient life-stage owing to the time taken and complexity of the habitat to develop. Threshold dimensions for veteran characteristics are recommended in the Veteran Trees Initiative:

Specialist Survey Method but these may not be appropriate for all species of tree, especially those of a smaller stature (Fay, N. and de Berker, N. (1997): Veteran Trees Initiative: Specialist Survey Method. English Nature, Peterborough, UK). For example, in terms of dead wood in the crown of the tree the unit of value is "each 1m length over 15cm in diameter".

According to the glossary, a veteran tree does not need to be old enough to be ancient.

However, it is likely that for the condition of the tree (decay features of branch death or hollowing) to be judged as irreplaceable habitat, a veteran tree will usually be in a mature life-stage.

In conclusion

- All ancient trees of whatever species or size should receive the level of protection stated in para 175c.
- Mature trees, where they have the appropriate key decay features, should be considered as irreplaceable habitat and therefore veterans to which the policy in para 175c of the NPPF applies.



# JFL 17

# THE AUTHOR'S RESPONSE TO THE ANCIENT TREE FORUM



# FLAC Instruction ref. SC38-1036 OAKHURST RISE

# Cheltenham Borough Council Planning Application ref. 20/00683/OUT: Ancient Tree Forum (ATF) comments of 15.06.20

## Project Arboriculturist's Response

#### Note

The ATF comments are difficult to reference in their original form due to lack of page and paragraph numbering: this response should be read in conjunction with a marked-up version of the ATF document, to which paragraph numbers have been added.

Responses below are enumerated in like numbering to the paragraphs to which they refer.

For reference, we insert here the NPPF definition for ancient and other veteran trees:

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.

- In this paragraph the ATF introduces itself as, in effect, a single-issue pressure group. Whilst
  we support the principle of protection for important trees, one must not lose sight of the
  need for the application of objectivity when identifying which these are. In our view, the
  generally laudable concern shown for such trees by the ATF is potentially a difficulty where it
  impairs objective judgment. The extent to which this has occurred in this case will be
  explored below.
- 2. We disagree that any tree has been wrongly excluded from the list of those identified as veterans. The ATF is here rehearsing the central allegation of the Woodland Trust put before Inspector Sims last year (PINS ref. APP/B1605/W/19/3227293), namely that our ancient, veteran and notable tree recognition system (RAVEN) is not fit for purpose. This matter was ventilated at length at the 2019 Inquiry, further to which Inspector Sims concluded in his Decision Letter (paragraph 58) that RAVEN was suitable, and accordingly all ancient and other veteran trees had indeed been correctly identified.
- 3. 1) The ATF is here seeking to interpret the NPPF in a way that the text of this document does not support, including by cherry-picking and/ or selective quotation. For example, the ATF correctly notes that the NPPF definition for veteran trees states that they do not need to be old enough to be ancient (i.e. ancient trees are the oldest subset of veteran trees), whilst omitting to point out that the NPPF requires veteran trees to be those that are old relative to others of trees of the same species. Thus, there is no such thing as a young veteran tree, where young here refers to comparison to others of its kind.



- 2) The species of the trees with which the ATF takes issue are pedunculate oak (*Quercus robur* L.), a species which in England is known to live to 800 1000 years. Given that the vast majority of such trees in England are younger than 200 years old, it is clearly irrational to suggest that one can qualify as a veteran within the NPPF criterion of *old relative to others trees of the same species* at much less than this age.
- 3) The ATF comments state in terms that they are an *interpretation* of the NPPF, however where the interpretation seeks to ignore a key element of the applicable definition, it should more accurately be described as a *distortion*. For example, the suggestion that trees can qualify based on condition-related features alone (the ATF cites branch death and hollowing), ignores the other two elements of the NPPF definition: age and size. Any assessment of a tree for veteran potential that fails to take these other factors into proper account, is not one undertaken in harmony with the NPPF definition and will, therefore, lead to false positive identifications. It is clear that this is precisely what the ATF has done in this case.
- 4. In this paragraph the ATF seeks further to expand the definition of veteran tree to any tree which has decay features and is mature or ancient. Clearly, if a tree has veteran features and is ancient, it is by definition a veteran. However, the suggestion that "mature" trees with "decay features" are veterans once again ignores the age and size criteria required by the NPPF definition.
- 5. 1) The ATF objects to the inclusion within the RAVEN method of very large stem girth (for species) as a gateway feature for consideration of veteran status. However, in doing so it ignores: the size element of the NPPF definition; a significant body of published advice, including its own recommendations<sup>1</sup>; the unbreakable biological link between increasing age and increasing stem girth; and thus also the age-related criterion in the NPPF definition.
  - 2) Notwithstanding this, the ATF omits to mention that RAVEN allows for cases where trees of smaller girth (due to stunted growth) can qualify as veteran trees, where they still meet the age and condition criteria (albeit no such under-sized trees qualify here).
- 6. No response required.
- 7. 1) In relation to 3010, the ATF states that it exhibits features which meet the criteria for veteran identification. Once again, the ATF ignores that fact that the NPPF sets out <a href="three-en-status">three</a> criteria for veteran status: age and size and condition, all of which must be present simultaneously.

<sup>&</sup>lt;sup>1</sup> Ancient and other veteran trees, Lonsdale D, Ancient Tree Forum 2013, pub. The Tree Council



2) The ATF states that: although it is the view expressed in the tree survey that this tree may not survive long term, there is no indication why it is judged not to be able to survive long-term nor what time period that might be. This statement is straightforwardly false: in the tree survey entry for 3010, we recorded that:

Physiological condition and vitality coupled with structural condition considered likely to limit long-term retention prospects.

The survey entry also records its estimated remaining longevity at 20 years.

- 3) In any event, tree 3010 is neither old relative to others of its kind, nor large and so it fails both the other two NPPF criteria, irrespective of condition and remaining longevity. In relation to its age, using the accepted White Method, we put this at 138 years (likely range 130-150). Even the upper end of this likely range is less than 20% of the lower end of the range for the species maximum (150/800\*100 = 18.75%). Accordingly, it cannot rationally be advanced that 3010 is *old relative to other trees of the same species*. In relation to size, its unimpressive stem diameter of 930mm is well under the threshold size of likely onset of veteran status published by the ATF itself<sup>2</sup>.
- 4) 3010 is not a veteran tree and accordingly does not require a 15x stem diameter buffer zone.
- 8. Tree 3014 can be addressed in like manner to 3010. Whilst it does have features that can be associated with veteran trees, in order for it to meet the definition required by the NPPF for the associated protective policy to apply, it would have to be both larger and older. Here, again, the ATF is seeking to cherry-pick only one of the three stipulated criteria. To reiterate, its suggestion that a tree is a veteran if merely mature and possessed of veteran features is a distortion of the NPPF. This is not to say that the features are not of some value, but unless they are of *exceptional* value (which they are not), then the protective policy does not apply.
- 9. In this paragraph the ATF suggests that other veteran trees may also be present, a notion that they derive from what they describes as the citizen science project known as the Ancient Tree Hunt. Whilst we note in passing the hyperbolic description of tree measuring and recording by hobbyists as "science", our NPPF-based approach, which was subjected to the scrutiny of the Inquiry process and validated by the appeal decision, has not overlooked any veteran trees on this site.
- 10. It follows from the above that there is no need to undertake any further veteran tree survey on the application site.
- 11. This paragraph, which comprises relevant extracts from the NPPF relating to veteran trees, requires no response.

<sup>&</sup>lt;sup>2</sup> Op.cit.



- 12. This paragraph sees the first narrative acknowledgement that the NPPF definition relates to <a href="three">three</a> criteria, not just one (condition). Unfortunately, the ATF advises that there is no guidance [in the NPPF definition] on the parameters of age (except that veterans can be younger than ancient trees). This statement is straightforwardly false: as we point out above, the definition states in terms that veteran trees are those which are old relative to other trees of the same species. The fact that the ATF seeks to obscure this part of the NPPF definition is sadly consistent with the potential for impaired judgment to which we have already referred.
- 13. No response required.
- 14. 1) In this paragraph, the ATF considers guidance in addition to that found in the NPPF. In relation to the PPG, the ATF says that this guidance is as follows:

Veteran trees may not be very old but exhibit decay features such as branch death or hollowing. Trees become ancient or veteran because of their age, size or condition. Not all of these three characteristics are needed to make a tree ancient or veteran as the characteristics will vary from species to species. Our underlining.

- 2) It will be apparent that the underlined text is not consistent with the definition in the NPPF, with three divergences being present:
  - i) The PPG omits the requirement for veteran trees to be *old relative to other trees of* the same species;
  - ii) The PPG rewords the NPPF so as to change the additive construct of the latter (age and size and condition), to an alternative construct (age or size or condition);
  - iii) Finally, the PPG then states explicitly that not all three criteria have to be present for the veteran descriptor to apply.
- 3) From the foregoing it is apparent that there is a tension between what is said in the guidance and the policy. The policy, read objectively, is to be given precedence. Insofar as this was the settled conclusion of the recent appeal on this site, we have, unfortunately, been here before.
- 4) Finally, the ATF draws attention to and quotes from the FC/ NE Standing Advice. We wish to draw attention to and comment on one particular aspect of this guidance. The Standing Advice includes the following: A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features <u>contribute</u> to its biodiversity. Our underlining.
- 5) What must not be forgotten when considering whether a tree qualifies as a veteran is the purpose of identifying it as such: this purpose is the protection of exceptional biodiversity (and/ or other) value. It is <u>only</u> where a tree has exceptional value that it merits the exceptional protection at NPPF 175c.



- 6) In relation to irreplaceable habitat trees, therefore, the NPPF's clear purpose may be summarized simply as 'exceptional protection for exceptional value'. Thus, for the Standing Advice to cite merely *contributory* biodiversity value is a significant departure from the NPPF. As with the PPG, the Standing Advice is subordinate to the NPPF, and the Standing Advice should be read with this in mind.
- 15. No response required.
- 16. No response required.
- 17. In this paragraph, the ATF again seeks to mislead by cherry-picking. The response states: according to the [NPPF] glossary, a veteran tree does not need to be old enough to be ancient. Once again the ATF omits the fact that the glossary also requires such trees to be old relative to their kind.
- 18. No response required.
- 19. Here, at last, the ATF agenda becomes apparent: it seeks nothing less than the reclassification of all mature trees with decay features as veterans. There are several aspects to this which are badly wrong:
  - i) Mature trees with branch death and hollowing are relatively commonplace compared to actual veteran trees;
  - ii) Contrary to the ATF's explicit assertion, mature trees are <u>not</u> "irreplaceable habitat";
  - iii) The effect of the attempted reclassification of mature trees as veterans would be to vastly expand the number of trees attaining veteran status;
  - iv) This is very clearly not the intention of the NPPF, which as we note seeks to afford exceptional protection to exceptional value.

