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Wolf Business Park

Gloucester Road, Ross-on-Wye

Tree Survey and
Arboricultural Constraints Report
Revision 6 *(Trees all reassessed, December 2019)*

Prepared on the instructions of
RAPLEYS LLP
(property & planning consultancy)

on behalf of
Lidl UK GmbH

Based on inspections carried out on
3rd and 5th December 2019

by
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Wolf Business Park
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Arboricultural Constraints Report
DECEMBER 2019

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Appendices:

1 Introduction:

1.1 The following report concerns land currently forming the Wolf Business Park in Ross on Wye and was prepared on instructions received from Rapleys LLP, planning consultants acting on behalf of Lidl UK. It is based on the findings of inspections carried out over the period March to October 2018 with a detailed reassessment of all trees having been made on 3rd & 5th December 2019. Weather conditions were at that time cold and largely overcast, but visibility was quite adequate for the purposes of this investigation.

1.2 The purpose of the survey was to make assessments of the major trees in terms of their health, general condition, form and overall significance within the local environment, specifically in order to consider what degree of constraint that they might represent with regard to the possible redevelopment of the site. My understanding is that the northern sector is proposed to be redeveloped to provide a new Lidl food store and will be the subject of an application for full planning consent. Outline planning permission will be sought for the southern sector as retained employment land. The survey areas are as shown on the two accompanying tree location plans, one showing the northern (retail) sector, the other the employment land.

1.3 Both sectors were assessed using the methodology of BS5837:2012, as outlined in Appendix 2 below. (Appendix 3 provides explanations of the terms used and also defines the codes and abbreviations employed in the Tree Schedule.) The assessments comprised brief visual inspections made from ground level only: only those features apparent at the time of the inspection could be considered and no liability can be accepted for damage or injury sustained as a result of faults in trees or their parts that were not apparent at this season or which developed subsequent to the survey. Similarly, no liability can be accepted for the condition of trees that are obscured in part or in whole (e.g. by dense Ivy or other foliage), nor for any that proved inaccessible to the inspector.

1.4 The accompanying 'Arboricultural Constraints' plan has been based upon topographical survey data provided by the client adapted to reflect the tree population as at the time of my inspection in December 2019.This includes trees shown here as items 12 & 14 which did not appear on the land survey and have been plotted by eye only. All other tree locations (and hence their nominal root protection areas) are based on their positions on the topographical survey and should therefore be accurate. It is nevertheless advised that wherever tree locations may prove to be critical (for instance in determining clearances between trees proposed for retention and proposed structures), they be confirmed by further on-site measurements

1.5 It should be stressed that, although the health and safety of the trees is part of the assessment methodology used, this is an arboricultural constraints report, as defined by BS5837:2012, and as such is intended for planning purposes only; it should not be construed as an exhaustive assessment of tree safety. Faults may be identified and recorded as part of this study, but although measures to deal with immediate and significant hazards may be made, detailed management recommendations will not normally be made, not least because these should be determined by future patterns of site usage: it remains the client's responsibility to take appropriate action to maintain appropriate levels of safety

1.6 Note that certain trees are protected by Tree Preservation Order no. 599 ("Wolf Business Park, Ross-on-Wye, Ross East 2018. A copy of the provisional Schedule and Map identifying the protected trees is provided at Appendix 1.

ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres) N	E	S	W	Clearance (metres)	Life stage	Health & Vigour	Structural Condition	Remaining useful life-expectancy	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
1	Fastigiate Hornbeam *Carpinus betulus 'fastigiata'*	7	[793.7]	16	6.5	7	5	4.5	2.5	M	Good	Fair	M	Fair, multi-stemmed tree; partially one-sided but no major defects **TPO T2** (Average stem diam ~300)	B	9.5	284
2	Sunrise Sycamore *Acer pseudoplatanus 'Brilliantissimum'*	1	205	5.3	3	3	3	3	1.6	EM	Fair	Good	S	Fair, rather low vigour (typical of cultivar). Acceptable but not outstanding **TPO T3**	C+	2.5	20
3	Rowan *Sorbus aucuparia*	1	220	8	2.5	3	2	2	4	M	Fair	Poor	S	Rather heavily pruned/crown-raised; some decay at base **TPO T4**	C	2.6	21
4	Himalayan Birch *Betula utilis* cv.	1	500	18	5.5	5	5	5	5	LM	Good	Good	M	Attractive prominent tree; no significant defects **TPO T5**	B+	6	113
5	Ash *Fraxinus excelsior*	2	390 315	12	5	4	5.5	4.5	2.5	M	Good	Fair	L	Numerous leaders; acceptable	C+	6	113
6	Ash-Leaved Maple or 'Box Elder' *Acer negundo*	1	680	14	3.5	9	7	8	4.5	M	Good	Fair	M	[Outside site boundary] Asymmetric form (influenced by conifers to the north, now removed). Some dead wood but otherwise quite good **TPO T6**	B	8.2	211
7	Norway Maple *Acer platanoides*	1	660	20	5	4	7	8	3.5	M	Fair	Fair	L	[Outside site boundary] Quite good; somewhat one sided	A	7.9	196
8	Whitebeam *Sorbus aria*	1	355	16	5	4	5.5	0.5	3	M	Poor	Poor	S	[Outside site boundary] Supressed by larger trees on both sides: somewhat one-sided and drawn-up. Rather poor	C	4.3	58
9	Beech *Fagus sylvatica Purpurea*	1	595	18.5	6.5	9.5	9	3	4	M	Fair	Good	L	[Outside site boundary] Somewhat one-sided; some minor dieback; also some bark (squirrel) damage, but generally good	A	7.1	158

ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres) N	E	S	W	Clearance (metres)	Life stage	Health & Vigour	Structural Condition	Remaining useful life-expectancy	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
10	Amur Maple *Acer ginnala*	1	220	4.5	1	3	3.5	3	1.8	EM	Good	Fair	M	Unusual / rare species; some branch damage but overall a good specimen, worthy of retention **TPO T7**	B	2.6	21
11	Purple-Leaved Cherry Plum *Prunus cerasifera* 'Pissardii'	1	460	9	3	3	4	4	2.5	M	Fair	Poor	S	A medium-sized mature tree; various branches lopped and others with storm damage; interior of crown very crowded. Generally with a rather poor appearance	C-	5.5	95
12	Lawson Cypress	1	255	9	2	2	2	2	1	EM	Fair	Good	L	Unremarkable but acceptable	C	3.1	30
	Note: **Trees 13 to 31 form a largely unmanaged wooded belt, most of which has been designated within the TPO as group G1** (See Appendix 1). They have a more or less continuous canopy which itself is more or less contiguous with a belt other trees (mostly evergreen, coniferous species) situated outside the site to the east (not shown on the accompanying plans). Many of the trees within the woodland block, especially those to the north, have developed tall, more or less drawn-up and/or asymmetric forms typical of woodland trees, while those on the edges have become one-sided, being suppressed under the woodland canopy while developing preferentially towards the open site to the east. Considered as individuals most of these trees are unexceptional or poor and many would be quite inappropriate as isolated, stand-alone specimens and are only retainable within the context of a woodland environment where they provide one another a degree of mutual protection and shelter. Most of these trees have been allocated to retention category C although several are so poor or with such short safe, useful life expectancies as to have been placed in category U and are likely to require removal irrespective of any proposed development. Nevertheless, this belt of trees does provide some valuable screening which could be further improved by some new planting.																
13	Incense Cedar *Calocedris decurrens*	1	#500	12.5	1	0.5	1	1	3	EM	Fair	Poor	L	An unusual species; one of two stems removed; dense ivy smothering lower crown, but could become a striking specimen if ivy removed	C+	6	113
14	Walnut *Juglans regia*	1	310	10	2.5	2	2	4	5	EM	Poor	Poor	S	Drawn-up by proximity to other trees; sparse and straggly; rather poor	C	3.7	43

ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres) N	E	S	W	Clearance (metres)	Life stage	Health & Vigour	Structural Condition	Remaining useful life-expectancy	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
15	Silver Maple *Acer saccharinum*	1	#2000	22	10	11	8	8.5	4	O	Fair	Bad	S	Massive bole with ponderous, wide-spreading branches. One branch failed some time ago, another has recently part-collapsed to the north. Other indications of possible weakness, so further branch failures likely. Nearing the end of its safe, useful life	U	15	707
16	Norway Maple *Acer platanoides*	1	390	18	2	1.5	3	6	7	EM	Fair	Fair	M	Narrow, upright form. Rather poor, although acceptable as a woodland tree.	C	4.7	69
17	Beech *Fagus sylvatica*	1	480	19	2.5	7	4	6	6	M	Fair	Fair	L	Upright / asymmetric form; some storm damage; some dead wood in top. Acceptable as a woodland tree.	C+	5.8	106
18	Coast Redwood *Sequoia sempervirens*	3	240 240 180	8	3	2	3	3	2	Y	Good	Fair	L	Somewhat suppressed by neighbouring trees (partially under tree 16) but physiologically generally good.	C+	4.6	66
19	Meyer's Blue Juniper *Juniperus squamata 'Meyeri'*	6	[281.7]	4	3	1	3.5	5	0	M	Fair	Fair	M	Bare on the east side with its broad, low canopy confined almost entirely to the west side where it spreads down the existing bank. Thus grossly asymmetric in form, but evidently healthy and acceptable as viewed from within the site, from where it provides some screening.	C+	3.4	36
20	Scots Pine *Pinus sylvestris*	1	330	16.5	1	2	2	3	12	M	Fair	Fair	S	Very tall and slender with high crown; only acceptable in a woodland context	C	4	50
21	Horse Chestnut *Aesculus hippocastanum*	1	455	16	2	6	4.5	7.5	3	M	Good	Fair	M	Generally good, although with one branch that arches over to the west, hanging low and extending disproportionately wide towards the site.	B-	5.5	95
22	Scots Pine *Pinus sylvestris*	1	390	15	3	4	4	2.5	10	M	Good	Fair	L	Rather slender with a very high crown; would be inappropriate as an isolated specimen but acceptable within woodland	C+	4.7	69

ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres) N	E	S	W	Clearance (metres)	Life stage	Health & Vigour	Structural Condition	Remaining useful life-expectancy	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
23	Scots Pine *Pinus sylvestris*	1	270	14	2	3	2.5	2	11	EM	Fair	Fair	S	Even more slender and high-crowned than the adjacent pine, tree 22; only acceptable due to the protection afforded by conifers in the adjacent property to the east.	C	3.2	32
24	Larch *Larix decidua*	1	240	12	1	1	0.5	1	9	Y	Bad	Poor	V	Very tall and slender, with ivy: poor/ negligible	U	2.9	26
25	Scots Pine *Pinus sylvestris*	1	595	17	4.5	5	5	3	7	M	Good	Fair	L	Rather asymmetric branch formation but overall a moderately good specimen	B	7.1	158
26	Larch *Larix decidua*	1	200	5.5	0.5	0.5	3	1	6	Y	Bad	Poor	V	Overwhelmed by ivy; top broken; seemingly dead	U	2.4	18
27	Spruce *Picea abies*	1	260	7.5	0.5	1.5	3	1	4	EM	Poor	Poor	V	Overwhelmed by ivy; crowded by other trees. Very poor.	U	3.1	30
28	Larch *Larix decidua*	1	265	16	2	2	1.5	3.5	6	EM	Poor	Fair	S	Very tall and slender; ivy. Negligible	C	3.2	32
29	Fastigiate Hornbeam *Carpinus betulus 'fastigiata'*	1	#700	15	7	6	8	8	2	M	Good	Fair	M	Numerous low branches with ascending form but spreading widely (compare with tree 2). No significant defects and generally acceptable	C+	8.4	222
30	Leyland Cypress *X Cuprocyparis leylandii*	1	#440	11.5	4.5	4.5	5	4	2	EM	Good	Good	L	Good condition but unremarkable	C	5.3	88
31	Wild Cherry *Prunus avium*	1	280	7	3.5	3	2	3	3.5	EM	Good	Good	M	Acceptable young tree	C+	3.4	36
32	Hybrid Black Poplar *Populus x canadensis*	1	530	17	4	2.5	4	4	4	EM	Fair	Fair	M	No major defects but widely pruned; rather poor appearance and an unsatisfactory species for this location	C	6.4	129
33	Horse Chestnut *Aesculus hippocastanum*	1	460	12	6.5	6	2	3	3	M	Fair	Fair	M	Acceptable, but with asymmetric form disposed to the north-east (due to the removal of one major bough). Some bleeding canker noted (not severe), but overall an unremarkable specimen.	C	5.5	95

