

Arboricultural Report

Tree Survey
Arboricultural Impact Assessment
& Tree Protection Plan

Land at
Woodberry Down – Phase 3
Woodberry Grove / Seven Sisters Road
London
N4

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1.0 Summary

1.1 Site summary:

The subject site is located on land at Woodberry Down, London, N4. This report covers Phase 3 of the proposed re-development of the Woodberry Down estate.

1.2 Existing trees (Section 8 refers):

I surveyed fifty-four individual trees and three groups of trees on site and adjacent to it in November 2018.

1.3 Condition of existing trees (Section 9 refers):

Three trees – T20, T27, and T37 – were found to be in such a condition that their removal is recommended irrespective of the outcome of this proposal.

1.4 Consequences of development on trees (Section 9 refers):

Thirty-three individual trees and two groups of trees would be directly lost following the full implementation of the proposals.

1.5 Tree Works (Section 10 refers):

No specific tree works are recommended as a direct consequence of implementing this proposal.

1.6 Tree Protection (Section 11 refers):

In order to protect the root systems of the retained trees during the construction period, the following measures are recommended and have been illustrated at Appendix B.

- The installation of three tree protection barriers,
- The installation of one area of temporary ground protection,
- The installation of one area of permanent ground protection, and
- The specification of appropriate stem and crown protection for T2 - T5 during the construction period.

1.7 Conclusion:

If the recommended tree protection measures are installed and adequately supervised, I consider that the proposal can be successfully implemented while protecting the retained trees to a level which complies with current arboricultural standards.

2.0 Details of survey

The Site: Land at Woodberry Down – Phase 3, London, N4
TMC Ref: AR/69518
Local authority: London Borough of Hackney
Survey date: 16th November 2018
Report date: 12th November 2019
Surveyed by: Clive Mayhew BA (Hons), MICFor, FArbor.A., CEnv

3.0 Instructions

3.1 I have been instructed to:

1. Survey the trees potentially affected by the proposal.
2. Produce an arboricultural report fully compliant with the recommendations contained within 'BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.'

3.2 My name is Clive Mayhew and I am the author of this report. I have over 35 years of experience in tree, landscape and ecology management in both the public and private sectors. I am a Chartered Arboriculturist within the Institute of Chartered Foresters, a Chartered Environmentalist, and a Fellow of the Arboricultural Association.

4.0 Site details

- 4.1 **Site description:** The subject site is located on land at Woodberry Down, London, N4.
- 4.2 **Proposal details:** This report covers Phase 3 of the proposed re-development of the Woodberry Down estate.
- 4.3 **Existing structures:** The site is currently occupied by The Happy Man Public House, the former Robin Redmond Centre, and five individual Council owned housing blocks.
- 4.4 **Existing topography:** The site is essentially level throughout. There is a slight general fall in levels from north to south, but these are of no arboricultural significance.
- 4.5 **Existing vegetation:** In addition to the trees surveyed for this report, the dominant vegetation type across the site is short mown amenity grassland.
- 4.6 **Soils:** The British Geological Survey website indicates the soil geology to be clay, silt and sand from the London clay formation. The clay content in these soil types is likely to be high. The degree of clay content is relevant because clay soils can be compacted, and this can be extremely damaging to tree roots; this potential is recognised in the tree protection recommendations detailed within this report.

5.0 Planning history

- 5.1 I have been given no specific details with regards to the site's planning history.

6.0 Protected trees

- 6.1 I have been given no information with regards to trees that might be protected by virtue of a Tree Preservation Order, or their location within a Conservation Area.
- 6.2 It should be noted that the legal status of trees can change at any time through, for example, the serving of a new Tree Preservation Order, and this should be checked prior to the commencement of any works.

7.0 Documents supplied

- 7.1 Proposal plans for the site have been supplied to me Daniel Palman and Farrah Hussain of Berkeley Homes (North East London) Ltd.

8.0 Existing trees

8.1 I surveyed fifty-four individual trees and three groups of trees on site and adjacent to it in November 2018.

8.1.1 I classed the trees according to the classifications outlined within BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (See Appendix E).

8.1.2 I classified five individual trees as A Grade. BS5837 considers that A grade trees are of high quality with an estimated remaining life expectancy of at least 40 years.

8.1.3 I classified twenty-five individual trees and two groups of trees as B Grade. BS5837 considers that B grade trees are of moderate quality with an estimated remaining life expectancy of at least 20 years.

8.1.4 I classified twenty-one individual trees and one group of trees as C Grade. BS5837 considers that C grade trees are of low quality with an estimated remaining life expectancy of at least 10 years.

8.1.5 I classified three individual trees as U Grade. BS5837 considers that U Grade trees are those in such a condition that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years.

