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ARBORICULTURAL IMPACT ASSESSMENT AND PRELIMINARY ARBORICULTURAL METHOD STATEMENT

In relation to proposed development

Site
115 Frognal, London, NW3 6XR

Client
Paul Crocker

Prepared by
Patrick Stileman BSc(Hons), MICFor, Dip. Arb (RFS), M.Arbor.A

Date
8th October 2016

Project reference:
DS23031601

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1 INTRODUCTION

1.1 I am Patrick Stileman, Director of Patrick Stileman Ltd. I am acting on instruction of the client, Paul Crocker. I have qualifications and experience in arboricultural consultancy and I have given details of this in Appendix 4.

1.2 **Brief:** Patrick Stileman Ltd is instructed by the client to appraise the likely impact to trees by development proposals at 115 Frognal, London, NW3 6XR. We are to specify tree retention and removal, provide an assessment of the effect of the development on the trees to be retained and an assessment of the likely impact of the retained trees on the new development.

1.3 **Tree survey:** I surveyed the trees at this site in accordance with guidelines set out in British Standard 5837: 2012 '*Trees in relation to design, demolition and construction – Recommendations*' (hereafter referred to as BS5837) on 14th April 2016. Information derived from the tree survey substantially informed the design process.

1.4 **Legal status of trees:** I have been informed by the client's agent that the two lime trees at the front of the site (Trees 7 and 8 of this survey) are protected by a tree preservation order (TPO). I have been sent a copy of the TPO and its reference is No 11 of 1957 – an order protecting trees over a large area. The trees are named on the TPO as individuals T17 and T60 respectively.

I have also been informed that the site is located within a conservation area. By virtue of this, all trees (bar certain exemptions) are afforded provisional statutory protection.

2 BRIEF SITE DESCRIPTION

2.1 115 Frognal is a corner plot located on the junction of Frognal and Oak Hill Way in Hampstead, North London. There is an existing detached house on the site which faces north. The property has a front garden laid mainly to lawn which slopes up to the house, and a driveway at the front. The property has a relatively flat rear garden with a retaining wall along the garden's eastern boundary. To the west of the house there is metaled private road serving access to properties to its south. The site has an irregular – shaped boundary with longest dimensions (excluding the private road adjacent) from west to east of 36 metres, and 31 metres from north to south.

2.2 Trees at the site are dominated by the two mature common lime trees mentioned in 1.4. There is an early-mature lime to the eastern side of the house and garden, adjacent to the private road. In the rear garden there are small ornamental trees of low significance. Notable trees off-site include a large London plane to the south-west, a pine on the junction between two roads to the west, and a screen of mature trees beyond the boundary of the road to the north.

3 SUMMARY OF PROPOSED DEVELOPMENT

3.1 It is proposed that the existing house shall be demolished and that a single new house shall be constructed as a replacement. The new dwelling shall have a driveway accessed from the private road to the east, and the replacement building shall extend further into the garden than the existing. The replacement house shall have a double garage constructed on its western side.

4 THE TREES

4.1 **Condition:** In total 11 individual trees and 3 groups have been included in the survey. The condition of these trees has been classified in line with BS 5837. The grading system is as follows:

U = Trees unsuitable for retention. 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. These trees are shown on the tree plans with dark red centres.

A = Trees of high quality. Trees of high quality with an estimated remaining life expectancy of at least 40 years. These trees are shown on the tree plans with green centres.

B = Trees of moderate quality. Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. These trees are shown on the tree plans with blue centres.

C = Trees of low quality. Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. These trees are shown on the tree plans with grey centres.

4.2 Category A and Category B trees are divided further into sub-categories. Sub-category 1 is allocated where it is assessed that the tree has significant arboricultural value. Sub-category 2 is allocated where it is assessed that the tree has significant landscaping or screening value. Sub-category 3 is allocated where it is assessed that the tree has significant cultural or conservation value.

4.3 Trees may be allocated more than one sub-category. All sub-categories carry equal weight, with for example an A3 tree being of the same importance and priority as an A1 tree.

4.4 I do not allocate sub-categories to Category C trees.

4.5 The number of trees or groups of trees falling under each classification is as follows:

Classification (BS5837)	Number
U	1
A	2
B	5
C	6

5 PRINCIPAL ARBORICULTURAL IMPACTS

In this section I discuss the significance of the trees, the constraints that they are likely to pose to the proposed development, and work requirements to trees for reasons of sound arboricultural management, and in order to facilitate the development.