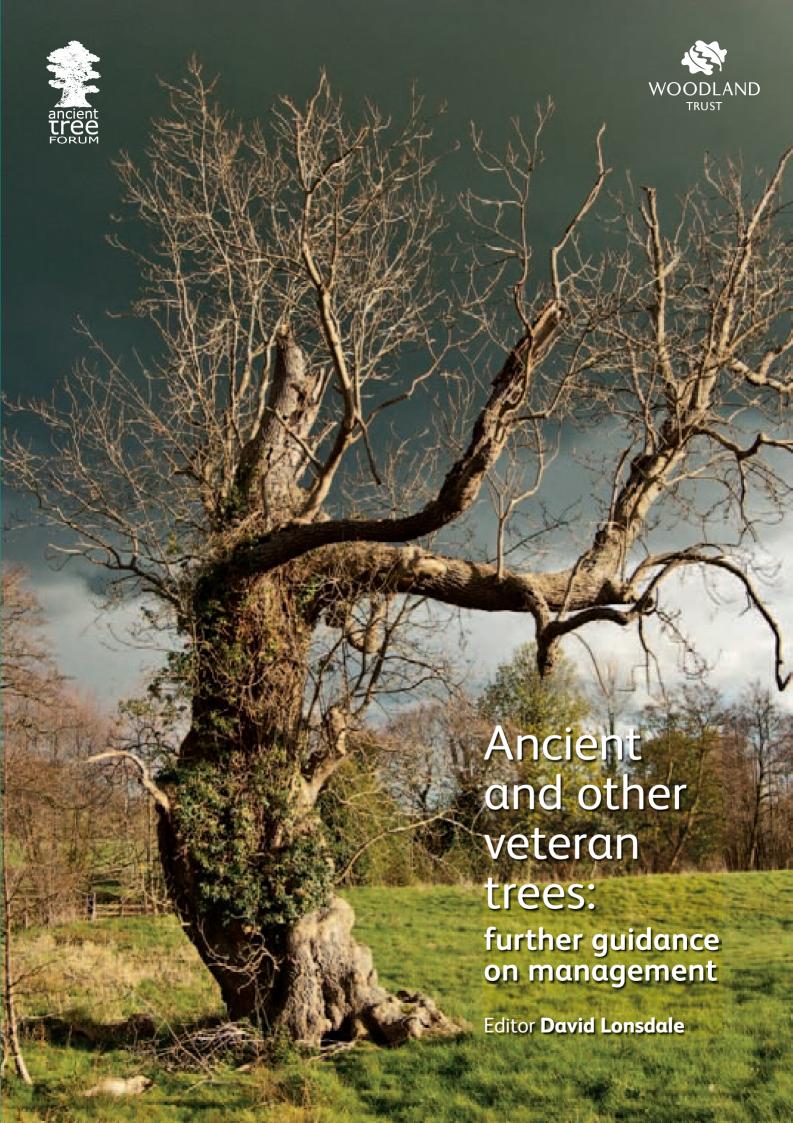
This completes our review of and response to the ATF's comments on the present planning application. We conclude by urging that no material weight should be attached to this organisation's comments. With respect to the ATF, these arguments were rehearsed in front of the Planning Inquiry Inspector: his conclusion was that our interpretation and approach to veteran tree identification are appropriate.

Forbes-Laird Arboricultural Consultancy 24 June 2020



**JFL 18** 

EXTRACT FROM ANCIENT AND OTHER VETERAN TREES,
Lonsdale D, Ancient Tree Forum 2013



## Copyright © Ancient Tree Forum 2013

All rights reserved. No reproduction of this publication or part thereof may be made without the written permission of the Ancient Tree Forum.

First published in February 2013 by The Tree Council 71 Newcomen Street, London, SE1 1YT www.treecouncil.org.uk

A catalogue record for this publication is available from the British Library

The Ancient Tree Forum is a charity that seeks to secure the long-term future of ancient trees through advocacy of the importance of their protection, encouraging research, promoting best conservation practice and increasing people's enjoyment of old trees.

Ancient Tree Forum Registered Office: Registered Charity No. 1071012

c/o Woodland Trust Brian Paul Secretaries Company No. 3578609

Kempton Way Chase Green House www.ancient-tree-forum.org.uk

Grantham Chase Side NG31 6LL Enfield

Middlesex EN2 6NF

ISBN: 978-0-904853-09-4

Lonsdale, D. (ed.) (2013). Ancient and other veteran trees: further guidance on management. The Tree Council, London 212pp.

## Disclaimer

The publishers, editor and contributors will not accept any liability, either separately or jointly, for loss or damage that may be suffered by any person as a result of the use, in any way, of the information presented here.

**Designed and produced** by Pages Creative, Cheltenham, Gloucestershire GL53 7HY www.pagescreative.co.uk

**Printed** by Severnprint, Gloucester, UK on Cocoon Silk 100 FSC, 100% recycled paper Process Chlorine Free (PCF)

# **ACKNOWLEDGEMENTS**

The Ancient Tree Forum gratefully acknowledges the assistance of the following organisations, whose financial contributions made the publication of this book possible:











The Board members also gratefully acknowledge the following organisations, who have endorsed and provided additional support for this publication:













## 1.2 DEFINITION OF ANCIENT AND VETERAN TREES\*

Ancient Tree Guide No. 4 (ATF, 2008) defines an ancient tree as one "that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species". Similarly, according to current guidance for use in the Ancient Tree Hunt (Owen & Alderman, 2008), an ancient tree is one that has all or most of the following characteristics:

- a) biological, aesthetic or cultural interest, because of its great age\*\*
- b) a growth stage that is described as ancient or post-mature
- c) a chronological age that is old relative to others of the same species

Earlier definitions pre-date the distinction that is currently made between "ancient" and "veteran". For example, the above characteristics were listed by Read (2000) as defining a veteran (rather than an ancient) tree. Shortly afterwards, the Woodland Trust adopted a partly age-related definition of veteran in its Position Statement on Ancient Trees (Woodland Trust, 2001).

According to the current distinction, a tree can be a veteran without necessarily being very old. Thus, if a tree has the physical characteristics of an ancient tree but is not ancient in years, compared with others of the same species, it is classed as veteran but not ancient. In the present book, the term veteran is used throughout to describe all trees that have markedly ancient characteristics, irrespective of chronological age. The term ancient is applied specifically to trees that are ancient in years.

More precise and universally accepted definitions of ancient and veteran are probably unachievable, since these terms are to some extent subjective. It is, however, possible to state the general principles by which the above list of characteristics has been derived.

Characteristics (a) and (b) are mainly based on developmental and morphological criteria: i.e. the stage of growth, decline and decay of the tree concerned.

On the other hand, the third characteristic (c) is based on demographic criteria: i.e. the age of the tree, with respect to the age distribution of trees of the same species in a population that is not subject to felling or other sudden lethal events. On this basis, the number of years required to attain ancient status could vary according to climate and other factors that influence the growth rate and longevity of trees.

<sup>\*</sup> Note: Other terms, such as "aged", are sometimes used as synonyms for "ancient".

<sup>\*\*</sup> Note: The biological interest is largely derived from the development of a diverse range of habitats associated with dead and decaying wood. This is a largely age-dependent process: see the further definitions in Section 1.2.1.

BACKGROUN

INTRODUCTION

Crown retrenchment is believed to result from a combination of physiological and biomechanical changes associated with growth and aging (Lonsdale, 2004). The biomechanical changes include an increase in leverage as branches lengthen, together with the effects of an increasing incidence of wood decay. Among the physiological changes, the increase in distance between absorptive roots and shoot tips might be especially important. Also, in broadleaved species, the progressive reduction in the length of annual shoot increments in the crown periphery is thought to lead to an increase in hydraulic resistance because of an associated increase in the number of vessel endings per unit length of branchwood (Rust & Roloff, 2002). A further increase in resistance could occur when sapwood increments become increasingly narrow as a result of being spread around a very large stem girth.

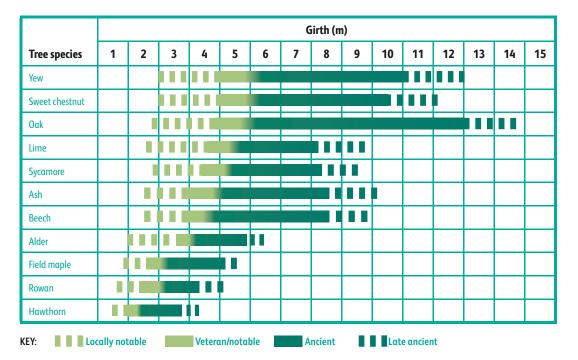


Fig 1.3: Chart of girth in relation to age and developmental classification of trees\*

The following text in this chapter explains the principles that underlie the definition of both categories of veteran tree. Guidance on the practical application of the criteria is provided in Chapter 2.

# 1.2.1 Ancientness in relation to development and form\*\*

The developmental characteristics that tend to develop with increasing age in trees [represented by the second characteristic (b) listed in 1.2 above] include the following:

- a large girth (for the species), owing to the long-continued accumulation of annual increments
- the progressive narrowing of successive annual increments in the stem, associated with sustained diminution of crown volume
- the aging and associated decay (leading to hollowing) of the central wood
- changes in crown architecture (Raimbault, 2006)
- a progressive or episodic reduction in post-mature crown size, often known as retrenchment (Lonsdale, 2004; Rust & Roloff, 2002).

<sup>\*</sup> See 1.2 for definitions of "veteran" and "ancient".

<sup>\*\*</sup> Note: Many trees have a form that originates partly from a history of cutting (e.g. as pollards or coppice). Options for managing veteran pollards and coppice are provided in Chapter 4 of this guide. For definitions of terms such as pollard, coppice and coppard, see: Fay & de Berker (1997).



Fig. 1.4: Ancient hawthorn. Hawthorn can be considered ancient where its girth exceeds about 2.5 metres, as shown on the girth age chart on page 5. Girth at this stage can vary considerably between upland and lowland situations

# 1.2.2 Ancientness defined by chronological age within a tree population

In principle, ancient trees represent a small percentage of a population, in the upper part of the age-range. In practice, however, there is rarely enough demographic information to make a reliable age comparison between a particular tree and the rest of the population of the same species. Also, as a result of felling for many purposes, reference populations are often deficient in trees that have been allowed to age naturally. This makes it difficult to calculate average lifespan and life expectancy in the way that is done with human populations. We can nevertheless often recognise trees that have clearly survived longer than most other individuals of the species concerned.

# 1.2.3 Available categories, in addition to ancient, for classing a tree: veteran, notable, champion and/or heritage

- **Veteran:** this term describes a tree that has survived various rigours of life and thereby shows signs of ancientness, irrespective of its age. In order to qualify as a veteran, the tree should show crown retrenchment and signs of decay in the trunk, branches or roots, such as exposed dead wood or fungal fruit bodies.
- **Notable:** trees qualifying for this category are usually very large (also see champion on page 8), but might not qualify as ancient or veteran. Notable trees have been defined as mature and often magnificent, standing out locally because they are larger than other trees around them (ATF, 2008).