8.2 Tree locations:

8.2.1 The individually surveyed trees are plotted at Appendix A and described in the tree survey schedule at Appendix C.

9.0 Arboricultural Impact Assessment (AIS)

9.1 The recommendations made here relating to tree retention, removal and planting are informed by current arboricultural, planning and urban design best practice, primarily British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations,' which advocates a pragmatic approach to tree removal and retention, based on sustainability.

9.2 Trees requiring removal *irrespective* of the proposal

9.2.1 Three trees were found to be in such a condition that their removal is recommended irrespective of the outcome of this proposal, these being:

- T20 – Silver birch
- T27 – Purple plum
- T37 – Mountain ash

9.3 **Trees requiring removal as a *consequence* of the proposal**

9.3.1 The following trees would be directly lost following the full implementation of the proposals.

9.3.2 **T1, T6 to T30, T32, T46 to 48, T50 & T51, T53, T54, T56, T57 & G49 – Various species**

These trees are located throughout the Phase 3 area of the estate and along the Seven Sisters Road northern boundary, and within Woodberry Grove to the west.

These trees will be lost either because:

- 1) They fall beneath the footprints of a proposed new housing block or associated infrastructure.
- 2) The juxtaposition between the new structures and these trees means that their longer-term retention is unsustainable.
- 3) They are within the area identified for refurbishment and landscaping along the northern boundary of Seven Sisters Road.
- 4) They will be lost as they have not been incorporated into the future landscape design for the open space.

10.0 **Tree Works**

10.1 No specific tree works are recommended as a direct consequence of implementing this proposal.

10.2 If any works were to take place, they should comply with the recommendations contained within British Standard 3998:2010 'Tree Work' and be undertaken with the consent of the local planning authority, if such consent is required.

11.0 Arboricultural Method Statement (AMS)

11.1 Root Protection Areas (RPAs)

The identification of Root Protection Areas is the primary means by which retained trees are protected on construction sites. No unspecified activity should occur within any prescribed RPA, access should only be permitted with prior approval of the Local Planning Authority, and encroachment should normally only take place if the ground beneath is suitably protected.

- 11.1.1 BS 5837:2012 provides arboriculturists with a method to determine the extent to which excavations associated with construction works might have a damaging effect on the roots of adjacent trees. The Standard enables an RPA to be calculated from the diameter of each retained tree, and this is usually described as a circle with a radius at the prescribed distance from that tree.

11.2 RPAs and the subject site:

I have calculated the RPA of the retained tree (T55 – London Plane) as recommended within BS 5837:2012. This area is shown as a dashed red line around the retained tree at Appendix B.

- 11.2.1 The illustrated Root Protection Areas at Appendix B are based upon a notional representation of the RPA as a circle centred upon the base of the stem. However, the British Standard recognises the potential for this to be a crude oversimplification of actual root spread, and that specific site conditions can result in the development of asymmetrical root systems – See Paragraph 4.6.2 of BS 5837:2012. In such situations the British Standard suggests that it should be demonstrated that the trees in question should remain 'viable and that the area lost to encroachment can be compensated for elsewhere, contiguous with its RPA' – See paragraph 5.3.1 of BS 5837:2012.

11.3 Site specific tree protection measures

Some aspects of the activity associated with the proposed development will occur within the vicinity of the nominal RPA of the retained tree. As a consequence, I make the following recommendations regarding tree protection measures for this tree during the construction period.

11.4 Protective barriers

- 11.4.1 BS 5837:2012 recommends that the RPAs of the subject trees should be protected by the erection of barriers, the preferred form of which consists of welded mesh 'Heras' type panels 1.8 metres high, mounted on a braced scaffolding frame as detailed in Figure 2 & 3 of BS 5837:2012. (See Appendix F). The barriers should carry laminated signs stating: "Construction exclusion zone – No Access," or similar. (See Appendix G). It is recommended that gaps should be left beneath the bottom of any perimeter site fencing and the ground to allow for the passage of foraging mammals.

11.4.2 The subject site: The requirement for three Tree Protection Barriers has been identified and these have been illustrated at Appendix B.

- **TPB 1** - This barrier is located adjacent to T2 – T5. It is designed to protect the stem and root system of that tree from being damaged during the construction period; in practice this barrier is likely to be incorporated into the external site fencing.
- **TPB 2** - This barrier is located around T52 and T55 within the proposed post-construction area of open space. The installation of this barrier is designed to protect the stems and root systems of these trees during the construction period.
- **TPB 3** - This barrier is located around trees within the north east corner of the site, these trees being identified for retention until the consideration and commencement of Phase 5. The installation of this barrier is designed to protect the stems and root systems of the trees during the implementation of Phase 3.

11.5 Temporary ground protection

BS 5837 recognises that temporary ground protection may be needed within construction sites and provides sample specifications for that protection.