Refer also to the Arboricultural Impact Plan on Page 14 of this document.

5.1 **Root Protection Areas:** The Arboricultural Impact Plan shows the position of the Root Protection Area (RPA) for trees being retained. BS5837 2012 (section 3.7) defines the RPA 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'*. The RPA is an area based on a circle with a radial distance of 12x the stem diameter at 1.5 metres in the case of single-stemmed trees, or 12x the combined stem diameter (calculated in accordance with a formula set out in BS5837) in the case of multi-stemmed trees. In situations where the site conditions clearly prevent consistent rooting around the tree I modify the shape of the RPA to take this into account. At 115 Frognal I have adjusted the RPA shape for Trees 5, 7 and 11 to take account of features likely to restrict rooting.

The impacts of the scheme on trees which I consider warrant further discussion are as follows (refer also to the Arboricultural Impact Plan):

5.2 Tree 7: Common lime

5.2.1 This is a highly prominent mature tree with a height of 20 metres, located at a distance of 2.5 metres from the front of the existing building close to the western corner. The tree has been subjected to past heavy crown reduction from which it is re-growing with reasonable vitality. The tree shall be retained with the proposed development. A trial pit has revealed that the existing building has a foundation depth of 1m and on this basis I do not consider it foreseeable that roots of significance will extend beneath the building. I have adjusted the RPA to exclude the footprint of the existing building.

5.2.2 It is proposed that the new building line shall be set back further from Tree 7 than existing. Directly opposite the tree the new building line shall be 1.3m further back, and where the building is against the tree's RPA, though not directly opposite it, it shall be 0.2m further back.

5.2.3 During the demolition process existing foundations shall either be left in-situ if it is possible to do so, or foundations for removal adjacent to the tree's RPA shall be removed carefully to avoid causing damage to the roots (see the Tree Protection Plan and Arboricultural Method Statement).

5.2.4 The new building has been designed to ensure that primary habitable rooms do not face towards Tree 7 in order to avoid potential future conflict and pressure to the tree to undertake unacceptable work to it. On the ground floor the two small windows facing the tree are to a larder and hallway, and on the first floor the windows facing the tree are to the en-suite bathroom from the master bedroom. I am satisfied that the relationship proposed is acceptable and will not lead to foreseeable future pressure to the tree which the council is unable to resist.

5.2.5 There is currently a single low-hanging chain defining the front boundary, with open grass leading directly from the road (see Photograph 1). It is proposed that along the boundary a dwarf wall with a height of 1-2 brick courses shall be constructed with metal railings above. Where the boundary extends into the RPA of the Tree 7 construction of the dwarf wall shall be with great care. Details have not been worked up at this stage; however it is proposed that mini screw piles shall be inserted into the ground (in locations which have previously been assessed for root presence) and that these shall support a lintel entirely above the ground level. If required brick slips could be fixed to the front of the lintel to conceal it. If constructed in this way, with mini piles being the only insertion into the ground in locations previously investigated for tree root presence, I am satisfied that construction of the front boundary wall / railings shall not cause harm to Tree 7.

5.2.6 It is proposed that the existing steps leading up the front garden shall be replaced with new steps 1.3m further from Tree 7. Whilst technically still within the tree's RPA the existing steps are likely to act as a partial root barrier, and providing excavation for construction of the new steps is undertaken carefully by hand and does not extend lower than the depth of the existing steps I am satisfied that the tree will not be harmed by this.

5.2.7 Construction of the new steps and railings shall be undertaken following completion of the house construction to enable full protection of this area during the demolition and construction process.

Photograph 1. View of Tree 7

5.3 **Tree 8: Common lime**

5.2.1 This is a highly prominent mature tree with a height of 19 metres, located at a distance of 6 metres from the front of the existing building close to the eastern corner. I have assessed Tree 8 to be in a poor condition and have advised the design team that the tree should be shown for removal.

5.2.2 My assessment of the tree's poor condition is based primarily on the state of the wood on its western side at the base. In this position there is a major supporting buttress which has become entirely degraded to the point that it provides no strength at all. The bark covering the buttress is dead and the wood behind it is soft and highly degraded. The nature of the decay that I observed is consistent with that caused by the fungus *Kretzschmaria deusta*, though I observed no fruiting bodies of that fungus at the time of my assessment (which doesn't mean that this is not the cause). *Kretzschmaria deusta* is a frequent cause of whole tree failure of limes. In addition to the tree's decayed base, a wide, open cavity is extending downwards from the top of stem where past heavy pruning has caused the onset of decay.