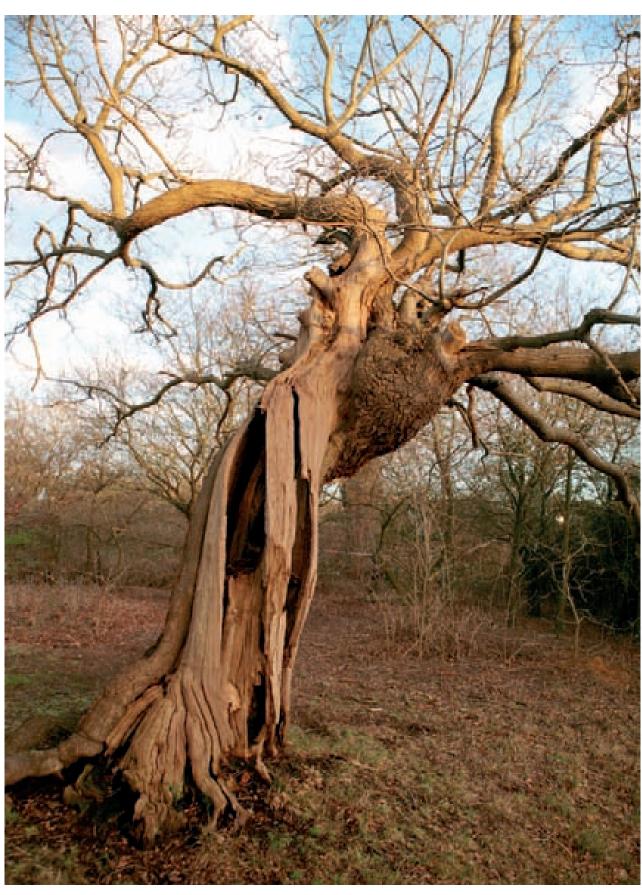


Fig. 1.5: A small oak tree with veteran characteristics, including a healthy crown and a hollow stem

- **Champion:** this term is reserved for a tree that is the tallest or has the largest trunk girth of its kind in the UK (or a given region).
- **Heritage:** trees answering any of the above descriptions could qualify for this category, together with others of special cultural or historical interest.

Surveyors should record trees for possible inclusion in the notable, champion or heritage categories, even if they lack ancient or veteran characteristics.

Certain trees have certain veteran characteristics (e.g. extensive hollowing of the stem), but are relatively small in girth (Fig. 1.5). Such trees should be included in the management plan for the site concerned (see Chapter 2), even if they do not formally qualify as veterans. They can play an important role where nearby ancient trees have no immediate successors and where habitats in smaller hollow trees could therefore help to fill a gap in continuity. Such trees are, however, unlikely to contribute as much to biodiversity in situations such as urban streets, where habitats

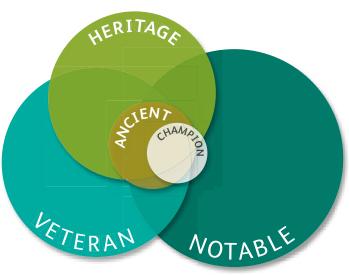


Fig. 1.6: Potential overlap of classification for an individual tree

associated with ancient trees cannot readily develop. The size criteria shown in Fig. 1.3 should be applied, for example, when trees are being evaluated according to BS 5837: 2012, Table 1 (BSI, 2012).

Certain individual trees have special significance because of associations with culture, heritage, history and landscape, as outlined in Section 1.3.2.2. A heritage tree has been defined as one that has contributed to or is connected to human history and culture. Most trees that are valued for cultural or historical reasons are veteran, if not also ancient, but there are a few, such as the Arbor Tree in Shropshire or the Boscobel Oak in Staffordshire, which are substitutes for older trees that have died.

Since the above categories of tree overlap to some extent (see Fig. 1.6), there are certain trees that could be classed in two or more of those categories.

# 1.2.4 Exceptions related to growing conditions and life history\*

Although mis-recording can often be avoided by applying all relevant criteria, there can still be cause for uncertainty. The following are examples of trees that might be hard to classify.

- A relatively young tree that has been affected by adverse factors could show crown retrenchment, hollowing or other characteristics more typical of an ancient tree. Such a tree might simply be in a state of terminal decline, unworthy of recording as a veteran unless it has evidently recovered from adversity and can thereby be regarded as a veteran by virtue of being a survivor.
- A very slow-growing ancient tree could be much smaller in girth than might usually be expected for the species concerned (e.g. in very poor growing conditions or where kept small by pollarding).
- If an ancient tree consists of one or more small-diameter relict portions of the original stem, these could be mistaken for two or more small individual trees.

<sup>\*</sup> See also Section 1.2.1

BACKGROUND



Fig. 1.7: Dead ancient tree retained as a feature in the entrance of a university campus. In the first four years of the Ancient Tree Hunt, 2,905 dead trees of a total of approximately 80,000 ancient and other veteran trees were recorded. Of these, 271 have been verified as ancient

- An unusually fast-growing tree could, relatively early in life, attain a girth typical of an ancient tree, even allowing for good site conditions. The same is true for a "tree" that is really two or more trees that have become established in the same spot (e.g. by bundle planting), but these are said to be identifiable by having an oval cross-section at the base.
- Owing to deviations from a predicted rate of girth expansion over decades or centuries, trees of a similar girth can be very different in age, even next to each other on the same site. Yew trees (*Taxus baccata*) often show this phenomenon.
- A tree could be both large in girth and ancient in years, but without showing significant signs of crown retrenchment. According to developmental criteria, such a tree could be regarded

Most tree species have an indefinite (indeterminate) growth pattern, producing new shoots, roots and radial increments of wood and bark throughout their lives (Lonsdale, 2004). If branches die or break, new ones can replace them by re-iterative growth (Raimbault, 2006) (Fig. 4.12). Since there is generally no theoretical limit to a tree's capacity to produce new tissues, there is no intrinsic limit to its lifespan\*, even though parts of it can die. An accumulation of disadvantageous mutations might limit longevity but advantageous mutations could have the reverse effect. The growth of trees is therefore fundamentally different to that of most animals, including man, despite misconceptions that tree species in general have a fixed lifespan.

Even though trees of most species do not have a fixed lifespan, they eventually die owing to a variety of changes and factors that tend to accumulate with age. These include the progressive attenuation of new increments of growth around an increasingly large dead, central core.

<sup>\*</sup> The main exceptions are species that do not produce radial increments (e.g. palm trees) or that tend to do so only for a limited number of years (mostly small, shrubby species).

- 1
- 2
- J
- 4
- 5

as post-mature, rather than ancient, and yet would clearly merit recording and protection (see Chapter 2, regarding notable and champion trees).

• As a result of recent vigorous growth in response to cutting, the crown of an ancient tree could have a form that is more typical of a young or mature tree.

The above possibilities should be taken into account in surveys, especially when tree age is estimated (see Chapter 2).



## **JFL 19**

REPORT FOR RULE 6 PARTY
PREPARED BY
BARTON HYETT ASSOCIATES



# LAND ADJACENT TO OAKHURST RISE, CHELTENHAM



## ARBORICULTURAL REVIEW

Prepared for: Charlton Kings Friends

Prepared by: Ian Monger

10 September 2020

Project reference: F.2622

Website: www.barton-hyett.co.uk

## CONTENTS:

INST	TRUCTIONS	2	
SCC	PE OF WORK	2	
DOC	DOCUMENTS USED TO PREPARE THIS REPORT		
SUMMARY			
1.	INTRODUCTION	4	
2.	METHOD OF REVIEW	6	
3.	REVIEW OF THE SUBMITTED ARBORICULTURAL REPORT AND OBJECT	ION	
	RESPONSES	6	
4.	REVIEW OF THE DEVELOPMENT PROPOSAL IN RELATION TO TREES	10	
5.	CONCLUSIONS	18	
6.	RECOMMENDATIONS	19	
RFFI	REFERENCES:		



#### **Instructions**

<u>Received from</u>: Mrs Sally Walker, resident of Charlton Manor, Ashley Road, Cheltenham, on behalf of the community group 'Charlton Kings Friends' (CKF).

<u>Terms of reference:</u> to review the submitted outline planning application regarding land adjacent to Oakhurst Rise, Cheltenham (ref: 20/00683/OUT) and provide a statement commenting on the arboricultural elements of the development proposal. This follows a similar instruction for my colleague Paul Barton to comment on a previous application (ref: 18/00710/OUT), which was refused in March 2019.

#### Scope of work

The scope of my instructions are to:

- visit the application site to familiarise myself with the trees and site context
- review the arboricultural information submitted with the application
- prepare a report giving an independent view of the impacts of the development proposal on the trees at the site.

#### Documents used to prepare this report

In preparing this report, the following documents (amongst the full suite of submitted documents) have been obtained from the Cheltenham Borough Council website:

- Proposed site plan drawing no: PL005 Rev B (April 2020)
- Arboricultural report ref: SC38-1036 (April 2020)
- Landscape Strategy plan drawing no: 19216.101 Rev F (April 2020)
- The Woodlands Trust consultee comment (June 2020)
- Ancient Tree Forum consultee comment (June 2020)

A copy of Tree Preservation Order (TPO) (No.1, 1981) was also obtained from the Cheltenham Borough Council tree officer.

#### **Summary**

The revised planning application for reduced number of dwellings proposed has clearly improved the development proposal in terms of the retention of veteran and protected trees, but the development proposal still has the potential to cause harm to significant trees. In



particular, hydrological changes due to obstruction of soil water flows by new structures may have an adverse impact. Despite protective measures that have been recommended, disturbance to the veteran tree habitats (including soil, ground flora and fungi) during construction and in the site's end-use is likely to occur. There remains a significant risk of permanent damage to high value trees, and of deterioration of the irreplaceable habitats of veteran trees.