11.5.1 The subject site: A requirement for one area of temporary ground protection has been identified and these are illustrated in pink at Appendix B.

- **TGP 1** – This area of ground protection is located to the east of T2 - T5. It is designed to provide working space by providing protection to the RPAs of those trees. In order to achieve that aim, the ground protection should completely fill the gap between the perimeter fence and the proposed building. It should also be of a suitably robust specification to withstand the degree of proposed activity anticipated within the area.

11.5.2 BS 5837 states that any ground protection should be appropriately specified and capable of supporting any activity without being distorted or causing compaction of the underlying soil.

11.5.3 A specification for temporary ground protection where pedestrian movement and/or pedestrian operated plant with a gross weight of 2 t only is anticipated, might typically consist of 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.

11.5.4 If a greater – or lesser – degree of activity is envisaged than that described above, the specification of ground protection required can be adjusted accordingly depending upon the weight and frequency of the proposed activity within the RPA; guidance for such amendments should be sought from an appropriately qualified arboriculturist and structural engineer.

11.6 Permanent ground protection

BS 5837 also recognises that permanent ground protection solutions may be required to provide protection to tree roots after the construction phase has been completed, and the standard provides sample specifications for that protection.

11.6.1 The subject site: A requirement for one area of permanent ground protection has been identified; it has been illustrated in orange at Appendix B.

- **PGP 1** - This area is located to the west of T55 and encompasses a section of the proposed internal access road within the development. It is designed to provide protection to the RPA of adjacent T55.

11.6.2 While the specific design of any 'no-dig' surfacing will need to be drawn up by an appropriately qualified engineer, a sample specification is attached at Appendix H.

11.6.3 Any detailed specification and method statement for the installation of 'no-dig' surfaces must strictly comply with the following elements in order to protect the root systems of the retained trees upon which it is laid:

- 1) The installation of the surface should require no excavation into the existing soil profile other than the removal of any turf layer or existing vegetation by hand tools. Any raising of levels should be achieved using granular materials which will remain gas and water permeable throughout its design life.
- 2) Any specification should include a final wearing course constructed using a compacted semi-permeable material. The specification of the actual material and its application will need to be prepared by a suitably qualified engineer, but it should allow for moisture infiltration and gaseous diffusion; washed gravel with a low fines content is often cited as being a suitable, but given the gradient of this particular site, block pavers may be more appropriate choice.
- 3) If the semi-permeable surface is to be used by construction traffic, it should be protected by a temporary sacrificial layer over a geotextile separator, which should be removed on completion of the works.
- 4) A geotextile material should be used at the base of the construction to allow for gaseous exchange and prevent potential pollution contamination of the rooting area below.
- 5) Excavated kerbs or edgings should not be used; their installation can be highly damaging to tree roots and an alternative method needs to be specified. Alternatives include: Peg and board edging, pinned sleepers, and gabions or other proprietary non-invasive ground-contact structures.

11.6.4 If any roots are encountered in these areas during the execution of the works, the following treatment should be adopted:

- 1) Any roots encountered should be severed using a sharp tool.
- 2) Backfilling should be carefully carried out to avoid direct damage to the retained roots and excessive compaction of the soil around them. Backfilling should be carried out using the excavated soil. This should not be compacted but lightly “tamped” and usually left slightly proud of the surrounding surface to allow natural settlement. Other materials should not be incorporated into the backfill.
- 3) It should be recognised that fine roots are vulnerable to desiccation once they are exposed to the air. Larger roots have a bark layer which provides some protection against desiccation and temperature change. The greatest risk to these roots occurs when there are rapid fluctuations in air temperature around them - e.g. winter diurnal temperatures. It is important, therefore, to protect exposed roots where the excavation is to be left open overnight when there is a risk of frost. In winter, before leaving the site at the end of the day, the exposed roots should be wrapped with dry sacking. This sacking must be removed before the trench is backfilled.
- 4) If roots over 25mm in diameter are encountered, the advice of a suitably qualified arboriculturist should be sought before any severance works take place.

11.6.5 With ‘no-dig’ surfaces there can occasionally be issues with achieving the correct levels when tying in with a conventionally constructed adjacent surface. In this location, however, there is ample room for this to be achieved outside of the confines of the RPAs of individual trees.

11.7 Additional protection for trees T2 – T5

The crowns and stems of T2 – T5 will be in close proximity to the adjacent development during the construction period; as a consequence, I recommend the additional protection measures for these trees:

- **Stems:** If the stems of these trees fall within the perimeter site fencing, then those individual stems should be protected by free-standing solid board fencing for the construction period.
- **Crowns:** The crowns of these trees have the potential to encroach into the area of scaffolding access during the construction period. If this does occur, the tree branches *should not be severed*. Appropriate screening should be erected on the outer face of the scaffolding to prevent encroachment and allow the peripheral branches to be retained following completion of the development.