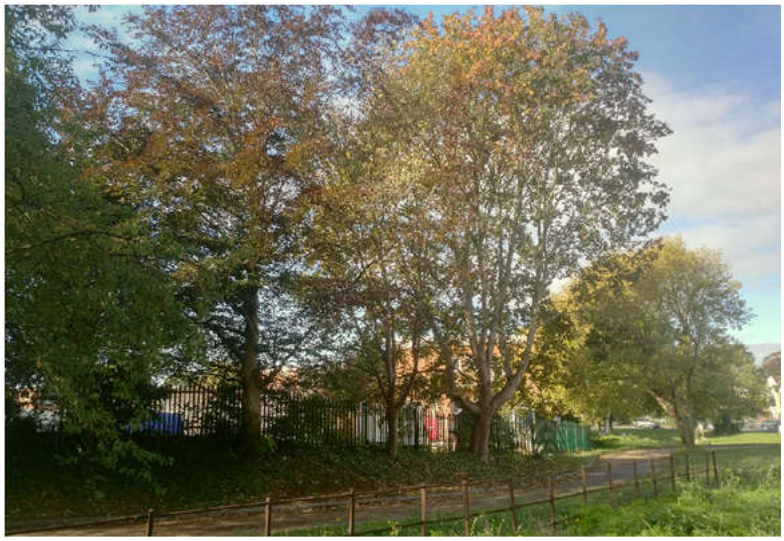
ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres) N	E	S	W	Clearance (metres)	Life stage	Health & Vigour	Structural Condition	Remaining useful life-expectancy	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
34	Lime *Tilia x Europaea*	1	575	17	6	6.5	4.5	4.5	3	M	Good	Good	L	Close to wooden shed but acceptable	B	6.9	150
35	Norway Maple *Acer platanoides*	7	687.9*	16	7.5	5	6	5	4	M	Good	Fair	M	Between two wooden sheds. Multistemmed from base; some minor dead wood; acceptable *(*Average diameter 292cm)*	B	8.3	216
36	Norway Maple *Acer platanoides*	6	#685.9 *	16	7.5	3	7	6.5	3	M	Fair	Fair	M	Between wooden sheds; no access to base of tree) Somewhat congested multi-stemmed structure but no significant defects observed from this inspection; acceptable *(*Average diameter 280cm)*	B	8.2	211
37	Ash *Fraxinus excelsior*	1	140	8	2	2	1	1	2	Y	Good	Good	L	Small, evidently self-set: negligible	C	1.7	9
38	Ash *Fraxinus excelsior*	1	180	8	1	1.5	2	1.5	1.5	Y	Good	Good	L	Small, evidently self-set: negligible	C	2.2	15
39	Norway Maple *Acer platanoides*	1	130 80 55	7	3	3	1	3	1.5	Y	Good	Fair	M	Small, evidently self-set: negligible	C	1.9	11
40	Sycamore	1	#620	13	6	5.5	6	5.5	2.5	M	Fair	Fair	M	Dense ivy; fair, but lacking vigour **TPO T1**	B	7.4	172
41	Sycamore	3	320 260 415	14.5	5.5	6	4	6.5	5	M	Fair	Fair	L	Fair but not exceptional; somewhat lacking in vigour	B	7	154

GROUPS:

ID	*Dominant Species*	Approx. no. of trees	Av. Height (or range) (m.)	Av. Trunk Diam (or range) (mm)	Approximate Canopy size (crown radius or length x width)	Life stage	Remaining useful life	General condition	*Observations*	Retention CATEGORY	Protection Radius (m)
G1	Leyland Cypress	6	19	305-605	7.5 x 12	M	M	Good	Row of six trees forming a tall dense screen, contiguous with trees in Hildersley House, to the east. In good condition with no significant defects but unremarkable and only of value insofar as the provide useful screening.	C	7.3 - 3.8
G2	Goat Willow x4	4	8 to 10	120#	~3.5	EM	M	Fair	Inaccessible area, not inspected at close quarters. (i) Various small trees growing adjacent to fence; evidently self-set, 'weed' trees of negligible value.	U	2.1
	Goat Willow x2	2		300#	4-6	M	S	Poor	(ii) In south of area: two more mature trees, one strongly leaning, neither of any significant merit	U	3.6
G3	Goat willow; Birch	~20	6 to 10	<100	6 x 8	Y	S	Fair	Dense stand of self-set sapling of negligible value	U	–

Tree 1 (T2- Hornbeam)
with tree 2 (T3 Sycamore)

December 2019



Trees 7, 8 & 9 (R to L);
outside site boundary

October 2018

Tree 11
(Purple-leaved maple)

December 2019

Tree 15 (Silver Maple) with tree 14 (Walnut) on left

(Part of TPO G1)

December 2019

Tree 19 (Juniper) with tree 15 behind and tree 13 (pencil cedar) far left

(Part of TPO G1)

December 2019

Fastigiate Hornbeam (tree 29: Part of TPO G1) with Leyland Cypress, Report group G1 on right

March 2018

Interior of woodland area, from north, Sep. 2018. (Slender trees on LHS are on adjoining land)

October 2018

Trees 34 to 36

March 2018

Goat Willows: group G2

March 2018

Self-set 'weed' trees, Group G3

March 2018

4 Arboricultural Impact

See ***Tree Impact Plans, drawing nos. HR95NB/LID/TIP [2019] N*** **and** ***S***

4.1 The assessment of arboricultural impact is based on a revised plan with altered parking layout designed to enable the retention of certain trees previously shown as being removed. Note however that tree 1 (TPO ID no. T2, a Fastigiate Hornbeam) would suffer extensive root loss as a result of the increase in size required for the new access road. Although a visually significant specimen it is not of especially high quality. It is proposed that its loss be mitigated by the establishment of a substantial semi-mature specimen tree to be planted nearby.

4.2 The impact on the woodland area to the east (identified as G1 on the TPO) has also been re-assessed to minimise tree losses. Certain trees in poor condition but not directly affecting the site at this time have been shown as retained. (Note that some of these are likely to require removal within a few years irrespective of the proposed development.)