#### 1. Introduction

- 1.1. I am Ian Monger, senior arboricultural consultant at Barton Hyett Associates and a professional arboriculturist. I have 15 years experience working in the arboricultural sector including senior tree officer for a unitary local authority and as an independent consultant (which has included freelance tree officer work for a unitary authority). I am a professional member of the Arboricultural Association. I hold a BSc (Hons) in Environmental Science and Level 3 Technicians Certificate in Arboriculture. I am currently appointed by The Planning Inspectorate as a Non-Salaried Inspector for the determination of TPO appeals.
- 1.2. I have been asked to provide an independent review of the documents submitted to Cheltenham Borough Council (CBC) in relation to an outline planning application for development of an existing field to the north of St Edward's Preparatory School, to the east of Oakhurst Rise, Cheltenham. The outline planning application is for the construction of 43 dwellings consisting of a mixture of house types and flats. The application seeks approval for the proposal's access, layout and scale but appearance and landscaping are to be a reserved matter.
- 1.3. A previous outline planning application for 69 dwellings was refused in March 2019. Reasons for CBC's refusal can be summarised as:
  - Failure to address constraints and requirements of the land allocation policy within the emerging Cheltenham Plan
  - The loss of trees within the site including a significant TPO'd tree and likely deterioration of retained veteran trees
  - Impact on the setting of nearby listed buildings
- 1.4. CBC's additional reasons for refusal on ecology and visual impact grounds were later withdrawn.
- 1.5. An Appeal against the refusal was dismissed in September 2019. The balancing of planning considerations which led the Inspector to dismiss the Appeal stand on their own. In any case, this new planning application will be considered by CBC on the basis of the details of new proposal, current national and local planning policy and consultation responses. I make some reference to Forbes-Laird Arboricultural Consultancy's (FLAC)



Proof of Evidence to the Appeal where explanation of its tree assessment methodology is missing from the current submission.

- 1.6. An arboricultural report prepared by FLAC has been submitted with the new planning application. This includes a tree survey, proposed tree retention and removal plan and a tree protection plan.
- 1.7. This review seeks to provide an independent arboricultural viewpoint on the merits and potential impacts of the proposed development on the site's trees. It is not intended to investigate or question the professionalism or competence of the author of the submitted arboricultural reports. I acknowledge that many aspects of arboricultural consultancy are inherently subjective and that there are numerous interpretations of published guidance, recommendations and standards that can affect the conclusions made on a site.



#### 2. Method of review

- 2.1. In order to review the planning application and its impact on trees, I began by obtaining the development proposal plans and arboricultural report.
- 2.2. Following a desktop review of these documents, I made a site visit on 3rd August 2020, where I met Mrs Walker (Charlton Manor) and walked over the site to discuss some particular matters pertinent to this planning application.
- 2.3. This review has been conducted as a desktop study having studied the amended proposal and the arboricultural report and submitted comments which are available for public viewing on the council's online planning application register.

#### 3. Review of the submitted arboricultural report and objection responses

- 3.1. The FLAC arboricultural planning submission (ref: SC38-1036, April 2020) consists of a tree survey schedule with a key, 'RAVEN' tree assessment, tree retention and removal plan and an outline tree protection plan. The submission is brief and succinct, dealing with matters arising from the Appeal and how they have been addressed, how the proposal complies with national and local planning policy (including the Tree Preservation Order (TPO) and a matter for resolution by the Planning Committee relating to tree 3015.
- 3.2. The submission itself provides minimal site-specific description or commentary regarding the impacts of the proposed development. The tree schedule contains all the site-specific details of the trees, including a column labelled 'Proposal' which states whether each tree/ group/hedge is to be retained, partially retained (groups and hedges) or removed in order to facilitate the development.

#### Veteran/ancient tree categorisation

3.3. The Woodland Trust (WT) and the Ancient Tree Forum (ATF) have submitted detailed objections to the proposal (June 2020), and refer to FLAC's submitted report and to the 'Ancient Woodland, ancient trees and veteran trees: protecting them from development' guidance ('Standing Advice') produced by the Forestry Commission and Natural England. The WT objects on the basis of damage and deterioration of seven veteran trees. The ATF



- objects because they assert that the way veteran trees have been identified by FLAC means that trees which should be protected as such by national planning policy have been wrongfully excluded. FLAC has provided detailed responses to each objection (June 2020) which together add a significant degree of additional commentary to the submitted report.
- 3.4. The objections and subsequent responses focus on disagreements about: the definitions of what is a veteran tree within the national planning policy, policy guidance and published literature, the methodology for assessing veteran trees and the categorisation of the site's trees which follows from these. FLAC's submission uses its in-house 'RAVEN' methodology and identifies 7 veteran trees at the site. The 'RAVEN' methodology, while not as such 'endorsed' by the Appeal Inspector (in the usual sense of the word), was certainly accepted. In contrast, the WT use as their starting point the Ancient Tree Inventory (ATI) to identify veteran trees at the site (which is a source of information 'endorsed' within the Standing Advice (in the usual sense of the word), despite criticism of it from FLAC). The ATF focuses on the characteristics of veteran trees as the starting point. Both the WT and ATF disagree strongly with RAVEN's reliance on tree age/stem size as a starting point.
- 3.5. The result of the different approaches is that:
  - The WT identify five additional trees (3010, 3014, 3015, 3022, 3027) which they believe should have been identified as veteran in the submission
  - The ATF identify at least two additional trees (3010, 3014) as veteran, with insufficient information on others
  - FLAC identify 4 trees (3021, 3026, 3028, 3031) which neither WT nor ATF highlight as veteran trees (albeit the ATF might include these with sufficient information).
- 3.6. Identifying veteran trees is not a straightforward or simple exercise when very old trees are in question, and there is demonstrably some inherent subjectivity involved which can include perceptions of age, rarity or special landscape context. Therefore, it is not my intention to muddy the waters for CBC with a fourth independent assessment. The FLAC report uses a consistent and transparent methodology in identifying the site's veteran and ancient trees, and so I do not find a sufficient reason to disagree with its findings in this regard.



#### Application of Veteran Tree Buffers (VTBs)

- 3.7. The FLAC report and plans include veteran tree buffers (VTBs) around all trees identified as veteran/ancient trees, which includes all those assigned the A3 quality category.
- 3.8. Three of the veteran/ancient trees 3007, 3021 and 3028 are identified as 'relic' veteran trees in the RAVEN assessment. RAVEN defines a 'relic' veteran tree as one bearing <75% of its former maximum crown volume. FLAC explained the concept of a 'relic' veteran tree within the arboricultural Proof of Evidence to the 2019 Appeal:
  - '3.3.8 Concerning Natural England's veteran tree buffer recommendation, this is clearly a precautionary, rather than evidence-based, protective distance. Whilst as a generality this might be suitable for some trees (albeit not justifiably applied as an absolute), it is the case that many veteran trees simply do not require a protective offset of the magnitude computed by the Natural England method (15 times stem diameter).
  - 3.3.9 This is because many veteran trees with a large-diameter stem have lost the greater majority of their original crowns. Because there is an unbreakable, biologically-imperative link between roots and shoots (known as the root:shoot ratio), such trees have a correspondingly compact root system too. Logically, it follows that where a tree occupies a much smaller biological space as a result of significant crown loss, it can be safeguarded by a reduced protective buffer compared to where it does not.'
- 3.9. Instead of a VTB of 15 times the stem diameter recommended in the Standing Advice, the RAVEN methodology caps the VTB at 15 metres radius which results in a smaller area/volume of soil being afforded protection in the site design and construction methodology.
- 3.10. The concept of a 'relic' veteran tree is not recognised in the Standing Advice, nor in published veteran tree literature or the objections of the ATF and WT. Nor does it appear within the RAVEN methodology itself.
- 3.11. The 'relic' veteran tree concept focuses on the 'much smaller biological space' that a veteran tree with a reduced crown and root system may take. But the Standing Advice VTB seeks not only to mitigate damage to a tree's roots (which might still exist beyond a



- calculated root protection area (RPA) or VTB), but also to mitigate direct impacts to soil, ground flora and fungi, the water table and drainage, and from pollution and disturbance to wildlife.
- 3.12. The application of a VTB to a veteran tree in accordance with the Standing Advice is not a means to *avoid* impacts, but is a means to *reduce* (mitigate) impacts. In this way, a VTB is necessarily precautionary to reduce impacts to an irreplaceable habitat.
- 3.13. It should be noted that the RAVEN methodology recognises extensive decay, extensive hollowing, crown senescence and retrenchment as additional primary features of veteran trees, but the 'relic' concept then downgrades the degree of mitigation provided by a VTB based on these these very factors. This is akin to 'begging the question'.
- 3.14. Whereas the Standing Advice would afford trees 3007 and 3021 VTB diameters of 21.8m and 22.8m respectively, they are only provided with VTBs of 15m diameter in FLAC's submission.
- 3.15. It is of note that FLAC's definition of a VTB for a 'relic' tree on the tree survey and retention plan submitted for the 2018 planning application was '...a maximum and fixed VTB... of 15m radius'. FLAC did not adhere to its own definition in that submission. As before, the FLAC submission for the current proposal calculates the VTB of tree 3028 on the basis of a smaller north-west fragment of the original stem which is alive measured as 740mm diameter as 15 times the remaining stem diameter, giving a VTB radius of 11m. Any definition of a VTB for a 'relic' tree (whether at a fixed 15m radius or not) has been removed from the current submission.
- 3.16. I am unconvinced by the concept of 'relic' trees, of FLAC's application of VTBs to them and of how this relates to the Standing Advice on veteran trees.
- 3.17. While the application of the concept of 'relic' veteran trees has no consequences for tree 3007 in the submitted design, it has significant consequences for potential impacts to 3021. The Standing Advice VTB of 15 times the stem diameter would bring the buildings and gardens of Plots 10, 11 and 13 and the road leading to Plot 10 within the VTB.



#### Arboricultural Impacts Assessment (AIA).

- 3.18. The FLAC submission lacks detail on the anticipated impacts of the development proposal. The assessment of impacts to trees is confined to a column in the tree schedule that states whether the tree is to be retained or removed, as shown on the submitted tree removal and retention plan.
- 3.19. The report does not provide comment on potentially damaging construction activities relevant to the site such as alterations in ground levels. While FLAC provided observations on potential hydrological impacts on trees in its Proof of Evidence to the Appeal, no assessment has been provided for the current application. Longer-term end-use indirect impacts on the veteran tree habitats, such as increased light from dwellings is not assessed. Although this may be beyond the remit of an arboriculturist, at least some recognition of potential end-use impacts should be provided for further ecological assessment and design.

#### 4. Review of the development proposal in relation to trees

- 4.1. The FLAC submission summarises that the design of the proposals allows the retention of tree 3014 and the removal of all construction and gardens from veteran tree buffer zones, which it says addresses the matters arising from the Appeal decision in full.
- 4.2. The reduced number of dwellings proposed has clearly improved the development proposal from an arboricultural point of view. Trees, including the significant notable and veteran trees, are afforded more open space around them which will reduce the potential for damage and decline. New surface and foul drains within the proposed residential area are accommodated within the new road layout and outside of the RPAs and VTBs of trees.
- 4.3. There are several aspects of the proposal which are of note:

#### Retention of protected and veteran/ancient trees

4.4. The new design proposal for the site retains English oak tree T3014. The design also retains all of the trees identified as veteran trees within FLAC's submitted RAVEN



- assessment, as well as all trees identified as veteran on the ATI. All individually-protected trees within the TPO will be retained.
- 4.5. Protected trees (those trees within area A3 of the TPO and present when the TPO was made) within TG3008 at the north-west site boundary would be removed for the new site access and for Plots 1 and 42/43.