11.8 Demolition

Significant demolition works are identified as part of this proposal. These works should not commence until *all* of the tree protection measures detailed above have been fully installed.

11.9 Other general activities

11.9.1 Many of the activities which occur on construction sites are potentially damaging to trees. These include the location of site huts, parking arrangements, the storage of materials, the storage of rubbish, and the movement and operation of plant. It is important to understand the range of potentially damaging activities that might occur on a particular site and ensure at an early stage that these possible conflicts are recognised and avoided. Therefore, areas designated for site huts, parking and storage of materials should be identified prior to the commencement of works and agreed with the Local Planning Authority.

11.9.2 **The subject site:** There is adequate space within the site to ensure that areas for storage and other aspects of site accommodation are not in conflict with the tree protection measures recommended in this report. However, this aspect of site management should be established and agreed with the local authority prior to the commencement of works.

12.0 Sequence of works

12.1 The sequence of works should be as follows:

1. Tree works
2. Erection of tree protection barriers
3. Installation of temporary ground protection
4. Installation of permanent ground protection
5. Demolition works
6. Construction works
7. Removal of temporary ground protection
8. Removal of tree protection barriers







13.0 Recommendations

13.1 It is recommended that the tree protection measures advocated in this report should be followed at all times. Any deviation should only occur following consultation with the local authority's arboricultural officer, and then only with their specific approval.

- 13.2 It is recommended that a suitably qualified arboriculturist supervises the installation of the tree protection measures and confirms that they comply with BS 5837:2012, and if necessary, briefs the individual who will be responsible for the maintenance of tree protection measures for the duration of the works.
- 13.3 An individual should be identified as a point of contact for arboricultural matters for the duration of the works. This individual will need to be familiar with the arboricultural constraints presented by the site, the tree protection measures that have been installed, and the requirement to keep those measures adequately monitored and maintained.

14.0 Conclusion

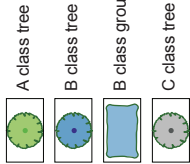
- 14.1 I consider that this scheme is acceptable in arboricultural terms and that the subject trees can be protected according to current standards, providing the recommended mitigation measures are adopted.

-  A class tree
-  B class tree
-  B class group
-  C class tree
-  C class group
-  U class tree

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AR69518 – Land at Woodberry Down, N4
 (Phase 3)
Existing Tree Plan
 November 2019
 Do not scale from drawing





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Tree Survey – 16th November 2018

Tree No	Species	Ht.	Stem dia.	RPA Rad	RPA Area	Crown spread N – S – E - W				CB	Age class	Phy con	Str con	ECR	Class	Observations & recommendations
T1	London plane	22	80	9.6	290	9	11	11	11	5	M	G	G	L	A	Good, established, broad crowned tree.
T2	Lime	12	45	5.4	92	3	3	5	7	4	M	F	F	M	B	Generally unexceptional ex-pollard in prominent highway location.
T3	Lime	12	50	6.0	113	3	3	4	4	4	M	F	F	S	C	Generally unexceptional ex-pollard in prominent highway location. Basal damage.
T4	Sycamore	12	45	5.4	92	3	3	4	3	4	M	F	F	S	C	Generally tree in prominent highway location.
T5	Lime	12	60	7.2	163	4	4	4	4	2	M	F	P	S	C	Generally unexceptional ex-pollard in prominent highway location. Poor twin stem junction @ 2m.
T6	Lime	13	50	6.0	113	7	7	7	8	3	SM	G	G	M	B	Good tree. Prominent to road.
T7	Lime	12	40	4.8	72	7	8	3	3	3	SM	G	G	M	B	Good tree. Prominent to road.
T8	Cotoneaster	6	15	1.8	10	7	2	2	4	2	M	P	P	S	C	Poor tree with basal suckers.
T9	Maple	14	30	3.6	41	8	7	7	5	3	SM	F	G	M	B	Established tree with thin crown.
T10	Purple plum	14	25	3.0	28	5	5	5	4	4	SM	F	F	M	C	Unexceptional tree.
T11	Lime	18	70	8.4	222	8	6	8	8	3	M	G	G	M	B	Good, established tree. Stem leans to north east.