5.2.3 I consider that Tree 7 will increasingly be at risk from failure, and could only be retained if topped to a pollard framework to a height of around 7 metres. This work would exceed all recommended good practice and would substantially reduce the tree's amenity value with it looking very poor following the work. Following work of this nature the tree's long-term future would remain doubtful particularly if the causal agent of the decay at the base is *Kretzschmaria deusta* as suspected.

5.2.4 I have recommended that Tree 7 should be shown for removal and that this planning application should be used as an opportunity to secure a high quality, large – sized replacement tree in a similar location at the front of the site. An area of soft landscaping is proposed at the front (see the Arboricultural Impact Plan) where it is proposed that a holm oak shall be planted with a height at planting of 7-8 metres and a stem girth of 50-60cm. This is a substantially larger tree than is likely to be secured through a TPO application for the tree's removal.

Photograph 2. View of Tree 8

Photograph 3. Decayed buttress at base of Tree 8

Photograph 4. Open cavity within the upper stem of Tree 8

5.4 **Tree 11: Common lime**

5.4.1 This is a good quality early-mature tree located in the verge of the road to the east side of the existing garden, close to the rear elevation of the house. The tree is located beyond the garden's side retaining wall in ground which is 1 metre below the garden level. Given the difference in level and taking account the wall's foundations, I consider that the boundary wall will act as a barrier preventing root growth into the garden, and I have adjusted the RPA shape to reflect this.

5.4.2 The rear of the proposed dwelling has an element which extends into the garden beyond the alignment of the main house. This has been designed with an off-set from Tree 11 of 4.6m, and the building element which faces towards the tree has a blank wall in which there are no windows in order to minimise any future pressure to the tree. The rear corner of the proposed house is 1.3 metres further into the garden than existing and marginally extends into the crown spread of the tree's lowest branches. It is proposed that the tips of the lowest branches shall be pruned back by 1-2 metres as required to facilitate construction. I am satisfied that this work can be undertaken to acceptable arboricultural standards and that this will not cause harm to the tree.

5.4.3 The eastern side alignment of the proposed house is along that of the existing house and wall, and shall not extend further into the verge. Care shall be required during the demolition and construction process to ensure that the ground is not disturbed beyond the alignment of the existing wall where this is aligned next to the RPA of Tree 11. Refer to the Tree Protection Plan and Arboricultural Method Statement.

5.4.4 The wall along the eastern boundary of the garden is to be replaced. This shall be removed by hand to the highest level on the garden side and re-built off the retained structure. The work shall be undertaken entirely from within the garden and there shall be no access for this from the eastern side of the wall around Tree 11.

Photograph 5. View of Tree 11 from the rear garden

6. SUMMARY OF TREE WORK PROPOSED

6.1 The following tree work is proposed

Tree No	Species	Work required
1	Lawson cypress	Remove
2	Magnolia	Remove
3	Apple	Remove
4	Apple	Remove
8	Common lime	Remove
9	Bay	Remove
10	Strawberry tree	Remove
11	Common lime	Reduce tips of lowest branches by 1-2m as required to facilitate construction
G1	Flowering cherry	Remove
G2	Beech	Remove

6.2 All work specified must be undertaken in accordance with BS3998 (2010).

6.3 Wildlife

6.3.1 Nesting birds, bats and bat roosts are protected by law. It is the duty of the contractors to satisfy themselves prior to commencement that neither these, nor any protected species shall be adversely affected by the proposed work. Work should be undertaken in accordance with BS8596:2015: *Surveying for bats in trees and woodland – Guide.*

7 STORAGE OF MATERIALS AND SITE CABINS

7.1 At this stage full construction details have not been worked up and the precise methodology for house construction has not been provided. However, it is currently proposed that access to the rear shall be gained through the location of the proposed garage, and that this shall be constructed after the main house has been completed. Consequently space for the storage of materials and cabins shall be available to the rear of the site within the garden area, and to the front of the site beyond the RPA of Tree 7.