4.3 The probable impact upon the root-systems of trees of constructing a retaining wall along the western edge of the woodland must be considered. The height of the retained land varies between 1425mm to 1725mm and it has been assumed that up to 1 metre to the rear (east) of the wall may be subject to disturbance that is likely to be affect tree roots in this zone. It is foreseen that trees numbered 14, 18, 19 and 29 would be significantly affected and will have to be removed.

4.4 The rooting area of tree 13 is also likely to be affected by these works but it is proposed it be retained in view of the relatively small proportion of the root system likely to be affected. Its future condition will be monitored.

4.5 Trees 16 and 28 are beyond the 1 metre 'work zone' but the construction of the wall will involve quite extensive working within their nominal root protection areas such that some root loss will occur. Both are tall, slender and drawn-up, having developed within the wooded area where they have been to some extent protected by neighbouring trees. Once these are removed they would be left more exposed and potentially vulnerable to wind throw. In view of their poor quality, their narrow high-crowned forms providing little or no low-level screening, their removal and replacement should be considered. However they are for the present shown as being retained.

4.6 Other trees in the woodland may also suffer some root disturbance; the RPAs of trees 16, 17 & 21 all extend somewhat into the working area to the rear of the line of the wall, but to degrees that it is believed will not prove to be critical to their continued survival. The horse chestnut, tree 21, will require some pruning of the branch that currently extends rather widely to the west to bring it back into better balance. Carried out with care this should not have any deleterious effect on the tree.

4.7 A summary of proposed tree removals is provided in tabular form on the following pages.

ID no.	Species	Notes on current condition	Cat.	Proposals & justification
1	Fastigiate Hornbeam	Fair, multi-stemmed tree; partially one-sided but no major defects	B	Remove: *Conflicts with proposed layout: wide encroachment into the tree's nominal RPA*
11	Purple-Leaved Cherry-plum	A medium-sized mature tree; various branches lopped and others with storm damage; interior of crown very crowded. Generally with a rather poor appearance.	C-	Remove: *Conflicts with proposed layout:*
12	Lawson Cypress	Unremarkable but acceptable	C	Remove: *Conflicts with proposed layout:*
13	Incense Cedar	An unusual species; one of two stems removed; dense ivy smothering lower crown, but could become a striking specimen if retained	C+	Retain. Remove Ivy and monitor: *Root system likely to be affected by construction or retaining wall. Propose to retain and minimise disturbance, assessing the degree of root loss during construction and, if stability is not deemed to have been impaired, retain and monitor thereafter.*
14	Walnut	Drawn-up by proximity to other trees; sparse and straggly; rather poor	C	Remove: *Conflicts with proposed layout:*
16	Norway Maple	Narrow, upright form. Rather poor although retainable within woodland	C	Retain and cut back to reduce overhang to site, but reassess on completion of other works.
15	Silver Maple	Massive bole with ponderous, wide-spreading branches. Previous branch failures observed; one branch recently part-collapsed with other indications of possible weakness and further failures likely. Near the end of its safe, useful life	U	Remove: *Wide-spreading crown and RPA conflict with proposed layout; limited safe useful life expectancy*
18	Coast Redwood	Somewhat suppressed by neighbouring trees (partially under tree 16) but physiologically generally good.	C+	Remove: *Conflicts with proposed layout:*

ID no.	Species	Notes on current condition	Cat.	Proposals & justification
19	Meyer's Blue Juniper	Bare on the east side with broad, low canopy confined almost entirely to the west where it spreads down the existing bank: grossly asymmetric in form, but evidently healthy and acceptable as viewed from within the site, from where it provides some screening.	C+	Remove: *Conflicts with proposed layout, with nearly all of its existing crown extending beyond the proposed site wall.*
21	Horse Chestnut	Generally good, although with one branch that arches over to the west, hanging low and extending disproportionately wide towards the site	B-	Retain, but tip back branches extending widely towards and over the site
28	Larch	Very tall and slender; ivy. Negligible	C	Retain, but reassess on completion of other works.
29	Fastigiate Hornbeam	Numerous low branches with ascending form but spreading widely (compare with tree 2). No significant defects and generally acceptable	C+	Monitor (removal likely to be required): *Moderately wide encroachment into RPA, but wide-spreading crown likely to require excessive cut-back, greatly diminishing any amenity value*
35	Norway Maple	Multistemmed from base; some minor dead wood; acceptable	B	Remove: *Conflicts with proposed layout (Removal would benefit tree 34)*
36	Norway Maple	Somewhat congested multi-stemmed structure but no significant defects observed from this inspection	B	Remove: *Conflicts with proposed layout*
37, 38 & 39	X2 Ash & X1 Norway Maple	Three trees, all small, evidently self-set and negligible	C	Remove: *Conflicts with proposed layout*
40	Sycamore	Dense ivy; fair, but lacking vigour	B	Remove: *Conflicts with proposed layout*
41	Sycamore	Fair but not exceptional; somewhat lacking in vigour	B	Remove: *Conflicts with proposed layout*

4.8 Mitigation for these losses are shown in the Landscape Proposals. Parts of the woodland area will be exposed as a result of the tree removals that are required but these will be mitigated by infill planting, including plants to provide low level cover. Note that most of the overall screening and the continuity of the 'green corridor' will be maintained as a result of the presence of trees to the east, outside the site.