Tree No	Species	Ht.	Stem dia.	RPA Rad	RPA Area	Crown spread N – S – E - W				CB	Age class	Phy con	Str con	ECR	Class	Observations & recommendations
T12	Lime	20	60	7.2	163	8	9	10	10	4	M	G	G	M	B	Good, established tree.
T13	Horse chestnut	15	70*	8.4	222	7	7	8	8	4	M	G	F	L	B	Fine, established tree. Extent of inspection limited due to secured compound.
T14	London plane	22	70*	8.4	222	8	10	10	10	6	M	G	G	L	A	Fine, established tree. Extent of inspection limited due to secured compound.
T15	Horse chestnut	18	70*	8.4	222	8	9	10	7	5	M	G	G	L	B	Fine, established tree. Extent of inspection limited due to secured compound.
T16	Silver birch	9	20	2.4	18	3	1	3	3	5	SM	F	F	S	C	Unexceptional tree.
T17	Silver birch	12	25	3.0	28	4	5	3	4	5	SM	F	F	S	C	Unexceptional tree.
T18	Silver birch	12	25	3.0	28	5	5	4	5	4	SM	F	F	S	B	Established tree.
T19	Silver birch	13	25	3.0	28	5	5	5	5	4	SM	F	F	S	C	Established tree.
T20	Silver birch	6	15	1.8	10	3	2	2	4	3	Y	P	P	D	U	Poor tree with crown die-back.
T21	Silver birch	12	20	2.4	18	4	4	4	4	5	SM	F	F	M	C	Generally unexceptional tree on road frontage.
G22	Mixed species x 16	<9	<30	3.6	41	As per plan				Var	SM	F	F	M	B	Collectively adjacent road. Purple plum x10, Malus x3, Silver birch x1, & Cotoneaster x2.
T23	Silver birch	9	25	3.0	28	5	5	5	5	4	SM	G	G	M	B	Prominent to road.

Tree No	Species	Ht.	Stem dia.	RPA Rad	RPA Area	Crown spread N – S – E - W				CB	Age class	Phy con	Str con	ECR	Class	Observations & recommendations
T24	Cotoneaster	4	20	2.4	18	2	2	4	0	1	SM	P	P	S	C	Poor, leaning specimen.
T25	Thorn	5	20	2.4	18	2	1	2	2	3	SM	F	F	S	C	Unexceptional, poor specimen on road frontage.
T26	Cotoneaster	5	20	2.4	18	2	2	3	4	2	SM	F	P	S	C	Unexceptional, poor specimen on road frontage.
T27	Purple plum	4	15	1.8	10	1.5	1.5	1.5	1.5	2	SM	P	P	D	U	Poor, failing tree.
T28	Silver birch	12	20	2.4	18	5	5	5	5	4	SM	F	F	M	C	Established, but generally unexceptional tree.
T29	Silver birch	10	25	3.0	28	5	5	5	5	4	SM	F	F	M	C	Established, but generally unexceptional tree.
T30	Cherry	11	30	3.6	41	5	5	5	4	1.5	SM	F	F	M	C	Established, but generally unexceptional tree.
G31	Mixed species x 7	<12	<45	5.4	92	As per plan				Var	SM	F	P	S	C	Generally thin and poor group. Thorn x 3, cotoneaster x 3, cherry x 1.
T32	Beech	15	35	4.2	55	4	4	4	4	5	SM	G	F	M	B	Good, established tree.
T33	Silver birch	14	40	4.8	72	4	9	7	8	3	SM	F	F	M	B	Prominent to road.
T34	Silver birch	14	25	3.0	28	2	8	6	3	4	Y	F	F	M	C	Generally unexceptional tree.
T35	Silver birch	16	25	3.0	28	2	5	4	4	5	Y	F	F	M	C	Generally unexceptional tree.
T36	Silver birch	11	20	2.4	18	4	3	4	2	5	Y	F	F	M	C	Generally unexceptional tree.

Tree No	Species	Ht.	Stem dia.	RPA Rad	RPA Area	Crown spread N – S – E - W				CB	Age class	Phy con	Str con	ECR	Class	Observations & recommendations
T37	Mountain ash	9	15	1.8	10	2	2	2	2	3	Y	P	P	D	U	Poor tree.
T38	Lime	20	100	12.0	452	8	8	8	8	7	M	G	G	L	B	Good, established tree.
T39	Silver birch	11	15	1.8	10	2	4	4	4	6	Y	F	F	M	C	Generally unexceptional tree.
T40	Silver birch	15	30	3.6	41	7	4	6	6	5	SM	F	F	M	B	Good, established tree.
T41	Silver birch	15	40	4.8	72	7	2	7	5	6	M	G	G	M	B	Prominent to road.
T42	Silver birch	11	20	2.4	18	7	6	3	3	2	Y	F	F	M	C	Generally unexceptional but established tree.
T43	London plane	21	90	10.8	366	6	6	6	6	9	M	G	G	L	A	Large prominent tree. Crown reduced.
T44	London plane	21	80	9.6	290	6	6	6	6	8	M	G	G	L	A	Large prominent tree. Crown reduced.
T45	Silver birch	16	25	3.0	28	7	5	5	4	6	SM	G	G	M	B	Good, established tree.
T46	Cypress	13	35	4.2	55	3	3	3	3	1.5	SM	G	G	L	B	Good tree, part of small group planting.
T47	Cypress	13	35	4.2	55	3	3	3	3	1.5	SM	G	G	L	B	Good tree, part of small group planting.
T48	Cypress	13	35	4.2	55	3	3	3	3	1.5	SM	G	G	L	B	Good tree, part of small group planting.
G49	Silver birch x 2	13	30	3.6	41	4m cardinal points each tree				3	SM	G	F	M	B	Collectively B grade group, individually C Grade.