7.2 I am satisfied that sufficient information has been provided to assess that the work can be undertaken with the retained trees adequately protected. It is possible that the positions for the ground protection / tree protection fencing shown on the Tree Protection Plan (Page 30) may require adjusting after construction details have been provided.

8 SERVICES AND DRAINAGE

8.1 The existing dwelling on site is fully serviced and at this stage it is anticipated that new utility and drainage connections from the road will not be required. If this is required they can easily be provided from the road to the front of the house without affecting retained trees.

8.2 **There shall strictly be no excavation for service installation within the RPA of retained trees unless approved and supervised by the project arboriculturist**. Services shall be installed in accordance with guidelines set out in National Joint Utilities Group (NJUG) Volume 4 (2007). This can be downloaded at no charge from the following website: http://www.njug.org.uk/publication/51

9 PROTECTION OF THE RETAINED TREES

9.1 Providing sufficient care is taken I consider that the retained trees can be adequately protected during the development process. Tree protection is to be in accordance with the Arboricultural Method Statement which is included as Appendix 2 to this report, and the Tree Protection Plan dated 8th October 2016, drawing number DS23031601.04 or subsequent revisions.

10 CONCLUSIONS

10.1 Trees were surveyed prior to the scheme being designed and the constraints posed by the trees have subsequently informed the design process.

10.2 I am satisfied that the development proposed is acceptable from an arboricultural perspective in terms of tree removal and retention, and the relationship between the proposals and retained trees.

10.3 I am satisfied that the proposed development will not cause harm to the trees shown for retention providing care is taken during the construction process and that the Arboricultural Method Statement is followed.

11 REFERENCES

BSI BS5837:2012: *Trees in relation to design, demolition and construction – Recommendations*

BSI BS3998:2010: *Tree Work - Recommendations*

BSI BS8596:2015: *Surveying for bats in trees and woodland – Guide.*

NJUG (2007): Publication no. 10 *Guidelines for the planning, installation and maintenance of utility services in proximity to trees.* National Joint Utilities Group, London

Patrick Stileman

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Chartered Arboriculturist. Arboricultural Association Registered Consultant

This drawing must be viewed in colour

Dwarf wall with railings above shall be constructed around edge of front boundary. The wall shall be constructed using mini screw-piles supporting a lintel entirely above ground level. If required the lintel could be concealed for example by the use of brick slips

Alignment of steps shall move east by 1.3m. During construction there shall be no excavation below the depth of the existing steps

Approximate location of large (50-60cm stem girth at planting) holm oak to be planted as a replacement to Tree 8

New building line set back slightly from existing line against RPA of Tree 7

New building line set back from existing where it is opposite Tree 7

New vehicular access shall be created

Slight incursion by new garage into (adjusted) RPA of Tree 7. This is very minor (4.5m^2 = <1%) and roots of Tree 7 are unlikely to actually be present in this location

Tree 8 (lime) has basal decay on the west side and could only be retained (for a relatively short likely timescale) if excessively pruned. It shall be removed and a large replacement tree provided at the front of the site

The wall along the eastern side of the garden is to be replaced. This shall be removed by hand to the highest level on the house side and re-built off the retained structure. The work shall be undertaken from within the garden and there shall be no access for this to the east of the wall around tree 11

Tips of lowest branches of Tree 11 shall be pruned back by 1-2m as required to facilitate construction

Blank wall of proposed house facing Tree 11

Slight incursion by new garage into (adjusted) RPA of Tree 5. This is very minor (4.6m^2 = 0.7%)

ARBORICULTURAL IMPACT PLAN

SITE ADDRESS
115 Frognal, London, NW3 6XR

CLIENT
Paul Crocker

JOB REF
DS23031601

DRAWING NO
DS23031601.03

DATE
08/10/2016

N

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KEY

- Tree / tree group for retention
- Tree / tree group for removal
- Root Protection Area (RPA) for retained tree / tree group
- Outline of existing structure for demolition

BS 5837 Category key

- Category U tree
- Category A tree
- Category B tree
- Category C tree

SCALE
1:250 @ A3

0 5m 10m

NOTE:

Stem diameters are not drawn to scale. See schedule for dimensions

This drawing is based on the topographic survey provided to us by the client. The following tree was not included on the topographic survey and its location shown is indicative only: 6

APPENDIX 1

TREE SURVEY DATA AND KEY

For the schedule of tree work proposed, refer to Section 6 of this document

KEY TO TREE SURVEY DATA

Tree / Group reference: Tree numbers as shown on the Tree Survey Plan. Where trees form a coherent group, they have been assessed as a group, and are shown in the survey and on the plan prefixed with the letter G.