5 Preliminary notes on tree protection

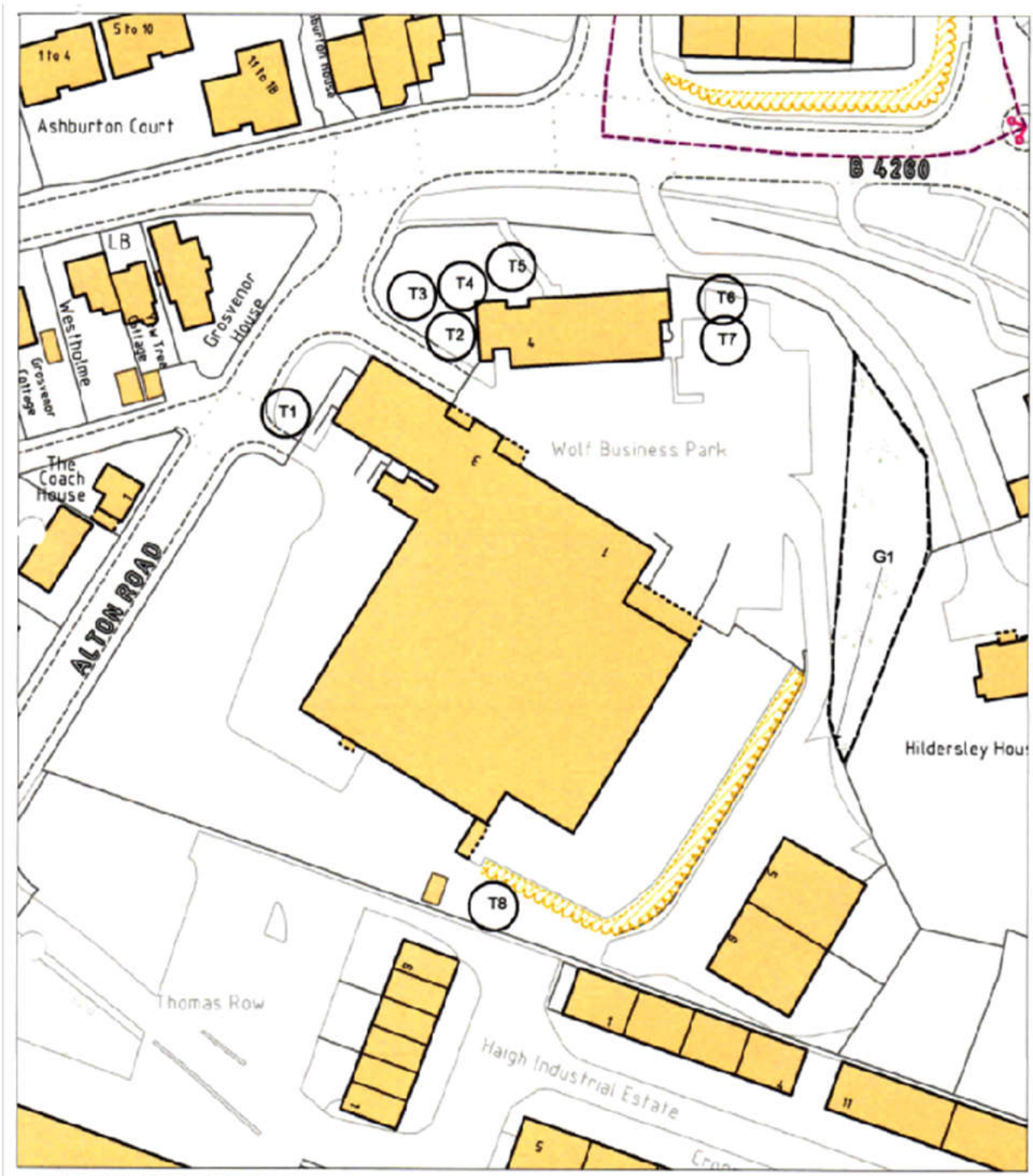
5.1 Prior to demolition work proceeding but following the removal of trees and completion of tree works as specified above, tree protection barriers would be provided in the positions shown on the Tree Protection Plan. These are to be maintained intact and erect throughout the demolition and construction process.

5.2 The tree protection barriers shall be of Type 1 specification, being weldmesh or similar panels firmly fixed to a study, braced frameworks, as defined in Appendix 4A below, and shall be set up and managed in accordance with BS5837 as also outlined in that appendix.

5.3 In order to provide working room for the construction of the retaining wall to the east of the main car parking area, the tree protection barrier will be set 1 metre back from the retaining wall. The rear face of the wall will itself be set at a minimum distance of 2.5 metres away from tree 13 and 3.75 metres from tree 28.

5.4 The areas enclosed by the tree protection barriers will be designated as Construction Exclusion Zones with no permitted for as long as construction operations are ongoing. Provision for limited, controlled access will be provided, however, to enable routine grounds and tree maintenance to be carried out as and when required.

5.5 Should access be required within the Construction Exclusion Zones for any operations *other* than routine grounds and tree maintenance they would be carried out under the guidance of the project arboriculturist, an arboricultural method statement having been prepared where appropriate.



TREE PRESERVATION ORDER

GRID REFERENCE: 360811 224068

OS REFERENCE:

TPO NUMBER: TPO_599

LOCATION DESCRIPTION:
Wolf Business Park, Ross on Wye
Herefordshire, HR9 5NB

Herefordshire Council SCALE 1:1000 NORTH

SCHEDULE

Specification of trees

Trees specified individually (encircled in black on the map)

Reference on map	Description	Situation
T1	Sycamore	Grid reference – SO 60763 24095
T2	Hornbeam	Grid reference – SO 60790 24122
T3	Norway Maple	Grid reference – SO 60787 24129
T4	Rowan	Grid reference – SO 60801 24118
T5	Himalayan Birch	Grid reference – SO 60809 24124
T6	Box Elder	Grid reference – SO 60843 24130
T7	Wild service tree	Grid reference – SO 60843 24115
T8	Common Lime	Grid reference – SO 60798 23984

Trees specified by reference to an area (within a dotted black line on the map)

Reference on map	Description	Situation
None		

Groups of trees (within a broken black line on the map)

Reference on map	Description	Situation
G1	Group of trees consisting of 1 Hornbeam, 1 Red Horse Chestnut 1 Juniper, 1 Silver Maple, 1 Yew, 1 Walnut, 1 Incense Cedar, 1 Copper Beech, 1 White Beam, 1 Norway Maple, 4 Scots Pine.	Located on the eastern boundary of wolf business park.

Woodlands (within a continuous black line on the map)

