

IAN KEEN
LIMITED



ARBORICULTURAL REPORT

Part 1
Tree Survey
Part 2
Arboricultural Implications Assessment

**RELATING TO PROPOSED
DEVELOPMENT
ON LAND AT**

**THE ORCHARD HOUSE,
WESTERN AVENUE, EMSWORTH**

Our Reference
JTK/9243-RevB/WDC

CLIENT

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Part 1

TREE SURVEY

OF LAND AT

**THE ORCHARD HOUSE,
WESTERN AVENUE, EMSWORTH**

**Our Reference
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1. Objective

- 1.1 To assess the condition of the trees and provide sufficient information to enable decisions to be made on planning aspects of the site and its potential development.

2. Notes

- 2.1 The assessment was carried out from ground level from within the site or from any adjacent public place.
- 2.2 The assessment has been carried out following the guidelines set out in *British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*.
- 2.3 The survey was conducted by Jago Keen, MSc, Dip.Arb., MArborA, MICFor on the 27th June 2016.¹
- 2.4 This survey is intended for planning purposes only and may not include all shrubs and small trees on site. The survey is not suitable for the design of foundations.
- 2.5 Since the survey the Council have recently protected all trees within the garden with tree preservation order number 2067 of 2017.

3. Tree Identification and Details

- 3.1 As annotated on the drawing. Please note that sketch drawings or drawings marked 'not to scale' are indicative only, and tree positions should not be relied upon for design or setting out.
- 3.2 Details of each individual tree are recorded in the Schedule of Trees at Appendix 1 of this report.

4. Site Description

- 4.1 The area subject of this survey consists of a property known as the Orchard House set at the southern end of Western Avenue in Emsworth.
- 4.2 The site is broadly square in outline served by a tarmacadam drive leading to areas of tarmacadam hard standing within the north of the plot.
- 4.3 The two storey detached brick built dwelling also lies towards the north of the plot and has two associated garages and outbuildings.
- 4.4 The site is laid mostly to lawn and dissected by an array of hedgerows.
- 4.5 The site contains a number of trees including a row of mature trees along the western boundary, alongside Western Avenue.

¹ Since that survey a sycamore was removed from the garden and no longer appears within the schedule or upon the drawing.

- 4.6 Within the garden there are a number of trees of mixed species including young trees of unusual species such as katsura, liquid amber and Judas.

5. **Geology**

- 5.1 This information is obtained from the (online) 'Geology of Britain Viewer' that contains British Geological Survey materials © NERC [2016]. The geological information given in this report should not be relied upon by other parties who are advised to carry out their own assessment of the site conditions to suit their own needs.

Bedrock Geology

- 5.2 London Clay Formation - Clay, Silt And Sand. Sedimentary Bedrock formed approximately 34 to 56 million years ago in the Palaeogene Period. Local environment previously dominated by deep seas.

Setting: deep seas. These rocks were formed in deep seas from infrequent slurries of shallow water sediments which were then redeposited as graded beds.

Superficial deposits

- 5.3 River Terrace Deposits (undifferentiated) - Sand, Silt And Clay. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by rivers.

Setting: rivers. These rocks were formed from rivers depositing mainly sand and gravel detrital material in channels to form river terrace deposits, with fine silt and clay from overbank floods forming floodplain alluvium, and some bogs depositing peat; includes estuarine and coastal plain deposits mapped as alluvium.

6. **General Guidance Notes for Development**

- 6.1 These notes are provided as a guide to the designer. They represent my personal views of the tree stock, which trees should be retained and how they should be protected. The views expressed have not been subject to consultation or discussion with any other party.
- 6.2 If not already provided, the site designer should establish root protection areas by creating a circle around each tree with a radius of that shown in the schedule.
- 6.3 Ideally, building lines should be at least 2m outside the root protection area to provide working space for construction however protection measures can be taken if such clearance, in isolated cases, is not achievable. Service runs should be routed outside the root protection area. Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist.

- 6.4 On residential developments consideration must be given to future tree growth and orientation, i.e. adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible arrange or orientate windows to primary rooms parallel or tangentially to tree canopies to lessen the conflict.