Species: These are listed in the schedule by their common name. The botanical names of the principal species present are as follows:

Lawson cypress: *Chamaecyparis lawsoniana*
Magnolia: *Magnolia sp*
Orchard apple: *Malus domestica*
London plane: *Platanus x hispanica*
Corsican pine: *Pinus nigra* subsp. *laricio*
Common lime: *Tilia x europaea*
Bay: *Laurus noblis*
Strawberry tree: *Arbutus unedo*
Beech: *Fagus sylvatica*
Yew: *Taxus baccata*
Sycamore: *Acer pseudoplatanus*
Copper beech: *Fagus sylvatica* 'Purpurea'

Ht. (m): The height of the tree is measured or estimated to the nearest metre.

Crown spread – NSWE: Radial crown spread measured or estimated, rounded up to the nearest metre, for north, south, west and east.

Crown base: The height above ground level and orientation of the lowest permanent crown base (excluding basal, and small epicormic growth).

Stem count: For trees recorded as individuals, the number of stems recorded for the purpose of RPA calculation (where stem numbers exceed 5 an average diameter is assessed).

Stem dia: In the first column the stem diameter is recorded for trees with a single stem, or the first measured stem where there are fewer than five, or the average stem diameter for trees with more than 5 stems. The diameter of individual stems for trees with up to five stems is recorded in columns 2-5. Measurements are shown in mm, rounded to the nearest 10. In some situations it is not possible to measure the diameter of stems, and for these estimates are made. When stem diameters have been estimated they are written in *italics*. Measurements are taken in accordance with BS5837 Annex C. For tree groups, stem measurements are recorded for the largest tree in the group.

RPA Rad: This shows the radius of the notional RPA circle in metres to be centered on the tree, based on the calculation made using the stem diameter.

RPA Area: This shows the calculated RPA in m^2 for each tree (as individuals or within groups). If the notional RPA circle is adjusted (see 4.6) the area must be maintained. The RPA area is capped at 707 m^2, equivalent to a circle with a radius of 15m.

Life Stage: An assessment of the tree's stage of life, where: Y = young, SM = semi-mature, EM = early-mature, M = mature, and OM = over-mature.

Phys. Condition: The physiological condition of the tree, reflecting the condition of the vascular system as indicated by leaf and shoot vitality. The physiological condition is not a comment on the tree's structural condition. The physiological condition codes used are G = good; F = fair; P = poor; D = dead.

Condition and observations: Description of general tree condition, including structural integrity, the presence of hazards, pests and diseases which may affect the tree's retention span.

Preliminary management recommendations: Work required to trees for reasons of sound arboricultural management only, **not for development facilitation** (for this refer to Section 6 of AIA). This is not to be taken as a list of tree work required prior to development activity, but provides management recommendations for trees in their current context.

Ret span: Estimated remaining likely retention span based on species, condition & context. The following longevity bands are used: <10; 10-20; 20-40; >40. The retention span assessment is based on trees in their current context.

Grade: Quality & Value classification according to BS 5837:2012 (see 4.1).

115 FROGNAL : TREE SURVEY DATA

Tree / Group reference	Species	Ht. (m)	Crown Spread (m)				Crown base (m)	Stem Count	Stem Dia. (mm)					RPA Rad. (m)	RPA Area (m2)	Life Stage Y-SM-EM-M-OM	Phys. Condition G-F-P-D	Condition and observations	Preliminary management recommendations	Ret. Span <10, 10+ 20+, >40	Grade U-A-B-C
			N	S	W	E			1 / mean	2	3	4	5								
1	Lawson cypress	9	1.5	1.5	1.5	1.5	1m S	1	230					2.76	24	EM	F	Small tree of moderate quality and value just crossing B grade threshold.	No action required at time of survey	>40	B1
2	Magnolia sp	4	3	2	0	2	1m E	1	*100*					1.20	5	SM	F	Growing against wall of garage. Small tree of relatively low significance.	No action required at time of survey	10+	C
3	Apple	5	3	2	2	2	2m N	1	280					3.36	35	M	F	Regularly pruned for fruit. Small tree of relatively low significance.	No action required at time of survey	>40	C
4	Apple	4	2	3	3	3	1m W	1	210					2.52	20	M	F	Regularly pruned for fruit. Small tree of relatively low significance.	No action required at time of survey	>40	C
5	London Plane	30	9	9	9	9	3m E	1	*1200*					14.40	651	M	G	Located off-site in neighbouring property. Very large, prominent tree of high quality.	No action required at time of survey	>40	A1
6	Corsican Pine	16	3	6	4	4	1m W	1	550					6.60	137	EM	F	Slight crown asymmetry and lean to south. Growing in island bed centrally within road. Tree of moderate quality and value.	No action required at time of survey	>40	B1
7	Common lime	20	5	3	3	5	6m S	1	1050					12.60	499	M	F	Large, highly prominent tree in close proximity to existing building. Re-grown from heavy past crown reduction. Evidence of trenching in road close to stem.	No action required at time of survey	20+	B1