Reference on map	Description	Situation
None		

- The report has been framed as an 'Arboricultural Constraints Report', as defined in BS5837:2012 - *Trees in relation to design, demolition & construction-Recommendations*. Its purpose is to set out and to quantify the degree of constraint offered by existing tree cover with regard to any development or alteration in land-use that may be proposed and is intended to be used to inform feasibility studies and design options. As such it reflects the conditions *as they existed at the time of our inspections*: no account has been taken of any specific development proposals, although it has been assumed that certain unspecified alterations in site usage patterns are likely to occur, which are likely to result in an increase in site occupancy levels. Additional arboricultural input may be required at subsequent stages of design, planning and implementation in relation to the assessment & management of possible arboricultural impacts.
- The survey parameters are as set out in BS5837:2012 and based on the findings each tree or group is allocated to one of four 'Retention Categories' (see Appendix 2, p2). The factors taken into account in categorising the trees include their overall arboricultural quality, their general health and structural stability, their likely useful life-expectancy, their significance to the local landscape and general public amenity value, the degree to which they provide wildlife habitat and enhance local biodiversity and any other social or cultural values that they may embody.
- Also integral to the methodology of BS5837 is the calculation of **Root Protection Areas (RPAs)** for each of the trees in question. The RPA is defined as a "*layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority."* BS5837 requires the RPA to be based on the area in square metres formed by a circle of radius (the Root Protection Radius) twelve times the stem diameter of the tree.
- It should be noted that in most cases the plan accompanying this report will show the *nominal* RPAs of the trees, indicated as circles centred upon the tree of a radius such that they enclose an area equal to the relevant RPA. In practice the distribution of roots around a tree will frequently prove to be uneven due to the presence of a variety of constraining influences. These may be physical barriers such as existing foundations etc, or the existence of localised soil conditions inhospitable to root growth, such as waterlogging or soil compaction. Conversely, soil conditions may be particularly *conducive* to root development in one quarter and this might also lead to an asymmetric distribution of roots around the tree. However in most cases the nominal circular areas as indicated will provide a reasonable guide as to where special measures will be required to protect tree roots and preserve good soil condition.
- The RPAs of the trees will provide the basis for defining **Construction Exclusion Zones (CEZs),** these being areas around all of those trees intended to be retained where access should be prevented throughout the entire process of site preparation and construction. In certain cases the CEZ will exceed the size of the RPA in order to accommodate the aerial parts of wide-spreading trees.
- Access within the CEZ should be prevented through the erection of barriers, constructed in accordance with BS5837:2012. Where access within an RPA is unavoidable, appropriate ground protection should be installed. Outline details of the design of suitable barriers and ground protection are given in Appendices A & B. These protection measures should be put in place prior to any site clearance or construction work commencing on the site and they should remain *in situ* until all works have been completed. Some activities within the CEZs may be acceptable but should not be put in hand until appropriate arboricultural advice has been sought
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APPENDIX 3: Terms & Definitions
(including codes & abbreviations used in Tree Schedule)

DIMENSIONS :

- **STEM-No.** indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- **DIAMETER** (in millimetres (rounded to the nearest 5mm), obtained from the girth measured at approx.1.5m. For trees with 2 to 5 sub-stems, a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees the notional diameter may be estimated on the basis of the average stem size x the number of stems. (Diameters may be estimated where direct measurement is not possible.)
- **HEIGHT**, estimated and expressed in metres.
- The **CROWN SPREAD** is expressed in terms of the crown radii estimated at the four cardinal points (or as otherwise specified) and given in metres.
- **CLEARANCES** are indicated as an estimate of the *mean, overall* height of the canopy above ground level with an additional figure for the height above ground of the *lowest significant branch* within the site, together with the direction of its growth.

LIFE STAGE is defined as follows:

P	recently Planted; sapling: A tree that is still establishing and which would be relatively easy to replace or even transplant. Likely to be vulnerable to damage from (e.g.) strimmers, mowing equipment, drought, vandals, etc. (Easily replaced thus a negligible constraint).
Y	Young, establishing trees. Should be growing fast, usually primarily increasing in height more than spread, but as yet making limited impact upon the landscape.
EM	Early-mature. Established young trees, normally of good vigour and still increasing in height, but beginning to spread laterally. Beginning to make an impact upon the local landscape & environment.
M	Mature: Well-established trees, still growing with some vigour, but tending to fill out and increase spread. Bark may be beginning to crack & fissure. In the middle half of their safe, useful life-expectancies.
LM	Late-Mature: In full maturity. Still retaining some vigour but growth slowing.
O	Old: Fully mature with vigour declining. Likely to possess features that could be regarded as potential faults, such as large, ponderous branches, old wounds etc. etc., but also likely to be of high amenity value.
A	Ancient: Old trees can survive for very many years with healthy growth continuing although the tree may be of low vigour. Crown size usually becomes reduced, either through natural branch-loss or through management (e.g. pollarding). Decay is usually present. Such trees may embody certain hazards but they are also likely to be of considerable conservation value (i.e. "Veteran" trees).

HEALTH & VIGOUR: Essentially a snapshot of the general health of the tree based upon its general appearance, its apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but *decay giving rise to structural weakness* would be recorded under 'Structural Condition' – see next parameter):

Good	no significant health issues; normal shoot extension growth.
Fair	indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood, reduced shoot extension growth or the presence of epicormic shoots)
Poor	Significant stress or disease noted; larger areas of dieback than above
Bad	Severe decline; widespread dieback and/or severe stress; life-threatening disease.
Dead	(or Moribund)

STRUCTURAL CONDITION: Defects affecting the structural stability of the tree, including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. etc. Classified as:

Good	No obvious structural defects: basically sound
Fair	Minor, potential or incipient defects
Poor	Significant defect(s) likely to lead to actual failure in the medium to long-term
Bad	Defects liable to cause significant failure in the short term, or to lead to a major or total collapse in the foreseeable future
Severe	Tree that has already suffered or is at imminent risk of a major collapse.

REMAINING USEFUL LIFE EXPECTANCY: An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance)

V -	very short: less than 10 years	**S** -	short: 10-20 years
M -	moderate: 20-40 years	**L** -	long: 40 or more years

RETENTION CATEGORY:

Trees are placed into one of four basic categories using the letter codes **A, B**, **C or U**, as recommended in BS5837:2012, supplemented where appropriate by a Plus [+] or Minus [-] suffix. The categories indicate the surveyor's assessment of the 'Retention Value' of each tree, how much importance should be placed on its retention or conversely, how much or how little would it be missed if it was to be removed.

It would normally be presumed that trees in categories A and B should be retained wherever possible, but with the highest priority given to category A. Category U trees may be lost without significant detriment while category C trees are intermediate, potentially retainable but not of *major* significance in terms of their importance to the site or the wider locality. The Plus [+] and Minus [-] suffixes denote trees that do not fall easily into one or other of the categories but are intermediate between two. A+ and U- have special meaning, defined below.

Note: *These are NOT health and safety assessments: the classifications do not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees' general suitability for retention.*

A HIGH RETENTION VALUE (●) Trees or groups of such quality and significance such that their retention and protection should be given a particularly high priority within the design process. Category A trees would generally be expected to have a safe, useful life-expectancy of at least 40 years (although exceptions may be made in the case of specimens of exceptional cultural, historic or scientific value).