Signed:



Date: 28th June 2016

Appendix 1

SCHEDULE OF TREES

UPON

LAND AT

**THE ORCHARD HOUSE,
WESTERN AVENUE, EMSWORTH**

**Our Reference
JTK/9243-RevA/WDC**

Key to Schedule of Trees

Column Heading	Explanation
Tree No.	Unique number corresponding with number on plan
Species	English names
Ht (m)	Height in metres
Branch Spread	Crown radius in metres to cardinal points of the compass
Stem diameters (cm)	All measurements conform to Annex C of BS 5837:2012 Single stem - Stem diameter in centimetres measured at 1.5m above ground level. Multi-stemmed tree with 2 to 5 stems – Diameter of each stem Multi-stemmed tree with more than 5 stems – Average stem diameter and number of stems
Height of crown clearance	Height in metres between the ground and underside of canopy
Height of first major branch and direction of growth	Height from ground level to base of first major branch and the approximate direction of growth
Abbreviations as suffix to a dimension	<i>Suffix 'e' denotes an estimated dimension.</i> <i>Suffix 'av' denotes an average dimension</i>
Age class	Age Class definitions: Y = Young S = Semi-mature E = Early mature M = Mature O = Over mature
Category grading and Estimated remaining contribution (yrs)	Summary of BS 5837: 2012 categorisation: 1. Trees that do not warrant consideration for retention: U = those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management. 2. Trees to be considered for retention: A1, 2 or 3 = trees of high quality and value (substantial contribution >40 yrs) B1, 2 or 3 = trees of moderate quality and value (significant Contribution >20 yrs) C1, 2 or 3 = trees of low quality and value (but adequate, ie >10 yrs or young trees – until new planting can be established)
Estimated remaining contribution	Useful estimated remaining contribution of the tree or tree group
Condition	Brief description including physiological and structural defects
Preliminary management recommendations	Describes current arboricultural requirement for the tree in its current context
Root protection radius	Radius of minimum root protection area in metres calculated from section 4.6 and Annex D of BS5837:2012
Root protection area	Total area of minimum root protection area extrapolated from root protection radius

SURVEY OF TREES AT THE ORCHARD HOUSE, WESTERN AVENUE, EMSWORTH

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Preliminary management recommendations	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems										
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
1	Sycamore	18	7	8	5	8	70e							5	5NE	M	B2	>20	Visually significant tree growing at edge of driveway. Main stem stands within dense conifer hedge preventing thorough inspection and accurate measurement.		8.40	222	
2	Sycamore	16	5	7	6	8	70e							5	5E	M	B2	>20	Visually significant tree growing at edge of driveway. Main stem stands within dense conifer hedge preventing thorough inspection and accurate measurement.		8.40	222	
3	Western Red Cedar Hedgerow	7av	2av				15av							0	-	E	B2	>20	Established evergreen screen running alongside driveway.		1.80	10	
4	Norway Maple	16	6	8	6	7		55e	50e	40e				3	5S	M	C2	>10	Visually significant tree growing on site driveway however poor unions between stems as just above ground level are liable to failure in future years.		10.13	322	
5	English Oak	17	7	8	9	9	126							2	2E	M	A2	>40	Visually significant and aged tree growing close to boundary. Some sections of deadwood within crown.	Remove deadwood in excess of 25mm diameter.	15.00	707	
6	Row of Western Red Cedar	6av	2av				15av							0	-	E	C2	>10	Row of conifers including some lawson cypress set at edge of driveway. Offers some low level screening.		1.80	10	
7	English Oak	16	6	8	8	6	81							3	3SE	M	C1	>10	Showing signs of crown retraction. Unusual swellings and depressions on lower stem and associated dead bark and juvenile fruit bodies of Ganoderma species suggest significant internal decay. Would be wise to undertake further detailed inspections to ascertain if it can be retained.		9.72	297	
8	Horse Chestnut	14	5	6	6	4		35e	40e					3	3E	E	B1	>20	Twin stemmed from just above ground level. Both stems partially smothered in ivy preventing thorough inspection and accurate measurement.		6.38	128	