Tree / Group reference	Species	Ht. (m)	Crown Spread (m)				Crown base (m)	Stem Count	Stem Dia. (mm)					RPA Rad. (m)	RPA Area (m2)	Life Stage Y-SM-EM-M-OM	Phys. Condition G-F-P-D	Condition and observations	Preliminary management recommendations	Ret. Span <10, 10+ 20+, >40	Grade U-A-B-C
			N	S	W	E			1 / mean	2	3	4	5								
8	Common lime	19	6	4	5	6	3m S	1	870					10.44	342	M	F-P	Large, highly prominent tree on road frontage. Tapping base revealed highly decayed buttress on west side. Decay consistent with that caused by *Kretzschmaria deusta*, though no fungal fruiting bodies seen. Twin-stemmed from 5 metres - cavity has developed between stems and from ladder open cavity seen extending down stem by approximately 1 metre. Tree is retainable in short-term only with heavy reduction (akin to topping) which would substantially reduce its amenity value; however even with this treatment applied it may not be possible to safely retain beyond 10 years.	Remove for reasons of sound arboricultural management	<10	U
9	Bay	8	3	3	3	3	2m W	13	90					3.90	48	M	F	Multi-stemmed from ground level. Tree of relatively low significance.	No action required at time of survey	20+	C
10	Strawberry tree	6	4	1	1	3	1m E	9	90					3.24	33	M	F	Multi-stemmed from ground level. Pronounced lean to north-east away from wall.	No action required at time of survey	10+	C
11	Common lime	14	4	4	4	4	3m S	1	420					5.04	80	EM	G	Located in verge beyond retaining boundary wall. Good form and high future potential.	No action required at time of survey	>40	A1
G1	Beech	3	0.5	0.5	0.5	0.5	1.5m N	1	150					1.80	10	SM	G	Pleached trees with clear stems, providing useful screening function on boundary.	Remove for reasons of sound arboricultural management	>40	B2
G2	Yew	2	0.5	0.5	0.5	0.5	0m N	1	*100*					1.20	5	SM	G	Short clipped hedge forming three sides of square to screen oil tank.	No action required at time of survey	>40	C
G3	Sycamore, common lime, copper beech	14 to 20	6	6	6	6	3m S	1	*600*					7.20	163	M	G	Located off-site in neighbouring property. Six prominent trees in group close to boundary. No access to inspect.	No action required at time of survey	20+	B2

APPENDIX 2

ARBORICULTURAL METHOD STATEMENT FOR TREE PROTECTION DURING DEVELOPMENT

SITE

115 Frognal, London NW3 6XR

October 2016

1 INTRODUCTION

1.1 **Brief:** Patrick Stileman Ltd is instructed by the client; Paul Crocker, to prepare an Arboricultural Method Statement (AMS) for the protection of trees during development at 115 Frognal, London, NW3 6XR.

1.2 This Method Statement is to be made available to all operatives on site during the development process so that they understand the scope and importance of the measures set out for tree protection.

1.3 This Method Statement is to be read in conjunction with the Tree Protection Plan (TPP) dated 8th October 2016, drawing number DS23031601.04, included as Page 30 of this report.

1.4 This Method Statement has been written taking into account requirements set out in British Standard 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*' (hereafter referred to as BS5837).