'A+' denotes a specimen of exceptional importance, the protection of which should be given the very highest priority. Includes Veteran[1] and champion trees, specimens of particular cultural significance and any other tree whose value and importance extends well beyond its immediate locality, county or even country-wide.

B MODERATE RETENTION VALUE (■): Trees or groups the retention of which would be highly desirable, although the selective removal of certain individuals may be acceptable provided full consideration is given to alternative courses of action and/or appropriate mitigation is provided.

Category B trees will be of generally good quality but may also show some defects or impairments where these are remediable and/or do not detract significantly from their significance or viability. Includes trees with clearly identifiable conservation or other cultural benefits.

They would generally be expected to have a safe, useful life-expectancy in excess of 20 years.

C MINOR RETENTION VALUE (▲): Trees or groups that are not of sufficient value to be regarded as a significant constraint to development.

Includes trees that are of poor quality or form; trees whose health or structural stability is deteriorating and is unlikely to be capable of effective remedial treatment, or where the cost of ongoing management would be excessive. Also trees clearly inappropriate to their location, likely to cause damage to nearby properties or to give rise to significant nuisance; trees being grossly suppressed by other nearby trees as well as those the removal of which would *benefit* better quality adjacent trees. Also included here are trees that are simply undistinguished and make little impact within the local landscape and environment.

Category C trees will normally have potential life expectancy of 10 years (although they may perhaps require attention) so, while not of a quality such as to significantly constrain development (i.e. their loss would not detract markedly from the site), they may nonetheless be retained where it proves appropriate, such as where they may be of benefit while new plantings become established.

Young, small and insignificant trees will be included here, even if of good health, on the basis that such trees can be relatively easily replaced or transplanted.

U UNSUITABLE: (★) Trees likely to prove to be unsuitable for retention for more than 10 years should any significant increase in site usage arise as a result of development: dead or moribund trees, those at risk of collapse or in terminal decline and/or with serious, irremediable defects.

Also trees that will be left unstable by other essential works (such as the necessary removal of other nearby trees); trees infected by pathogens that could materially affect other trees and low quality trees that are significantly suppressing better specimens

Some category U trees may be of significant conservation value which it might be desirable to preserve.

'U-' denotes a tree where removal or major preventative work is regarded as being required *based on the circumstances at the time of inspection and irrespective of any development proposal*.

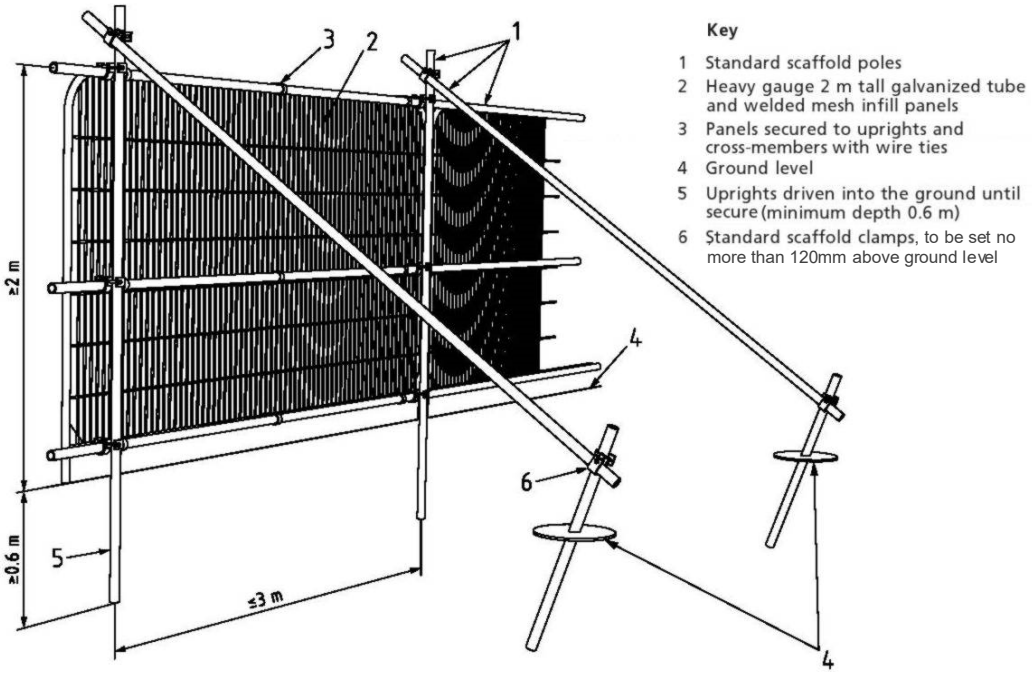
[1] A Veteran tree is one that is of exceptional age relative to others of the same species and which because of its advanced years possesses special biological, aesthetic and/or cultural interest. It should exhibit crown retrenchment and signs of decay in the trunk, branches or roots, thereby providing a range of diverse habitats for a wide variety of organisms.
[See *Ancient Tree Guide no. 4* (2008): Ancient Tree Forum, c/o The Woodland Trust, Grantham.]

*A **CONSTRUCTION EXCLUSION ZONE** should be established around all trees intended for retention, based upon the Root Protection Areas (RPAs) of those trees. These zones should be adequately protected by appropriately designed **Protective Barriers** & **Ground Protection** throughout the all demolition & construction processes.*

A: PROTECTIVE BARRIERS

- Vertical barriers should be erected and ground protection installed **before any materials or machinery are brought onto the site and before any demolition, development or stripping of soil commences**. Areas of new or retained structure planting should be similarly protected, based on the extent of the soft landscaping as shown on the approved drawings. The project arboriculturist should confirm that barriers and ground protection have been erected and set out correctly prior to the commencement of other operations, and that they are fit for purpose..
- Where required, pre-development tree work may be undertaken before the installation of tree protection, with the agreement of the project arboriculturist and the local planning authority.
- **Once erected, barriers and ground protection should be regarded as sacrosanct.** Special attention should be paid to ensure that barriers remain rigid and complete through the entire period of construction; they must not be removed or altered without prior recommendation by the project arboriculturist and approval of the local planning authority.
- Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s); three design types are described below.
- **Type 1** barriers are the default design and should be employed in all sites where heavy plant is used and where construction activity is likely to put pressure on the available space. Illustrated below, it will be based on a scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical poles spaced at a maximum interval of 3m. Onto this, weldmesh or other sturdy panels should be securely fixed.