SURVEY OF TREES AT THE ORCHARD HOUSE, WESTERN AVENUE, EMSWORTH

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Preliminary management recommendations	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems										
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
9	English Oak	14	5	3	7	7	71							4	4W	E	B1	>20	Established tree but dominated by adjoining horse chestnut. Some decay in lower stem.		8.52	228	
10	Ash	16	6	4	6	6	41							5	5W	E	B1	>20	Established tree but competing with adjoining oak.		4.92	76	
11	English Oak	17	7	9	8	7		66	38	48				3	5S	M	B1	>20	Visually significant broad spreading triple stemmed tree however, sparsely foliated. Some large sections of deadwood within crown.	Remove deadwood in excess of 25mm diameter.	10.80	367	
12	Horse Chestnut	16	7	7	7	7		67	71					2	2W	M	C1	>10	Visually significant tree however, stems heavily infected with bacterial canker. Tight union between the two stems is highly susceptible to failure in future years. Appears to have been pollarded at circa 3m above ground level in the distant past and allowed to re-grow.		11.71	431	
13	Walnut	10	5	7	6	4	44							2	2S	E	C1	>10	Sparsely foliated and appears to be in decline.		5.28	88	
14	Bay	11	6	7	6	6							20	11	2	2E	E	C1	>10	Established multi stemmed tree growing at edge of lawn.		7.96	199
15	Judas	5	5	4	1	1		14	12					2	2N	E	C1	>10	Growing amidst dense hydrangea. Of low vitality and biased towards the north.		2.21	15	
16	Cherry	6	3	5	4	4	37							1.5	1.5S	E	U	<10	Lower stem infected with Ganoderma species of decay fungus. Of low vitality.		4.44	62	
17	Holm Oak	10	5	5	6	5	39							1.5	1.5S	S	C1	>10	Well formed small ornamental tree growing amidst lawn.		4.68	69	
18	Liquidamber	9	3	3	3	4	18							2	2E	Y	C1	>10	Small tree growing towards boundary. Has some potential and could possible integrated in a scheme of development.		2.16	15	
19	Monterey Cypress	9	3	4	4	4	31							1.8	1.8E	S	C1	>10	Of low vitality.		3.72	43	
20	Group of Mixed Fruit	7av	3av				20av							2	2S	E	C2	>10	Established group of trees growing amidst lawn. Species include apple, pear and cherry.		2.40	18	

SURVEY OF TREES AT THE ORCHARD HOUSE, WESTERN AVENUE, EMSWORTH

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Preliminary management recommendations	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems										
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
21	Liquidamber	13	4	5	5	4	34							2	3NE	S	B1	>20	Well formed tree growing towards boundary.		4.08	52	
22	Rowan	10	1	1	1	2	20e							2	2N	Y	C1	>10	Offsite tree of etiolated form.		2.40	18	
23	Cherry	10	4	4	6	6	35e							2	2W	E	C1	>10	Misshapen offsite tree due to competition with liquid amber.		4.20	55	
24	Pittosporum	9	2	2	4	3	30e							3	3N	S	C1	>10	Offsite large shrub.		3.60	41	
25	Weeping Willow	11	4	7	9	8	61							2	2SW	E	C1	>10	Established broad spreading tree growing in lawn. Has been crown reduced in the past to control its dimensions.		7.32	168	
26	Pear	7	2	3	3	3	23							2	2S	E	C1	>10	Established fruit tree but of low vitality.		2.76	24	
27	Apple	3	1	1	2	1	41							1.5	1.5S	M	U	<10	Older apple tree that has extensive decay in the main stem.		4.92	76	
28	Silver Birch	15	6	7	8	7	53							3	4W	M	B1	>20	Well formed and large for species however, some beginning of crown retraction.		6.36	127	
29	Ginkgo	12	3	2	2	3	34							2	2W	E	B1	>20	Well formed young tree although in close proximity to existing dwelling.		4.08	52	
30	Rowan	7	2	2	2	2	15e							2	2S	S	C1	>10	Small tree growing just outside northern boundary wall.		1.80	10	
31	Wellingtonia	19	5	6	7	7	110e							2	5S	M	B1	>20	Visually significant tree although showing signs of crown retraction. Death of branching on eastern side of crown.		13.20	547	

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Part 2

**IMPACT ASSESSMENT
OF DEVELOPMENT PROPOSALS
ON TREES**

ON LAND AT

**THE ORCHARD HOUSE,
WESTERN AVENUE, EMSWORTH**

**Our Reference
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1. Introduction

- 1.1 Instructions were received from McCarthy & Stone Retirement Lifestyles to undertake an assessment of the impact upon or from trees of the construction of dwellings and associated infrastructure at The Orchard House, Western Avenue, Emsworth.
- 1.2 This assessment has been made by Jago Keen, MSc, Dip. Arb., MArborA, MICFor on the 1st June 2017.
- 1.3 This assessment will consider the impact upon trees of implementing the proposals and, vice versa, the effect of trees upon the proposals shown on the drawings, and with reference to the documents, listed below.
- 1.4 Drawings upon which this assessment has been made:

Table 1: List of drawings used as a basis for the impact assessment

Originator	Drg No	Title	Scale
Re-Format	SO-2379-03-AP-0001 P10	Site Plan	1:200@A1
New Leaf	SO-2379-02-LA- MCS587/Drg02 Rev F	Landscape Drawing	
Ian Keen Limited	9243/01	Tree Constraints Plan	1:200@A1
Ian Keen Limited	9243/02 Rev A	Tree Protection Plan	1:200@A1

- 1.5 Documents referred to in this report:

Table 2: List of documents used to inform the impact assessment

Originator	Title/Reference
British Standards Institute	<i>BS5837:2012 Trees in relation to design, demolition and construction – Recommendations</i>
Trees and Design Action Group	<i>Trees in the townscape: A guide for decision makers</i>
Department for Communities and Local Government	<i>National Planning Policy Framework</i>

- 1.6 A tree survey was undertaken by Ian Keen Limited on the 27th June 2016. A schedule of trees was used as the basis to prepare the Ian Keen Limited Tree Constraints Plan listed in Table 1 above. Shown on that drawing are root protection areas for category A, B and C trees as defined by *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations*.

1.7 Tree cover at the site consists of a row of mature trees along the western boundary and scattered established trees within the extent of garden. A visually significant Wellingtonia is located just outside the site, to the north.

1.8 The Council have recently protected all trees within the garden with tree preservation order number 2067 of 2017. This report considers the presence of the TPO but recognises that the Council have not sought to use the Order as a form of development control.

2. General overview of development proposals

2.1 The drawings listed in Table 1 above set out the proposals for the construction of dwellings and associated infrastructure. A scheme of soft and hard landscape, including tree planting, is proposed by New Leaf.

2.2 The proposals require the removal of trees but include the provision of replacement planting to ensure the character of the area is maintained in the long-term.

2.3 Retaining existing trees and introducing new trees ensures a resource of trees in places where residents and visitors alike will enjoy multiple benefits provided by the tree stock. In so doing the tree stock will be able to withstand climate change, protecting and enhancing the resources of soil, air, water, landscape, amenity value, culture and biodiversity, and increasing the contribution that trees make to the quality of life. In that respect the proposals are in line with the very latest guidance, in terms of integrating trees with built form, contained in *Trees in the townscape: A guide for decision makers* produced by the Trees and Design Action Group.

2.4 The proposals do not require the removal of, nor impact upon, ‘aged or veteran trees’ or ‘ancient woodland’ as defined in the *National Planning Policy Framework*.

2.5 The retention of trees adjoining the proposals safeguards their intrinsic contribution to biodiversity, the support of biodiversity, the contribution to the landscape and ecological network, and the wide provision of ecosystem services attributable to trees.

2.6 With regard to paragraphs 2.4 and 2.5 above, combined with the new tree planting, the proposals provide sustainable development in accordance with the *National Planning Policy Framework*.

2.7 The relationship between proposals and trees is discussed further below.

3. Relationship of proposals to the trees

- 3.1** The proposed site layout makes use of the existing access road, Western Avenue, before broadening to provide parking toward its southern end. Proposed parking bays on the western side of the access road require the removal of tree number 7, an oak that shows signs of crown retraction and bears juvenile fruit bodies of a decay fungus. As the existing and proposed access lie within the root protection area of retained trees on the western boundary the reconstructed drive and all new parking bays will need to be built above existing levels using the principles of 'no-dig' construction. Such techniques are commonplace and have proved successful to achieve hard surfaces.
- 3.2** To make effective and efficient use of the site the proposed building requires the removal of several trees. Tree removal is contained the lower quality categories, where trees are defective or provide little in the way of amenity to wider public view, and has sought to retain the better quality ones.
- 3.3** For instance the well-formed birch (number 28) and the adjacent ginkgo (number 29) are retained. Existing trees in the southern portion of the site (numbers 18, 20 and 21) are retained to give some maturity to the new landscape.
- 3.4** The horse chestnut (tree number 12) is prominent but is, as are many horse chestnuts, infected with bacterial canker. This disease tends to kill bark and can lead to low vitality. There are a number of occurrences of secondary infection through the dead bark that results in decay and failure of stems. When the diseases is advanced, such as in this case, the safe retention span of such trees is considerably foreshortened.
- 3.5** The neighbouring walnut (number 13) exhibited sparse foliage at the time of my survey. It too lacks vitality and its useful contribution is foreshortened.
- 3.6** Trees such as numbers 14, 16, 17, 19 and 25 are of little significance in themselves and contribute little to wider amenity. Their loss therefore has little impact on the contribution trees make.
- 3.7** A proposed access is intended along the northern boundary. It coincides with existing hard surface and buildings for much of its length. It will pass within the root protection area of the Wellingtonia (number 31) but as the area already contains hard surface it represents no material change to the growing conditions of the tree. To avoid harm to the underlying roots the proposed access can adopt 'no-dig' principles to build the access above existing levels.
- 3.8** In summary, the scheme does require the loss of trees from within the curtilage of the garden but retains the significant trees on the western boundary.