### Potential impacts of the proposed development Oaks 3014 & 3015

- 4.6. Oak tree 3014 has been categorised as a B3 quality tree and has an RPA of 11.76m radius. However, given that the tree as 40+ years remaining safe useful life expectancy and has some veteran characteristics with the potential to become a veteran the tree appears to be a 'high' value tree within the definition of policy GI3 Trees and Development of the Cheltenham Plan. Oak tree 3015 has been categorised as an A1 quality tree and has an RPA capped at 15m radius.
- 4.7. The proposal is to isolate the two trees together within an island of open space surrounded by new road to the north, east and south and Plots 29 and 32 to the west. New structural street tree planting will be provided along the road edges.
- 4.8. A small portion of the periphery of the RPA of 3014 is within the boundary of Plot 30 and meets the foundations of the dwelling. Although RPAs are the standard layout tool when considering trees and development, it is worth underlining that an RPA is the *minimum* area around a tree deemed to contain sufficient roots and rooting volume to maintain a tree's viability. Recent research in to the extent of tree roots of old trees has shown that roots extend well beyond the 'drip line' of the canopy, and beyond the capped 15 metre radial RPA as recommended in BS5837. Using a ground penetrating radar, the roots of a mature oak tree at Burghley Estate were found at 24 metres from the stem¹. It is therefore anticipated that the proximity of Plot 30 would result in some some root severance/loss, and soil disturbance within this area is inevitable.
- 4.9. A small portion of the north-west part of the notional RPA of 3015 (25m² or approx 3.5%) will be impacted by the proposed carriageway turning head, footway and car parking

<sup>1 &#</sup>x27;An examination by TreeRadar: http://sharonhosegoodassociates.co.uk/wp-content/uploads/2017/01/Burghley-TreeRadar-report.pdf



- spaces for Plot 29. The FLAC report demonstrates that an additional 50m<sup>2</sup> of land contiguous with the RPA can be protected from construction activity. FLAC's assessment is that the incursion would not result in a material adverse impact on the tree, but suggest no-dig construction as an option to reduce the risk of adverse impact further. The feasibility of no-dig construction of highway proposed for adoption depends on whether the Highway Authority accept this construction method as meeting its standards.
- 4.10. The submitted tree protection plan shows the location of physical protective barriers and the area of road and parking which could be constructed using a no-dig cellular confinement system. A brief working method for installation of the surface is provided on the plan. I am concerned that the locations of the protective barriers leave very little working space for, for example, excavation to achieve levels and any grading that might be required and installation of kerbs and haunching. Additional working space might necessitate slightly greater incursions into RPAs than shown on-plan. But given that the application is for outline permission, more detailed information could be approved at a later stage.
- 4.11. The isolation of the trees within the open space island, surrounded by hard surfaces with associated drains on the sloping ground above T3015 may alter the local hydrology of the soil, reducing the availability of soil moisture to the trees.
- 4.12. Alteration of the shallow (max. 0.5m deep) topsoil by the construction of the carriageway to the south and east of the trees potentially could reduce the downward flow of water to the trees, or conversely could lead to containment of water within the RPAs. The shrinkable clay ground conditions might require deeper construction extents than is typical, and no detailed assessment of potential hydrological impacts on the trees has been provided for the current application.
  - Veteran oaks 3007, 3018, 3026, 3030 & 3031
- 4.13. The VTBs of veteran oaks 3007, 3018, 3026, 3030 & 3031 are fully respected within the layout in accordance with the Standing Advice. No structures, new surfaces or drains are located within the VTBs. This is a significant improvement on the previous proposal. The feasibility of protecting the VTBs from construction activity is demonstrated.



#### Veteran ash T3021

- 4.14. The application of the concept of 'relic' veteran, and the associated VTB which is capped at 15m by FLAC, has consequences for potential impacts to 3021. The capped VTB is respected by the layout except for a small part of the west periphery which is included within the garden of Plot 10. However, the Standing Advice VTB of 15 times the stem diameter (22.8m radius) would bring the buildings and gardens of Plots 10, 11 and 13 and the road leading to Plot 10 within the VTB.
- 4.15. If CBC accept the concept of a 'relic' veteran tree and the application of a 15m cap on its VTB, this would appear to be contrary to the Standing Advice.
- 4.16. Obstruction of the downward flow of water through the shallow (max. 0.5m deep) topsoil by structures to the north and north-east could lead to decreased availability of water within the VTB. The shrinkable clay ground conditions might require deeper building foundations than is typical, and no detailed assessment of potential hydrological impacts on the trees has been provided for the current application.

#### Veteran oak T3028

- 4.17. The layout design respects the VTB of oak 3028, although rear gardens and the garage of Plot 7 abut the edge of the VTB.
- 4.18. I am concerned that the location of the protective barrier adjacent to the garage of Plot 7 leaves very little working space. Additional working space, including scaffolding which straddles the protective barrier, might necessitate a slightly greater incursions into the RPA than shown on-plan. But given that the application is for outline permission, more detailed information could be approved at a later stage.
- 4.19. The tree would become partially isolated between new dwellings, and I am concerned that the fencing specification shown on the tree protection plan is inadequate to protect against ground and dust pollution during construction. A more appropriate specification (including screening barriers) could be approved at a later stage. I am also concerned about indirect impacts such as increased light from dwellings could degrade the habitat. It is not uncommon for isolated areas such as this to suffer from tipping of garden waste and informal access. The submitted landscape strategy identified that the area is not suitable for public access, and that appropriate deterrent planting can help to mitigate some of the



- potential indirect impacts. Consideration should be given to securing more detailed information at a later stage.
- 4.20. Obstruction of the downward flow of water through the shallow (max. 0.5m deep) topsoil by structures to the north and north-east could lead to decreased availability of water within the VTB. The shrinkable clay ground conditions might require deeper building foundations than is typical, and no detailed assessment of potential hydrological impacts on the trees has been provided for the current application.

#### Protected oaks 3032 & 3033

- 4.21. The site's drainage outflow to existing off-site connections to the south and south-west is proposed to pass through the RPAs of protected oak trees 3032 and 3033. This is an improvement on the previous application, which proposed drainage through the VTB of veteran oak 3031. The tree protection plan notes that a trench-less technique should be used to minimise damage, and the arboricultural Proof of Evidence provided at the Appeal indicated that trench-less techniques are feasible.
- 4.22. It is reasonable to accept that more detailed specifications and working methods, which should include on-site arboricultural supervision, can be approved at a later stage.

#### Proposed Landscape Strategy

- 4.23. The proposed landscape strategy includes planting of a new native species woodland belt to the south-east of the residential area running from veteran oak 3007 to meet hedgerow group TG3005 at oak 3022. New open space, street and garden tree planting is also proposed. In the long-term, future mature canopies of new street tree and woodland belt planting may meet above the proposed carriageway and provide connectivity to the isolated oaks 3014 and 3015.
- 4.24. The proposed woodland belt contributes to compensating for the connectivity lost by the severance of the hedgerow group TG3005 for the proposed layout, and would eventually provide a visual screen. However, these benefits will take time to accrue, and the success of tree/woodland establishment depends on the adequate allocation of resources to, and implementation of, a new tree planting management plan. A new 10-year tree



- management plan 'heads of terms' document has been submitted which aims to achieve 100% successful establishment of new tree and hedge planting.
- 4.25. The ground at the site has been shown to be a maximum of 0.5m deep slightly silty clay topsoil over firm to stiff clay. Obstruction of the downward flow of water through the shallow (max. 0.5m deep) topsoil by structures to the north and north-west could lead to decreased availability of water within the planting area.
- 4.26. The site's documented aspect and ground conditions and my observations on site suggest to me that successful tree establishment, to independence in the landscape, is likely to require a high level of resources over a long period of time. The usual landscape scheme tree replacement condition period of 5 years is likely to be insufficient to secure delivery of an approved detailed scheme in the long-term. A condition for the implementation of the new tree management plan over its full 10-year period would provide a stronger basis to ensure successful establishment of the new trees. If reliance is placed on planning condition(s) for the successful implementation of the detailed landscape scheme, the wording of such condition(s) should be carefully considered.
- 4.27. Although not a common practice, a Tree Preservation Order (TPO) can be made to protect trees to be planted pursuant to a condition imposed under paragraph (a) of section 197 of the TCPA (planning permission to include appropriate provision for preservation and planting of trees). That is to say, a TPO can be made to protect trees, groups of trees or woodlands *yet to be planted*, but which are specified within an approved detailed landscape scheme. Such an Order takes effect from the time the trees are planted.
- 4.28. For a tree protected by such as TPO as an individual or within a group of trees (but not woodlands) landowners have a duty to replace a tree which is removed, uprooted or destroyed because it is dead (or in contravention of the Order or because it presents an immediate risk of serious harm). The local planning authority can enforce this tree replacement duty by serving a tree replacement notice. (Enforcement by serving a tree replacement notice is discretionary, can be dispensed with and can be appealed).
- 4.29. The making of a new TPO to protect at least the new woodland belt as a group (or groups) of trees would provide CBC with a stronger basis on which to ensure the successful establishment of the new trees in the longer-term.



#### National and Local Planning Policy

- 4.30. Paragraph 175c of the National Planning Policy Framework (NPPF) 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'.
- 4.31. In my opinion, while the current proposal is much-improved from the previous proposal, there remains a significant risk that the proposed development could have a negative impact on some of the veteran trees from construction pollution and end-use light pollution, and by changing the soil ecosystem and hydrology that would lead to their premature deterioration.
- 4.32. CBC's Cheltenham Plan was adopted in July 2020. It makes specific reference to the importance of trees in the local landscape, and contains four policies of relevance to trees at the site:

#### HD4: Land off Oakhurst Rise

This site-specific policy includes requirements for development proposals for Oakhurst Rise to demonstrate the protection of key biodiversity assets and mature trees and the long term protection of mature trees and hedges.

#### D3: Private green space

The policy requires that proposals for development within extensive grounds of large properties... where appropriate, will be required to: a) retain mature trees; b) retain and enhance existing landscaping; c) provide new landscaping; d) avoid disturbance of significant habitats.

#### GI3: Trees and development

Development which would cause permanent damage to trees of high value (Note 1) will not be permitted. (Note 1: 'High value' means a sound and healthy tree with at least 10 years of safe and useful life remaining which makes a significant contribution to the character or appearance of a site or locality).



The proposal includes the removal of mature trees, such common ash 3016, the protected trees within TG3008 and trees within TG3005. Hydrological changes due to obstruction of soil water flows by new structures may have an adverse impact on, in particular, high quality trees 3014 and 3015 and veteran trees 3021, 3028 and 3021. Despite protective measures, disturbance to the veteran tree habitats (including soil, ground flora and fungi) during construction and in the site's end-use is likely to occur. In my opinion, the proposal does not comply with policies HD4, D3 and GI3.