2 TIMING OF OPERATIONS

2.1 The timing of operations is essential if trees are to be effectively protected. Figure 1 in BS 5837 provides guidance for the sequential order of events on development sites. At this site, operations are to occur in the following sequence:

1. Carry out the tree work operations as specified in Section 6 of the Arboricultural Impact Assessment.

2. Hold pre-commencement site meeting with project arboricultural consultant, building contractors (and LPA arboricultural officer if required) prior to the commencement of **any** development work commencing on site. The purpose of this meeting is to ensure that the contractors are fully briefed and understand the requirements of this method statement.

3. Erect Tree Protection Fencing (TPF) in the locations shown on the TPP by the solid pale blue lines. See Section 3.

4. Install temporary ground protection in the locations shown on the TPP by blue hatching. See Section 4.

5. Demolish existing buildings. See Section 5.

6. Construct new house.

7. Install utilities and services. See Section 6.

8. Replace wall along the eastern edge of the garden. See Section 7.

9. Remove TPF and temporary ground protection.

10. Move front steps and install dwarf wall with railings along front garden boundary. See Section 8.

11. Undertake soft landscaping work. See Section 10.

3 TREE PROTECTION FENCING (TPF)

3.1 **Before** the commencement of any work on-site (other than tree work), TPF is to be erected to protect the trees being retained in the positions shown on the TPP by the solid pale blue lines.

3.2 The position of the TPF has been calculated by taking into account recommendations set out in BS5837. The Tree Protection Plan contained within this report shows the Root Protection Areas (RPAs) by the dashed purple lines.

3.3 Durable, all-weather signs are to be attached to the fencing. A suggested sign to be used has been included at the end of this arboricultural method statement. This shall be printed out, laminated and attached to every third fence panel.

3.4 Once erected, the protective fencing is to be regarded as sacrosanct. There is to be no access by pedestrians into the area protected by the TPF and no works carried out whatsoever in this zone including: the storage of materials, any form of excavation, or changes in levels. The protective fencing is to be maintained in good order so that it is fit for purpose throughout the construction process. The fencing will not be altered in any way, or prematurely removed without prior consent of the project arboriculturalist and if necessary the Local Planning Authority.

3.5 Specification of Tree Protection Fencing.

3.5.1 TPF is to be constructed of 2.2 metre height weldmesh (Herras type) panels, as set out on the insert on the TPP. The panels are to be fixed to a scaffold framework either with wire ties or with scaffold clamps. The scaffolding shall comprise a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum of 3 metres or alternatively at panel width, and driven into the ground by 0.6 metres. It is not sufficient to place the panels in rubber or concrete 'boots' alone.

Photograph 1: showing example of TPF erected to the correct specification

4 GROUND PROTECTION

4.1. Ground protection shall be placed in the locations shown on the TPP by the blue hatching. It shall be retained in this location for the duration of the construction process.

4.2 Ground protection shall comprise a geotextile membrane (eg *Terram*), topped with a **minimum** depth of 100mm compressible fill (such as wood chip). Proprietary ground protection sheets such as Greentek *ground guards* or Terrafirma *durabase* shall be placed over the woodchip and pinned securely in place.

5 BUILDING DEMOLITION

5.1 Where the existing structure is to be demolished against the RPA of Trees 7 and 11, the work shall be undertaken with care in order to prevent damage to the ground or roots adjacent. In these locations the new building proposed is situated no closer to the trees than the alignment of the existing.

5.2 Where possible the existing foundations shall be retained in-situ. Where this is not possible, the foundations shall be pulled back carefully towards the building ensuring that there is no excavation or ground disturbance beyond the existing alignment. Ply boarding shall be installed vertically along the outer face of the trench immediately following the removal of the foundations. This work is to be supervised by the appointed project arboriculturist.

6 SERVICES AND UTILITIES

6.1 The existing dwelling on site is fully serviced and at this stage it is anticipated that new utility and drainage connections from the road will not be required. If this is required they can easily be provided from the road to the front of the house without affecting retained trees.

6.2 **There shall strictly be no excavation for service installation within the RPA of retained trees unless approved and supervised by the project arboriculturist**. Services shall be installed in accordance with guidelines set out in National Joint Utilities Group (NJUG) Volume 4 (2007). This can be downloaded at no charge from the following website: http://www.njug.org.uk/publication/51

7 REPLACEMENT WALL ALONG EASTERN EDGE OF GARDEN

7.1 It is proposed that the retaining wall along the eastern edge of the existing garden shall be replaced. This shall be removed to ground level on the garden side (i.e. the retaining element of the wall shall be kept), and the new wall re-built off the retained structure.