Tree No	Species	Ht.	Stem dia.	RPA Rad	RPA Area	Crown spread N – S – E - W				CB	Age class	Phy con	Str con	ECR	Class	Observations & recommendations
T50	Thorn	8	20	2.4	18	5	0	0	5	4	SM	P	P	S	C	Poor, leaning tree.
T51	Cherry	12	35	4.2	55	7	6	6	6	3	M	G	G	M	B	Good, established cherry.
T52	Cherry	12	35	4.2	55	8	7	7	7	4	M	G	G	M	B	Good, established cherry.
T53	London plane	21	80	9.6	290	6	6	3	7	8	M	G	F	M	B	Large prominent tree. Crown reduced.
T54	London plane	16	45	5.4	92	2	5	4	2	7	SM	F	F	M	B	Prominent tree. Crown reduced.
T55	London plane	22	80	9.6	290	7	7	7	7	5	M	G	F	M	A	Large prominent tree. Twin stemmed @ 5m. Crown reduced.
T56	Cherry	13	45	5.4	92	7	7	7	7	3	M	G	G	M	B	Good, established cherry.
T57	Cherry	12	45	5.4	92	8	7	7	6	2	M	G	G	M	B	Good, established cherry.

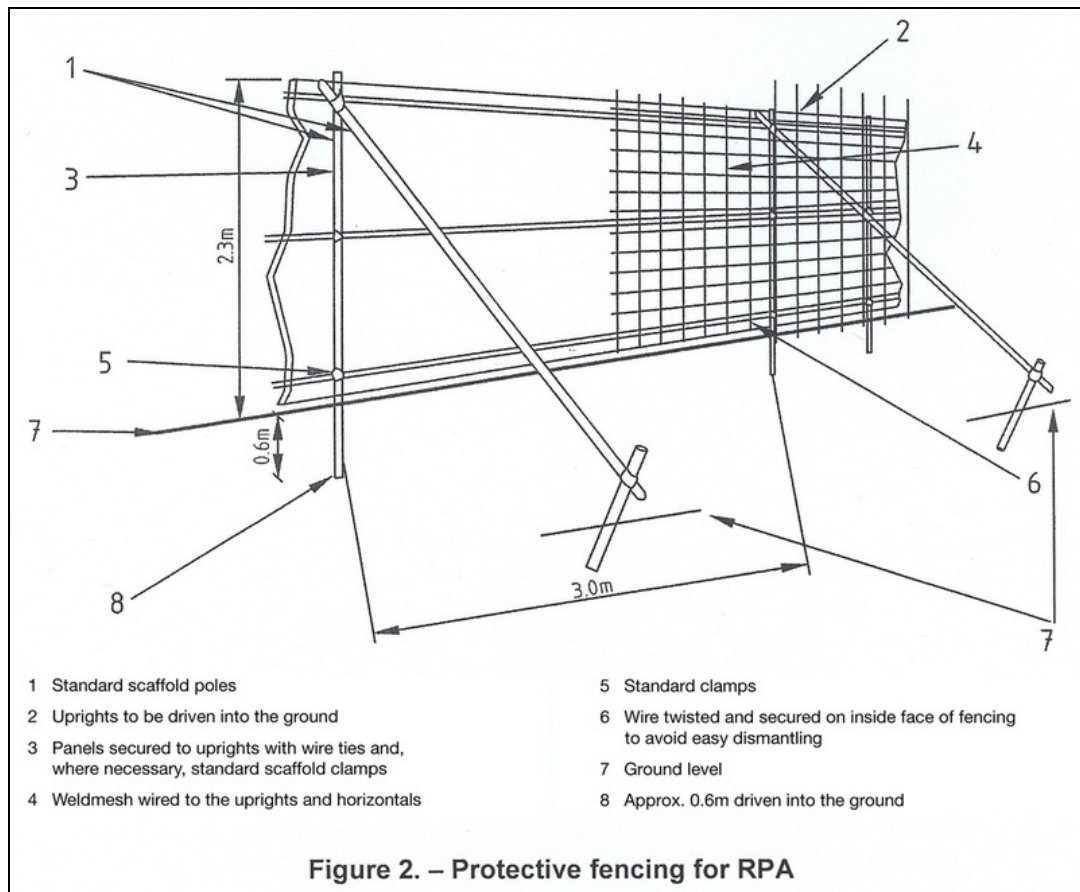
Survey sheet key

Tree No	Tree reference number as used in the report and survey plan T = Tree G = Group H = Hedge W = Woodland
Ht	Tree height in metres
Stem dia.	Stem diameter in millimetres Measured at 1.5 metres above ground level, or immediately above the root flare of multi-stemmed trees M = Multi-stemmed tree
Crown sp	Crown spread measured in metres from the stem to the four compass points
Crown break	Height of crown clearance above adjacent ground level, given in metres
Age class	Age class Y = Young: Staked or newly established tree SM = Semi-mature: An established tree at a stage of rapid growth EM = A tree nearing its ultimate canopy size for its situation M = Mature: A tree at its ultimate canopy size for its situation OM = Over mature: A mature tree smaller than its ultimate canopy size, often such trees are of great historical or ecological importance.
P. Con	Physiological condition of the tree expressed through an assessment of its general well-being G = Good, F = Fair, P = Poor, D = Dead
S. Con	Structural condition of the tree G = Good, F = Fair, P = Poor, D = Dangerous
R.C.	Estimated remaining contribution expressed in years D = <10, S = 10-20, M = 20-40, L = >40
BS Cat	Tree category graded as per the guidance given within Table 1 of BS 5837:2012 – See Appendix E A - Green = Trees of high quality with an estimated remaining life expectancy of at least 40+ years B - Blue = Trees of moderate quality with an estimated remaining life expectancy of at least 20 years C - Grey = Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm U – Red = Trees in such a condition that they cannot be realistically retained for longer than 10 years.
RPA ~ R	Root Protection Area radius, as measured in metres from the centre of the tree
RPA ~ A	Root Protection Area expressed in square metres

BS 5837:2012 Table 1 – Cascade chart for tree quality assessment

Category and Definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Trees 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 style="list-style-type: none">Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)Trees that are dead or are showing signs of significant, immediate, and irreversible overall declineTrees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.</p>			DARK RED