The proposed landscape strategy can provide a net gain in the overall canopy cover at the site and enhance the existing resource. In my opinion, the proposal complies with elements b) and c) of policy D3.

#### GI2: Protection and replacement of trees

In cases where trees are not protected by a Tree Preservation Order or by being in a Conservation Area, but contribute to the townscape and character of the town, the Council will consider including such trees in a Tree Preservation Order.

Given the difficult growing conditions at the site, the making of a new TPO to protect at least the new woodland belt as a group (or groups) of trees would provide CBC with a stronger basis on which to ensure the successful establishment of the new trees in the longer-term.



#### 5. Conclusions

- 5.1. My review of the site and the submitted arboricultural report leads me to the following conclusions:
- 5.2. The application site contains numerous trees that are of high value from a conservation and historical point of view. Seven of these are considered to be veteran trees which provide an irreplaceable habitat and many are important landscape tree features. As such, a precautionary approach should be adopted when designing any development proposals at the site to in order to reduce negative impacts on the trees, their soil, ground flora and fungi, the water table and drainage, and from pollution and disturbance to wildlife. This approach is clearly set out at both the national and local level planning policy.
- 5.3. The arboricultural information submitted with the planning application is succinct. The FLAC report uses a consistent and transparent methodology in identifying the site's veteran and ancient trees, and so I do not find a sufficient reason to disagree with its findings in this regard. However, it lacks a detailed assessment of the the development impacts to trees and conversely from trees to the development in future years. While FLAC provided observations on potential hydrological impacts on trees in its Proof of Evidence to the Appeal, no assessment has been provided for the current application.
- 5.4. The concept of a 'relic' veteran tree is not recognised in the Standing Advice, nor in published veteran tree literature or the objections of ATF and WT. Nor does it appear within the RAVEN methodology itself. The application of the 'relic' veteran tree VTB has significant consequences for potential impacts to 3021. If CBC accept the concept of a 'relic' veteran tree and the application of a 15m cap on its VTB, this would appear to be contrary to the Standing Advice.
- 5.5. The reduced number of dwellings proposed has clearly improved the development proposal in terms of the retention of veteran and protected trees, but the development proposal still has the potential to cause harm to significant trees. In particular, hydrological changes due to obstruction of soil water flows by new structures may have an adverse impact on, in particular, high quality trees 3014 and 3015 and veteran trees 3021, 3028 and 3021. Despite protective measures, disturbance to the veteran tree habitats (including



- soil, ground flora and fungi) during construction and in the site's end-use is likely to occur. In my opinion, the proposal does not comply with policies HD4, D3 and GI3.
- 5.6. Site conditions suggest to me that successful new tree establishment, to independence in the landscape, is likely to require a high level of resources over a long period of time. The usual 5 year landscape scheme tree replacement condition period is likely to be insufficient to secure delivery of an approved detailed scheme in the long-term. If reliance is placed on planning condition(s) to achieve this, the wording of such condition(s) should be carefully considered. The making of a new TPO to protect at least the new woodland belt as a group (or groups) of trees once planted would provide CBC with a stronger basis on which to ensure the successful establishment of the new trees in the longer-term.

#### 6. Recommendations

- 6.1. I have concluded through my review of the site and the proposed development that there remains a significant risk of permanent damage to high value trees, and of deterioration of the irreplaceable habitats of veteran trees.
- 6.2. I recommend that a detailed soil analysis and hydrological assessment is carried out in order to understand the soil hydrology and how the proposal would impact the high quality and veteran trees.

lan Monger

BSc (hons), MArborA.

Senior Arboriculturist



#### **References:**

- 1) British Standards Institution (2012). BS5837:2012 'Trees in relation to design, demolition and construction recommendations'.
- 2) Cheltenham Borough Council (2006). 'Cheltenham Borough Local Plan Second Review 1991-2011'.
- 3) Department for Communities and Local Government (2012). 'National Planning Policy Framework'
- 4) Forestry Commission & Natural England (2018). 'Guidance: Ancient woodland and veteran trees: protecting them from development". Viewed online at: <a href="https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences#veteran-trees">https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences#veteran-trees</a>.
- 5) Hosegood, S., Lee, I. (2016). An unpublished report of the examination of tree roots of an oak tree at Burghley Estate. Viewed online at: <a href="http://sharonhosegoodassociates.co.uk/wp-content/uploads/2017/01/Burghley-TreeRadar-report.pdf">http://sharonhosegoodassociates.co.uk/wp-content/uploads/2017/01/Burghley-TreeRadar-report.pdf</a>.



## **JFL 20**

## THE AUTHOR'S RESPONSE TO BARTON HYETT ASSOCIATES



#### FLAC Instruction ref. SC38-1036 OAKHURST RISE

Cheltenham Borough Council Planning Application ref. 20/00683/OUT:
Barton Hyett Associates' *Arboricultural Review*, 10.09.20

#### Project Arboriculturist's Response

#### Introduction

- 1. I note that there is widespread common ground between us on arboricultural matters, including on the identification of ancient and other veteran trees, and on tree retention/ and removal outcomes arising from the proposals.
- 2. In light of this, BHA's concerns can be distilled to two matters:
- i) The concept of 'relic' trees; and
- ii) How the identified veteran trees would be safeguarded.

I discuss these matters in turn below.

#### Relic trees

- 3. The concept of the relic tree is a response to the simple fact that the size of a tree's stem is driven by the maximum size of its crown: the protection afforded by any multiplier of stem size must, therefore, relate to safeguarding the tree at its peak size and, it follows, peak biological activity.
- 4. To some extent, maintaining a maximum safeguarding distance for a tree that is only marginally smaller than its peak size is reasonable. But at some lesser size this ceases to make sense due to the progressive reduction of the biologically active space that accompanies a diminishing tree.
- 5. Thus, if a tree is a *relic* of its former self, it is reasonable and proportionate to adjust the safeguarding requirement to reflect the reduction in biologically-active space that accompanies this. The estimate of crown loss threshold is set at 75% such that where a tree bears 25% or less of its estimated former maximum crown size, it passes the threshold for relic status.
- 6. The best example of a relic tree on this site is the ash tree numbered 3021, a photograph of which helpfully appears on the front cover of BHA's *Arboricultural Review*. Looking at this image objectively, it is clear that this is a tree missing the vast majority of its crown, and which bears a stem subject to massive vascular dysfunction. As a greatly diminished specimen it would plainly be irrational to treat it as if it were at its full size.



7. Where a relic tree is present (in this case with trees 3007, 3021 and 3028), I recommend applying protection via the RPA principle, calculated from the maximum continuity of vascular function in the stem, out to a cap of 15m.

8. Whilst the *Standing Advice* does not refer to the relic approach, equally it is clear that it does not address situations, such as tree 3021, where large-stemmed trees bear minimal residual crowns: simply, this is a matter on which it is silent. As such, practical, professional judgment is both required and desirable.

9. This was the approach taken with the appeal scheme and was accepted by the Inspector:

At the Inquiry, it was equally established that there was no substantive dispute among the parties to the appeal that the root protection areas (RPAs) and veteran tree buffers (VTBs) of the trees proposed to be retained in the development have also been correctly defined in terms of BS5837 and Natural England Standing Advice

(Appeal Decision 20 September 2019 para 59, page 8).

#### Safeguarding measures for veteran trees

10. The BHA reviewer identifies a number of areas where he considers veteran trees could be adversely affected by the proposed development. Planning conditions are proposed to ensure protection of existing trees during construction, the ground water arrangements associated with the development, and the future management of all trees.

11. Thus working space, hydrology and light pollution - raised as issues by BHA - are all subject to Conditions, within the compass of which further safeguarding details can be sought by the Council in due course. These details will be submitted to the LPA for their approval, which accordingly retains full control over both process and outcome.

Julian Forbes-Laird

BA(Hons), Dip.GR.Stud, MICFor, MRICS, MEWI, Dip.Arb(RFS)

15 September 2020



## **JFL 21**

## PROPOSED VETERAN TREE MANAGEMENT PLAN



Land Adjacent to Oakhurst Rise, Cheltenham

Veteran Tree Framework Management Plan

Quality Management			
Client:	William Morrison (Cheltenham) Ltd		
Project:	Land Adjacent to Oakhurst Rise, Cheltenham		
Report Title:	Veteran Tree Framework Management Plan		
Project Number:	ECO-5487		
File Reference:	5487 VTFMP vf1 DW/AB		
Date:	29/07/2019		

#### Copyright

The copyright of this document remains with Aspect Ecology & FLAC. All rights reserved. The contents of this document therefore must not be copied or reproduced in whole or in part for any purpose without the written consent of Aspect Ecology & FLAC.

#### Confidentiality

This report may contain sensitive information relating to protected species. The information contained herein should not be disseminated without the prior consent of Aspect Ecology. All records of Badger setts must remain confidential. Where this report is circulated publicly or uploaded to online planning portals, reference to Badger setts must be redacted and any maps pertaining to the locations of Badger setts removed from the document.

#### **Legal Guidance**

The information set out within this report in no way constitutes a legal opinion on the relevant legislation. The opinion of a legal professional should be sought if further advice is required.

#### Liability

This report has been prepared for the exclusive use of the commissioning client and unless otherwise agreed in writing by Aspect Ecology & FLAC no other party may use, or rely on the contents of the report. No liability is accepted by Aspect Ecology or FLAC for any use of this report, other than for the purposes for which it was originally prepared and provided. No warranty, express or implied, is made as to the advice in this report. The content of this report is partly based on information provided by third parties. Unless otherwise stated, information obtained from any third party has not been independently verified by Aspect Ecology & FLAC.

#### **Contact Details**

#### Sylvan

Hardwick Business Park | Noral Way | Banbury | Oxfordshire OX16 2AF t 01295 279721 e info@sylvan-consulting.com w www.sylvan-consulting.com

## **Contents**

#### Text:

1	Background	. 1
	· ·	
2	Background to Veteran Trees and Policy Framework	. 2
3	Baseline Conditions and Management Opportunities	. 5
4	Aims and Objectives of Management	. 6
5	Management Actions	7
5	Management Actions	. /
6	Conclusions	10
-		

#### Plans:

Plan 5487/VT1 Site Location

Plan 5487/VT2 Veteran Tree Locations

#### Annex:

Annex 5487/VT1 RAVEN Tabulated Results

## 1 Background

- 1.1 Sylvan is advising William Morrison (Cheltenham) Ltd in respect of veteran tree matters relating to the proposed development of land adjacent to Oakhurst Rise, Cheltenham, (for location see Plan 5487/VT1).
- 1.2 Collaborative survey work in August 2018 between FLAC and Aspect Ecology (Sylvan) identified seven veteran trees within the site, and a further one just off-site, against the objective assessment method RAVEN 'Recognition of Ancient, Veteran and Notable Trees'. The tabulated results are provided at Annex 5487/1.
- 1.3 The detailed work has identified the on-site veteran trees exhibit varying characteristics, albeit all are largely in good condition and suitable for retention. The current condition of the veteran trees is discussed further in FLAC's report entitled 'Oakhurst Rise: Planning Submission (Arboriculture)', which should be read alongside this report. This work will inform management proposals for the veteran trees. Indeed, the trees are currently in receipt of little to no management and, absent a structured approach, there is a risk that future activities could lead to the removal or mismanagement of veteran trees and hence a reduction in the ecological function of the site (notwithstanding the general controls including those under the TPO).
- 1.4 This report highlights that under the development proposals for the site, an exceptional opportunity is available to safeguard and protect the on-site veteran trees and introduce a sympathetic management plan to increase their longevity and contribution to biodiversity.