Specification for Type 1 protective barrier



- Where driven vertical poles are impractical due to the likelihood of causing damage to tree roots or to underground services, above-ground stabilizing systems may be specified (Refer to the project arboriculturist)
- **Type 2** barriers may be suitable on smaller construction sites where protection is only required from pedestrians, cars, vans and manually operated plant and where less pressure is anticipated. These barriers will comprise Weldmesh panels on rubber or concrete feet, the panels being securely joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabilizer struts.
- **Type 3** barriers should only be used on small, domestic projects or in locations where no significant pressures to extend the working area will occur. These may comprise split-chestnut paling or plastic mesh barriers. In all cases, however, they must be firmly fixed and maintained secure throughout the duration of all site works.
- Alternative specifications may be acceptable but should be specified in conjunction with the project arboriculturist but they must always ensure an adequate degree of protection for the conditions likely to obtain on site. It may be appropriate on some sites to use temporary site office buildings as components of the tree protection barriers.

B: GROUND PROTECTION

- Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate
- However, where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site. Such temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.
- The ground protection might comprise one of the following:

  a) *for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;*

  b) *for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;*

  c) *for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*

- In all cases, the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired.

C: ADDITIONAL PRECAUTIONS OUTSIDE THE EXCLUSION ZONE:

- Once the exclusion zone has been protected by barriers and/or ground protection, construction work can commence. All weather notices should be erected on the barrier with words such as:

Construction exclusion zone – NO ACCESS

In addition the following should be addressed or avoided.

- Care should be taken when planning site operations to ensure that wide or tall loads, or plant with booms, jibs and counterweights (including drilling and piling rigs) can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus necessitating access facilitation pruning. Local Planning Authority consent for such pruning may be required.
- Material which will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, should not be discharged within 10 m of the tree stem.
- Fires should be avoided on sites if at all possible. Where they are unavoidable they must not be lit in a position where heat could affect the trunk, branches or foliage of any tree. The size of the fire and the wind direction should be taken into account, and fires must be attended at all times.
- Notice boards, telephone cables or other services should not be attached to any part of the tree.
- It is essential that allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees..

D: ROADS, DRIVEWAYS AND PATHS NEAR TREES (including outline notes on 3-dimensional 'Cellular Confinement' load-support systems)

1. The overriding principles to be adhered to in the design of hard surfaces near trees are: (i) the preservation of the character of the soil in a form no more compacted or otherwise disturbed, disrupted or contaminated than it is at present; (ii) to maintain gaseous exchange between the upper layers of soil and the atmosphere; (iii) to ensure adequate (but not excessive) water supply to the soil; and (iv) the avoidance of damage to retained trees as a result of root severance, crushing or abrasion.
2. Tree roots are concentrated in the upper metre of the soil, with the great majority 300-600 mm below the soil surface. Beyond 3 or 4 metres from the trunk most of the roots are small in diameter and not readily apparent as originating from trees. They are nevertheless vital to the tree's well-being, as well as being very easily damaged by even rather shallow soil disturbance, such as may be required in establishing a path or driveway.
3. Wherever possible paths etc should be routed well outside the Root Protection Area (RPA), when problems should not arise. Note, however, that the position of a path or road on a layout plan may indicate the surface only: *Allowance must be made for any kerbing, and the footing into which kerbs will be set, when considering possible conflicts between trees and nearby paths, roadways etc*.
4. Where there is no alternative other than for such a route to impinge upon the RPA of a tree, the possibility of damage can be significantly reduced through the use of No-Dig techniques, where an adequately load-bearing sub-base and hard-wearing surface is established over existing roots without them being disturbed. A variety of techniques are available including geocellular raft systems (such as ArborRaft[2]) as well as three-dimensional cellular confinement systems[3]. Alternatively, piles, pads or elevated beams can be used to support surfaces to bridge over the RPA or, following exploratory investigations to determine location, to provide support within the RPA while allowing the retention of roots greater than 25 mm in diameter. The design of all such systems should be specified in liaison with the project arboriculturist.
5. Temporary haul roads must be similarly designed and specified, taking into account the extra loading that is likely to be imposed by construction traffic. Where proposed *permanent* new surfaces will be used for construction access, it is essential that this extra loading and wear is taken into account during the design process. A temporary sacrificial wearing surface may be required for the duration of construction activity.
6. Wherever possible, new surfaces should permit the percolation of moisture into the soil and allow free gaseous exchange. Suitable permeable wearing course include washed gravel (either loose or in laid gravel-retention grids, but note that self-binding gravels and 'hoggin' is NOT suitable) or paving slabs or block pavers with built-in infiltration spaces. These must be laid dry-jointed, bedded onto a free-draining sub-base such as sharp sand or coarse, no-fines aggregate. Porous asphalt and resin-bonded gravels will provide good porosity initially but will eventually become blocked by fines and should be laid following the principles used for impermeable surfaces (see below).
7. New permanent impermeable hard surfacing should not exceed 20% of any existing un-surfaced ground within the RPA. The hard surface should be resistant to or tolerant of deformation by tree roots, and should be set back from the stem of the tree and its above-ground root buttressing by a minimum of 500 mm to allow for growth and movement. Resulting gaps may be filled using appropriate inert granular material.
8. Prior to and during installation, the soil structure in the area beneath the proposed new surfacing must be protected from compaction, using temporary ground protection where necessary (see appendix 2B). During installation the new surface should be "rolled out", using machinery working forward from the surface as it is constructed.
9. If it proves necessary, existing surface vegetation should be killed using an *appropriate herbicide* that will not leach into the soil and will not affect tree roots. All herbicides must be applied strictly in accordance with the manufacturer's instructions.
10. The soil should not be skimmed to reduce ground levels. However loose organic matter and/or turf should be removed carefully, using hand tools. If the surface needs to be levelled or raised, this should be achieved using a suitable granular fill material (e.g. no-fines gravel, washed aggregate etc.)

[2] Manufactured by Infrafgreen Solutions
[3] Suppliers of proprietary cellular confinements systems include Infragreen Solutions ('InfraWeb' TRP), Geosynthetics ('CellWeb') and Terram ('Geocell') and Greenfix ('Geoweb')