	1. Mainly arboricultural values	2. Mainly landscape values	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 of 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)	LIGHT GREEN
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	Trees with material conservation or other cultural value	MID BLUE
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	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 conferring on them significantly greater landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	GREY

BS 5837:2012 - Tree protection fencing



On site examples of appropriate tree protection fencing installed as recommended within BS5837

Tree protection area warning sign

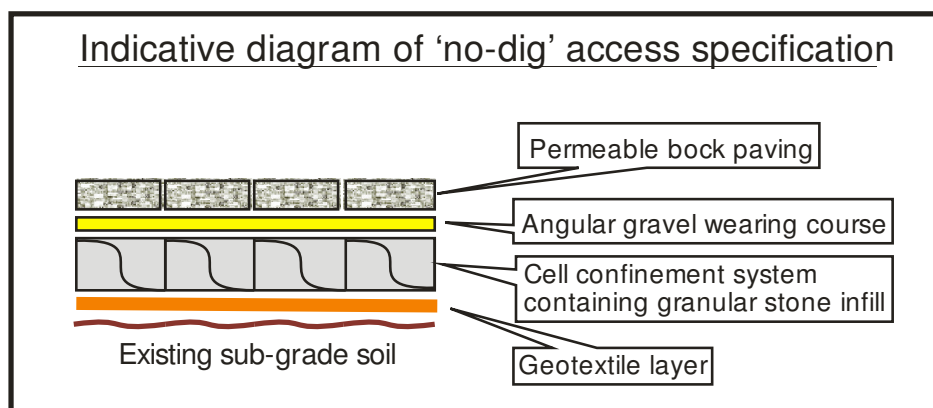


Installation of 'No-Dig' Surfaces in Proximity to Trees

This indicative specification is based on adapted advice given in Arboricultural Practice Note 12, and British Standard 5837, and is intended only to illustrate the feasibility of such an approach. Any adopted specification would need to be prepared and approved by an appropriately qualified engineer.

- a) Remove surface vegetation either:
 - 1) By hand, ensuring that any soil stripping operations do not exceed 50mm in depth.
 - 2) By the use of an approved herbicide. The chosen chemical should not adversely affect tree roots and must be applied by appropriately trained and qualified operatives.

Any roots encountered during this process should be pruned so that the final wound is as small as possible and free from ragged ends – See BS3998 'Tree Work.' paragraph 8.6.
- b) Remove major obstructions and use sharp sand to in-fill hollows, ensuring that a level and well graded surface is achieved.
- c) Lay a geotextile membrane of appropriate specification over the prepared sub grade area.
- d) Install edge restraints to contain the lateral movement of the infill. Care must be taken to ensure that edge restraints are laid along the soil surface and that no excavation occurs. The restraints can be secured either with pegs into the ground, or through the use of tie bars.
- e) Expand and lay the perforated cellular confinement system to fit the required area. Suppliers include: Geosynthetics Limited - www.geosyn.co.uk
- f) Backfill the cellular confinement system, using a no-fines angular material with a general particle size of between 30mm and 50mm.
- g) Following completion of development:
 - 1) Where permanent access is required; apply a 50mm wearing surface of angular gravel, OR permeable block paving on an appropriate laying course, as appropriate. The level differential between the top of the confinement system and the surrounding soil can be re-graded using good quality top-soil.
 - 2) If the access is intended to be temporary, all materials should be carefully removed by hand, working off the access surface to avoid soil compaction by machinery. The soil surface should then be lightly forked by hand to a depth of 300mm.