#### 1.5 Purpose and Scope of the Report

1.5.1 To take forward the opportunity to safeguard and introduce sympathetic management of the on-site veteran trees, this document sets out a Veteran Tree Framework Management Plan the aim of which is to provide a framework structure for the management proposals which there is an opportunity to bring forward so as to increase longevity of the veteran trees and their contribution to biodiversity. This framework will in turn form the basis of a full management plan, to be produced at the detailed stage should planning approval be granted.

July 2019 1 | Page

\_

https://www.flac.uk.com/new-tree-assessment-system-from-jfl-raven-recognition-of-ancient-veteran-notable-trees

## 2 Background to Veteran Trees and Policy Framework

#### 2.1 Background to Veteran Trees and their importance

- 2.1.1 An integral part of the lowland British landscape, veteran trees can be individual trees or groups of trees within wood pasture, historic parkland, hedgerows, orchards, parks and other areas. Considered an irreplaceable habitat, veteran trees are a significant part of historic, cultural and ecological heritage.
- 2.1.2 In terms of their ecological value, veteran trees exhibit decay features such as branch death and hollowing, potentially supporting a wide range of faunal and fungal bodies, and thereby contributing to local biodiversity.
- 2.1.3 'Compared to many historic environment features, veteran/ancient trees are often forgotten parts of our cultural heritage, and many are not actively managed'2; risking the loss of the trees and any specialised species with limited mobility.
- 2.1.4 Management of veteran trees is often needed to ensure threats do not cause loss of the trees or the value associated with them. Whilst active management may not involve much for much of the time, it 'is essential that trees and their situation are checked at regular intervals and management carried out only if necessary' to promote longevity.

#### 2.2 Guidance on the Management of Veteran Trees

- 2.2.1 Guidance on the management of veteran trees is provided in a number of documents including those published by the Forestry Commission and the Woodland Trust. Key titles include:
  - Ancient and other veteran trees: further guidance on management (Lonsdale, 2013);
  - Veteran Trees: A guide to good management (English Nature, Read H., 2000);
- 2.2.2 These documents set out what veteran tree management plan should seek to achieve and provide guidance on the factors to consider when developing a plan. The development of this Framework Veteran Tree Management Plan has been informed by this guidance.

#### 2.3 **Policy framework**

2.3.1 Veteran trees are afforded protection through planning policy at national and local level.

National Planning Policy Framework (NPPF:2019)

2.3.2 Specific reference is made to veteran trees under paragraph 175c of NPPF which states:

July 2019 2 | Page

<sup>&</sup>lt;sup>2</sup> https://www.forestresearch.gov.uk/tools-and-resources/historic-environment-resources/veteran-trees/

<sup>&</sup>lt;sup>3</sup> Veteran Trees: A guide to good management (English Nature, Read H., 2000)



'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 holly exceptional reasons and a suitable compensation strategy exists`

2.3.3 Paragraph 175d also supports enhancement of biodiversity when determining planning applications stating that:

'development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity`

#### **Local Planning Policy**

Development within the Cheltenham Borough is guided by `saved` policies from the Cheltenham Local Plan (2006), and the Gloucester, Cheltenham and Tewkesbury Joint Sore Strategy 2011-2031.

#### Cheltenham Plan 2006

2.3.4 Policy **GE6** relates to trees and development and states:

`Development which would cause permanent damage to trees of high value will not be permitted.

The following may be required in conjunction with development:

- (a) the retention of existing trees; and
- (b) the planting of new trees; and
- (c) measures adequate to ensure the protection of trees during construction works.`

#### Gloucester, Cheltenham and Tewkesbury Joint Sore Strategy 2011-2031

- 2.3.5 Policy **INF3** relates to Green Infrastructure and states:
  - `1. The green infrastructure network of local and strategic importance will be conserved and enhanced, in order to deliver a series of multifunctional, linked green corridors across the JCS area by:
    - i. Improving the quantity and / or quality of assets;
    - ii. Improving linkages between assets in a manner appropriate to the scale of development, and
    - iii. Designing improvements in a way that supports the cohesive management of green infrastructure;
  - 2. Development proposals should consider and contribute positively towards green infrastructure, including the wider landscape context and strategic corridors between major assets and populations. Where new residential development will create, or add to, a need for publicly accessible green space or outdoor space for sports and recreation, this will be fully met in accordance with Policy INF4. Development at

July 2019 3 | Page



Strategic Allocations will be required to deliver connectivity through the site, linking urban areas with the wider rural hinterland

- 3. Existing green infrastructure will be protected in a manner that reflects its contribution to ecosystem services (including biodiversity, landscape / townscape quality, the historic environment, public access, recreation and play) and the connectivity of the green infrastructure network. Development proposals that will have an impact on woodlands, hedges and trees will need to include a justification for why this impact cannot be avoided and should incorporate measures acceptable to the Local Planning Authority to mitigate the loss. Mitigation should be provided on-site or, where this is not possible, in the immediate environs of the site
- 4. Where assets are created, retained or replaced within a scheme, they should be properly integrated into the design and contribute to local character and distinctiveness. Proposals should also make provisions for future maintenance of green infrastructure.`

July 2019 4 | Page

## 3 Baseline Conditions and Management

## **Opportunities**

#### 3.1 Baseline Conditions

- The tree stock at the site was surveyed in August 2018, by FLAC, in compliance with BS5837:2012. Concurrently, the older/larger age class trees were subject to survey by Sylvan (undertaken by FLAC Principal Julian Forbes-Laird and the Director of Aspect Ecology Alistair Baxter) in order to document their features so as to inform their categorisation as ancient, veteran or notable against the objective assessment method RAVEN 'Recognition of Ancient, Veteran and Notable Trees<sup>4</sup>'. A table of results is provided at Annex 5487/VT1.
- 3.2 Seven veteran trees were identified within the site, and a further one off-site, each exhibiting varying characteristics, albeit all are largely in good condition and are proposed for retention under the proposals.
- 3.3 Biological active zones within the soil for the on-site veteran trees have been found through investigation by 59 Degrees<sup>5</sup> to be directly beneath the trees, with a sharp reduction in soil biological function beyond the canopy edge. Fungal diversity peaks near to the trunk and reduces rapidly away from the trunk, with no saprophytic fungi observed within the veteran tree buffer beyond the canopy edge. It is considered this is a result of increased soil compaction away from the trunk, and impoverished soil biology.
- 3.4 A low importance bat roost for a single Common Pipistelle *Pipistrellus pipistrellus* bat has been recorded in veteran tree 3018 in the north of the site.
- 3.5 Other protected species present in the wider site include nesting birds, Badgers and common reptiles which should be borne in mind when carrying out any management actions.

#### 3.6 Management Opportunities

- A valuable opportunity is afforded by the proposals to secure a long-term management plan ensuring the biodiversity value of the veteran trees is recognised and conserved, through the correct maintenance and management of features of high ecological function, providing a secure future for the veteran tree stock on site. A framework for such management is set out herein.
- The proposals also provide the opportunity to manage other retained habitats e.g. hedgerows in accordance with ecological principles for the benefit of wildlife, which will be detailed within a separate document in due course.

July 2019 5 | Page

\_

<sup>&</sup>lt;sup>4</sup> http://sylvan-consulting.com/index.php/2019/05/19/raven/

<sup>&</sup>lt;sup>5</sup> 59 Degrees (July 2019) Soil Consultation Report

## 4 Aims and Objectives of Management

- 4.1 The principal aim of restoring sympathetic management will be to increase longevity of veteran trees at the site and their contribution to biodiversity, while the tree stock site wide shall require management in the interests of both trees and users of the surrounding land both on and off site.
- 4.2 To achieve this aim, the key overarching objectives of management will be:
  - Discharge duty of care obligations owed to residents, visitors and neighbours imposed by both common law and Owners and Occupiers Liability Act;
  - Preserve and enhance arboricultural attributes within the constraints of best practice and the controlling statutory protection;
  - Maximise the protection of features of biodiversity value within the veteran trees; and
  - Ensure the soil-root relationship is fully maintained along with the soil's associated micro-fauna.
- 4.3 The second bullet point above captures all trees within the site but this necessarily includes a subset of veteran trees that shall require specific considerations (see subheading *Veteran tree* in the management framework at Section 5 herein)
- 4.4 To achieve the above objectives, the management plan should draw on relevant publications, as described in section 2. A management framework to achieve the above objectives is set out in the following section.

July 2019 6 | Page



## 5 Management Actions

#### 5.1 **Scope**

5.1.1 This framework management plan is for all veteran trees identified within the site (as shown at Plan 5487/VT2), although will be extended to mature trees where appropriate to promote the sustainable succession of future veteran trees. The proposed management framework is outlined below, which would form the basis of a detailed management plan in due course.

#### Tree Risk and General Management

- 5.1.2 Reasonable measures must be taken to minimise the risk of tree failures resulting in harm or damage. This shall be achieved by cyclical tree inspections to provide:
  - A risk-assessed and prioritised schedule of tree works recommendations as deemed necessary to achieve an acceptable level of risk; and
  - A schedule of ancillary works if considered advisable in the interests of sound arboricultural management.

#### **Best Practice and Legislative Control**

- 5.1.3 Statutory tree protection is in force and accordingly tree management requires adherence to legislative controls affecting tree works ordinarily by application to Cheltenham Borough Council for consent, this shall be achieved by:
  - Preparation of documentation appropriate for submission to Cheltenham Borough Council's Trees Section in pursuit of consent to undertake works to trees under statutory tree protection, as necessary.

#### <u>Veteran Tree Safeguards</u>

- Appropriate measures will be required to safeguard veteran trees, and associated biologically active zones within the soil, during the construction and operational phases of development, further details for which can be secured by condition, and will incorporate the following:
  - Buffers around veteran trees will be provided of 15 times the diameter of the tree trunk or 5 metres beyond the canopy, whichever is the greater, exceeding standard buffer recommendations stated in BS5837:2012, unless advised otherwise by a suitably competent arboriculturalist.
  - Appropriate tree protective fencing is to be erected at the margins of the veteran tree buffers to the standard specified in BS5837:2012. Works in proximity of the veteran trees will be subject to supervision and scrutiny by suitably competent arboriculturalist.
  - Veteran tree crown radius will be demarcated by knee rails, or similar, with defensive planting composed of native prickly species to be established within the buffer.