4. Opportunities for new tree planting

- 4.1 Whilst the construction of these proposals requires the removal of trees it also provides opportunity for new tree planting.
- 4.2 In this instance opportunity presents itself to plant trees within the gardens associated with the new development. Planting, such as that indicated on the drawing, offers a primarily informal style of landscape in keeping with the area.
- 4.3 In offering a new age cohort of diverse trees, including many more forms of tree, both in terms of species and of provenance, the contribution to the overall quality of tree stock in the area is substantial, results in a gain of biodiversity within the tree population and of the biodiversity supported by the trees. Diversity within the tree population provides resilience in the face of current, and future, pressures and ensures continuity of attributable ecosystem services. In essence, it is sustainability in tree cover.
- 4.4 The scheme of planting, that could include both native and non-native species that are large at maturity, would represent a significant contribution to the amenity of the area, that has seen little new tree planting in recent years, whilst fully observing the Government's planning policies contained in the *National Planning Policy Framework*, as well as current guidance to provide multiple benefits from trees in *Trees in the townscape: A guide for decision makers* produced by the Trees and Design Action Group.
- 4.5 Those multiple benefits of this new tree planting, as part of the site's green infrastructure, include contribution to open space, enhancement of sustainable drainage systems, and enhancement of biodiversity. In addition, as those new trees develop, so they will further contribute to local climatic regulation and, where they stand within the sun path of proposed buildings or surfaces within the re-development, they will minimise solar gain during summer months, and provide an accessible choice of shade and shelter.

5. Effect upon the amenity of the trees and their surrounds

- 5.1 Removal of the trees within, and directly adjoining, the site has limited effect upon the public views that are gleaned today. The loss of those few trees is mitigated by the planting of new trees.
- 5.2 The planting of new trees is brought forward in the landscape scheme to improve visual amenity through careful selection of tree species to maximise the provision of ecosystem services, including the support of biodiversity, that are known to provide human-wellbeing.

6. Relationship of proposed drainage, mechanical and electrical installations upon the trees

- 6.1 The location and route of underground service corridors or drainage runs are not shown on the proposed layout, however these should be routed outside the root protection area of retained trees.

- 6.2 Where such services and drainage, that might ordinarily require trenching, cannot be located outside optimum root protection areas specialist techniques such as moling, thrust-boring, broken trench or excavation by AirSpade can be considered in consultation with an arboriculturalist.
- 6.3 No other installations, including mechanical and electrical equipment, are proposed in an area that would be of detriment to trees.
7. **Requirements of the construction process and its relationship to the trees**
- 7.1 Guidance within *BS5837:2012: Trees in relation to design, demolition and construction* requires us to consider the effect of the construction process upon the retained trees and the spaces in which new trees will be incorporated.
- 7.2 Application of *BS5837:2012: Trees in relation to design, demolition and construction*, through careful construction management, can ensure the construction process has the minimum effect upon the trees.
- 7.3 As an integral, and vital, part of that construction management it will be necessary to protect the retained trees within, and adjoining, the application site. Such schemes of temporary protective measures, devised with reference to *BS5837:2012: Trees in relation to design, demolition and construction*, are achieved through adoption of the protective measures shown on the Ian Keen Limited listed in Table 1 above.
8. **Conclusions**
- 8.1 The proposal to construct the dwellings and associated infrastructure requires the removal of lesser quality trees that are of limited value in the landscape and can be mitigated by the planting of new trees.
- 8.2 The planting of new trees enhances the sustainability of the site, adding to the extant species diversity, contributing to the green infrastructure and enhancing the biodiversity within, and supported by, the tree stock.
- 8.3 Amenity provided by the retained, significant trees is preserved for the enjoyment of many.
- 8.4 Construction management will include schemes of protection for the retained trees, the detail of which has been developed to achieve the site layout.

- 8.5 The proposals do not impact upon the special categories of trees that are given prominence within the *National Planning Policy Framework* and make provision for new tree planting as part of the ecological network. The proposals therefore accord with national planning policy.

Signed:



1st June 2017