1.0 Scope of this report

- 1.1 I have been commissioned to produce base line survey data for trees, with a view to identifying constraints and opportunities for sustainable tree cover in the context of the development proposal for the site. The survey has been undertaken in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction - Recommendations' and was made in the context of the site's current usage.
- 1.2 This report comprises the prerequisite information for the planning process recommended in BS 5837:2012
 - The production of a Tree Survey
 - The production of an Arboricultural Impact Assessment
 - The production of a Tree Protection Plan if required.
 - The production of an Arboricultural Method Statement, if required.
- 1.3 The tree locations and canopy spreads are plotted on the indicative plans at Appendix A.
- 1.4 A detailed condition survey or hazard assessment of each tree has not been undertaken within the scope of this report. If a tree was noted as being in such a condition as to require more detailed assessment then that observation is included in the tree survey notes at Appendix B.
- 1.5 The findings within this report have been made on the basis of evidence seen on the day of inspection. It should be understood that some indications of tree hazard, such as leaf appearance and density, fungal fruiting bodies, and specific pests and diseases, are only visible at specific times of the year. Should significant additional information become apparent following the submission of this report I would reserve the right to modify the conclusion made accordingly.
- 1.6 This report is valid until:
 - The re-inspection dates given for any tree in the survey schedule
 - An episode of adverse weather conditions - for example winds over land measured at Beaufort scale force 8 or above.
 - For two years from the date of inspection.

Whenever any of the above occurs first, the trees must be re-inspected and any recommendations carried out. The presence of a hazard, the probability of the risk and the value of the target area all help to determine the frequency of re-inspection.
- 1.7 Some trees are protected in law. Prior to any works to trees being undertaken a check should be made with the relevant Local Authority to ensure that prior permission is not required with regard to Tree Preservation Orders (TPOs), Conservation Areas (CAs) or planning conditions that may affect the site or its trees.
- 1.8 Works to trees can also be regulated because of the risk of harming wildlife which may live on, or around them. Wild birds and bats are protected under the Wildlife and Countryside Act (1981) for example, and it is an offence to knowingly disturb their nests or roosts, while works to trees in proximity to badger setts may require a license.
- 1.9 Any tree works should be undertaken in accordance with British Standard 3998:2010 'Tree work - Recommendations'.

- 1.10 If hard surfacing needs to be installed close to trees the principles prescribed in BS 5837:2012 and modified specifications contained within Arboricultural Practice Note 12, 'Through the Trees to Development,' should be adopted.
- 1.11 My expertise is within the field of arboriculture and this report is limited to the arboricultural aspects of the site only. Any comments made with regard to other matters are from a lay person's point of view.

2.0 Survey method

- 2.1 Each tree was inspected from ground level, noting only external features and defects. The Visual Tree Assessment (VTA) method was used to carry out the tree survey; this is an industry standard, best practice method for assessing the health, stability and, to some degree, the amenity of urban trees. A tree may be physiologically healthy, with vigorous growth, but also exhibit mechanical defects and therefore be structurally weak, consequently presenting a risk. VTA involves an assessment of each tree's physiological and structural condition. It is carried out from ground level, with the aid of binoculars as necessary.
- 2.2 No climbing inspection was made of the crown, no excavation was made of the root system, and no specific decay detection equipment was used.
- 2.3 The following instruments were available to carry out the inspection:
- Diameter tape – To measure stem diameters
 - Nylon headed mallet – To sound trees for audible indications of decay
 - Steel probe – To indicate the presence and extent of cavities
 - Binoculars – To visually inspect above ground parts of the tree
- 2.4 No soil samples were taken and no tissue samples were collected.
- 2.5 The following publications have been used to inform this survey, and the recommendations which follow from it:
1. British Standard 5837:2012
'Trees in relation to design, demolition and construction – Recommendations.'
 2. British Standard 3998:2010 'Tree work - Recommendations.'
 3. 'Diagnosis of ill-health in trees' by R.G. Strouts and T.G. Winter.
DoE booklet Research for Amenity Trees No. 2, 1994.
 4. 'The body language of trees - A handbook for failure analysis'
by C. Mattheck and H. Breloer.
DoE booklet Research for Amenity Trees No. 4, 1994.