July 2019 7 | Page

#### **Veteran Tree Soil Biology**

- 5.1.5 Biological enhancement of the soil beneath the veteran trees will be considered to address the reduced micro-biological activity that has resulted from soil compaction, and will be informed by the microbiological soil biomass assay<sup>6</sup> undertaken by soil specialists 59 Degrees. This will be guided by expert advice from 59 Degrees, and would include measure to reduce soil compaction and increase micro-biological biodiversity, such as:
  - Areas around tree trunks to be mulched with good quality, carbon rich compost up to the drip zone, or where possible, to help increase organic matter within the soil and encourage biological activity specifically in the formation of humus; and
  - Existing trees to be subject to a root drench to increase diversity of saprophytes, and an inoculation of mycorrizal spores, to increase biological diversity within the soil ecosystem, increase the health and resilience of the trees, and encourage the breakdown of organic matter within the mulch.

#### <u>Veteran Tree Management</u>

- 5.1.6 The cohort of veteran trees by virtue of their age, size and condition confer attributes of biodiversity, cultural or heritage value. Maintaining these attributes is a key objective of the management plan, sitting alongside the general objectives listed above, and will be achieved by undertaking the following measures:
  - Review condition and maintenance requirements of veteran tree crown radius knee-rail;
  - Review condition and maintenance requirements of veteran tree deterrent planting;
  - Maintenance of land within veteran tree buffers;
  - Arboricultural risk-facing inspection and preparation of works schedule for application to Cheltenham Borough Council;
  - Assessment of veteran attributes (i.e. structural and conditional features of ecological potential – please see Annex 5487/1 for results against RAVEN) including works advisable in the interests of optimising habitat/biodiversity interests;
  - Assessment of works advisable in the interests of preservation, for example to
    prevent major mechanical failures and preserving the oldest parts of veteran
    trees; and
  - Update soil microbiology study to determine whether levels of soil micro fauna and flora beneficial to the veteran trees are establishing following implementation of appropriate enhancement measures.
- 5.1.7 As mentioned at section 5.1.2 cyclic tree inspections will be undertaken as part of the

-

July 2019 8 | Page

<sup>&</sup>lt;sup>6</sup> Ibid Footnote 5 above.



#### management plan, and will incorporate the following:

- The first inspection shall take place immediately prior to first occupancy;
- The period between inspections as described above shall be every two years;
- Inspections shall be undertaken by suitably qualified, trained and experienced arboriculturists (i.e. ideally qualified to level 6) with reference to suitable ecologists as appropriate. At each inspection a detailed works specification shall be prepared as required;
- Tree work shall be undertaken by qualified and experienced arboricultural contractors and they shall be briefed by the project arboriculturist prior to commencing works;
- Tree work shall be undertaken in accordance with BS3998:2010 Tree work recommendations. Care shall be taken to ensure that nesting birds and bats are not disturbed, and that bat roosts are not damaged during tree work. Prework surveys for bats shall be undertaken in accordance with BS8596:2015 Surveying for bats in trees and woodland Guide;
- Cycles of inspection provide an opportunity to review the management plan particularly in light of tree condition and emerging information relating to tree management.

#### <u>Protected Species Constraints</u>

5.1.8 In addition to bats and nesting birds, the detailed management plan will have regard to the presence (or potential presence) of protected species; and will include safeguards and careful timings of work with regard to Badger and reptiles.

#### Responsibility for Implementation of the Plan

The site developer will initially be responsible for the implementation of the management plan. Thereafter, it is anticipated that a management company would be formed or appointed to implement the management plan, albeit an arboricultural contractor would undertake the necessary assessments and works. This would be funded by revenue generated by the proposed development. The appointed arboricultural contractor will have suitable qualifications and experience as expressed at section 5.1.5 above.

#### **Timescales**

5.1.10 It is anticipated that a detailed management plan is produced prior to first occupation of the proposed development. This could be secured by planning condition.

July 2019 9 | Page



#### 6 Conclusions

- 6.1 This report sets out a veteran tree framework management plan for land off Oakhurst Rise, Cheltenham. This framework is intended to form the basis of a more detailed management plan, which could be secured by planning condition.
- 6.2 Collaborative survey work by Sylvan (FLAC and Aspect Ecology) in August 2018 identified seven veteran trees within the site, and a further one off-site, that exhibit varying characteristics; albeit all are largely in good condition and are proposed for retention under the proposals.
- 6.3 The trees are currently in receipt of little to no management and absent a structured approach there is a risk that future activities could lead to the removal or mismanagement of veteran trees resulting in a reduction in the ecological function of the site (notwithstanding the controls available under the TPO). Associated biological active zones in the soil only extend to the canopy edge and are impoverished.
- 6.4 The development of the site therefore provides the opportunity to secure a management plan that will increase the longevity of the veteran trees and their associated contribution to biodiversity. A framework management plan is set out herein, which would be extended to site wide tree stock, particularly retained mature trees, to promote the sustainable succession of future veteran trees at the site.
- The management plan will be subject to periodic reviews and monitoring to ensure the prescriptions are achieving the identified aims and objectives.
- 6.6 It is therefore concluded that the management framework will provide considerable benefits to biodiversity, subject to the production and implementation of a detailed management plan. Accordingly, it is considered that the value of the ecological asset would be increased post-development.

July 2019 10 | Page



## **JFL 22**

EXTRACT FROM TREE: THEIR NATURAL HISTORY, THOMAS P CAMBRIDGE 2014



## Trees

Their Natural History

SECOND EDITION

Peter A. Thomas

**C**AMBRIDGE

#### CAMBRIDGE UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9780521133586

First edition © Cambridge University Press 2000 Second edition © Peter A. Thomas 2014

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2000 Second edition 2014 4th printing 2016

Printed in the United Kingdom by Bell and Bain Ltd, Glasgow

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing-in-Publication data
Thomas, Peter, 1957–
Trees: their natural history / Peter A. Thomas. – 2nd edn.
p. cm.
Includes index.
ISBN 978-0-521-13358-6 (Pbk.)

1. Trees. I. Title. QK475.T48 2014 582.16–dc23 2013035072

ISBN 978-0-521-13358-6 Paperback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication, and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

oxygen but, perhaps more significantly, the fine roots end up below the zone where most water, minerals and oxygen are available unless the added material is very porous. If you like to mulch your garden you'll be pleased to know that even 50 cm of wood chips is sufficiently porous to cause little problem for tree roots. As is usually the case, some trees will have a solution to such problems: willows (*Salix* spp.) can cope with extra soil or silt by producing new roots from the buried stem, just below the new surface, within days of burial.

Underground utilities can be devastating for tree health. Cables and pipes are usually buried deeper than the roots so the trouble comes in putting them in and repairing them. A trench dug along the pavement in Figure 4.8 would neatly sever most of the main roots of the tree making it much more likely to die of drought or be blown over. So why don't we see rows of dead trees along streets if trenching is that bad? The answer is that sick urban trees are usually removed branch by branch or are felled long before they get to the stage of being an obvious danger. We usually notice the problem when we realise that the trees are missing. But there is plenty of advice available to help our beleaguered urban trees by sympathetic handling as you can see in Figure 4.9. This is increasingly reinforced by codes of practice such as the British Standard on *Trees in Relation to Construction – Recommendations* (BS5837) in the UK.

#### Root loss and death

Root loss raises the question of how many roots can be lost before a tree suffers. This obviously depends upon several factors but as a general rule many practitioners would consider the risk to be small if roots are cut off beyond the edge of one side of the canopy. A tangential straight-line cut along the edge of the canopy would cut off about 15% of roots. If the straight-line cut is made midway between the edge of the canopy and the trunk then around 30% of roots will be severed and trees of reasonable health, with roots previously unhindered in any direction, should be able to survive even this. In practice, 50% of roots can sometimes be removed with little problem provided there are vigorous roots elsewhere. A general rule of thumb for root protection is to allow no disturbance (such as adding or removing soil, or soil compaction from heavy machinery) under the canopy of the tree (sometimes referred to as not going beyond the 'drip line' of the canopy). This is why tree wells (empty

areas left around the trunk when soil is added for landscaping or building) that are less than a metre wide around the trunk are useless. More specifically, the British Standard mentioned above recommends that the root protection zone under a tree should be a circle with a radius 12 times the diameter of the tree (measured at 1.5 m above ground) for single stems and 10 times for a tree with more than one stem from near the base. This is up to a maximum of 15 m



(and the basis of commercial rooting compounds); gibberelins, produced in the same place as auxins plus the root tips; and cytokinins produced particularly by the root tips and young fruit. The gas ethylene, should also be included since it is involved in regulating wood formation (it is in high concentrations in sapwood and may be involved in responses to bending pressures and other mechanical disturbance, and in heartwood formation) and is involved in fruit ripening (one rotten apple - producing ethylene spoils the barrelful). There are many minor inhibitors in plants but the main one is abscisic acid (ABA), produced in leaves, seeds and other organs. ABA generally slows things down or stops them, causing bud and seed dormancy, and stimulating the shedding of leaves. These hormones are, however, just a part of the story. They are part of a complex set of feedback loops that control growth, which involve an array of genes and enzymes that influence, and in turn are influenced by, the carbohydrate and nutrient supply within the tree (see Halford & Paul 2003 for more details). This allows the tree to fine-tune growth much more quickly and precisely than would be possible just with hormones.

As touched on in Chapter 4, this is an important element in the internal disposition of a tree. The shoots provide food for the roots and in turn the roots provide water and minerals to the shoots, and so there needs to be a balance between the two parts (usually referred to as the root/shoot ratio). Too many roots become a burden on the limited sugars produced by the canopy; too few roots means water stress for the canopy. Trees have the ability to finetune the root/shoot ratio to prevailing conditions of light, water and nutrient availability: this is orchestrated by the hormones and feedback loops described above. For example, if part of the canopy is broken off, some of the roots will die. If the roots have problems growing because of shallow soil or competition with other plants, the canopy remains small. The balance of the ratio is at least partly under genetic control: trees from arid areas tend to have higher root/ shoot ratios than specimens from moister areas even when grown under similar conditions, and tree species that invade open areas tend to have proportionately more roots. Also, trees that have genetically determined higher tannin levels in their leaves (which has the side effect of slowing down their decomposition and thus nutrient recycling) have more fine roots (less than 2 mm in width) to help gather more of the scarce nutrients. But the precise balance struck will also vary depending upon conditions at any one time. For example, drought leads to a higher proportion of roots because