7.2 This work shall be undertaken from the garden side and there shall be no access within the verge to the east of the wall around Tree 11.

8 DWARF WALL / RAILINGS AND FRONT STEPS

8.1 Along the front of the site a dwarf wall with railings above shall be constructed around the edge of the boundary.

8.2 Where the dwarf wall falls within the RPA of Tree 7, it shall be constructed with great care. Details have not been prepared at this stage; however its construction shall using the following principles.

8.3 The wall shall be constructed using mini screw-piles supporting a lintel positioned entirely above ground level such that only the piles extend below the existing ground level. Prior to the insertion of the piles, each location shall be investigated for the presence of roots by a small hand-dug trial pit to a depth of 600mm. If roots of importance are discovered in any investigation pit, the pile location shall be moved slightly to enable the retention of the roots. This work shall be supervised by the project arboriculturist.

8.4 The steps at the front are to be removed and replaced with new steps in a location 1.3 metres further to the east. This work shall be undertaken by hand and there shall strictly be no excavation below the depth of the existing steps.

9 GENERAL PRECAUTIONS

9.1 **Storage of materials:** No materials or spoil are to be stored within the areas protected by the TPF.

9.2 **Levels:** There is to be no alteration of ground levels within the areas protected by TPF and ground protection, unless previously specified and agreed on by the project arboriculturist.

9.3 **Fires:** No fires are to be lit within 20 metres of the stems of trees to be retained.

9.4 **Above ground damage to trees:** Care must be taken in planning the location and operation of machinery to avoid above ground damage to trees. BS5837 (2012) Section 6.2.4.1 states '*Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights(including drilling rigs) in order that they can operate without coming into contact with retained trees. Such contact can result in serious damage to trees and might make their safe retention impossible. Consequently, any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance of trees is maintained at all times. Access facilitation pruning should be undertaken where necessary to maintain this clearance.*

10 LANDSCAPING WITHIN THE RPA OF RETAINED TREES

10.1 Landscaping shall be undertaken after all other development work has been completed. Prior to landscaping commencing the project arboriculturist shall meet the landscape contractors on site to discuss what is proposed and precautions required around trees. TPF shall be removed prior to landscape work commencing to enable access across the site.

10.2 The following principles shall be followed where work is proposed within the RPA of retained trees:

- No machinery shall pass over the ground unless protected by ground protection
- If excavation is required this shall be localised and undertaken with hand tools only ensuring that roots are preserved
- There shall be no changes in levels unless agreed by the project arboriculturist

11 ARBORICULTURAL SUPERVISION

11.1 A qualified arboriculturalist will be required to provide on-going supervision during work at this site. The critical times when supervision is required are:

- Prior to any development work starting, attend a pre-commencement meeting with the site managers and contractors to discuss exactly what is required in order to ensure that the retained trees receive full protection in accordance with this method statement. During the initial meeting a site supervisor will be appointed to take responsibility for tree protection and to be given the duty of reporting any damage to trees or deviation from the arboricultural method statement to the project arboriculturalist.
- After erection of the TPF and installation of ground protection.
- During removal of foundations where they are adjacent to the TPA of Trees 7 and 11.
- During construction of the dwarf wall at the front of the site.
- During the development process as required in the event of arising tree-related issues, and in any event no less frequently than once every three months.
- Prior to the commencement of landscaping work within areas formerly protected by TPF and ground protection.

11.2 The project arboriculturist shall prepare a written site monitoring report following each site visit made with details provided stating the condition of tree protection features and actions required where necessary in the event of any digressions. The site monitoring reports shall be made available to the council's arboricultural department on request.

Patrick Stileman

PATRICK STILEMAN BSc(Hons), MICFor, Dip.Arb(RFS), M.Arbor.A
Chartered Arboriculturist. Arboricultural Association Registered Consultant

NOTICE TO BE ATTACHED TO TREE PROTECTION FENCING

TREE PROTECTION FENCING

KEEP OUT

This fencing must not be removed or altered in any way without prior consultation with the project arboriculturist. There is to be no access, changes to ground levels, excavation, or material storage within the fenced area.

LANDSCAPING WITHIN RPAs

After construction has been completed the tree protection fencing shall be removed to allow landscaping to take place.

Prior to landscaping commencing the project arboriculturist shall meet the landscape contractors to discuss what is proposed and precautions required.

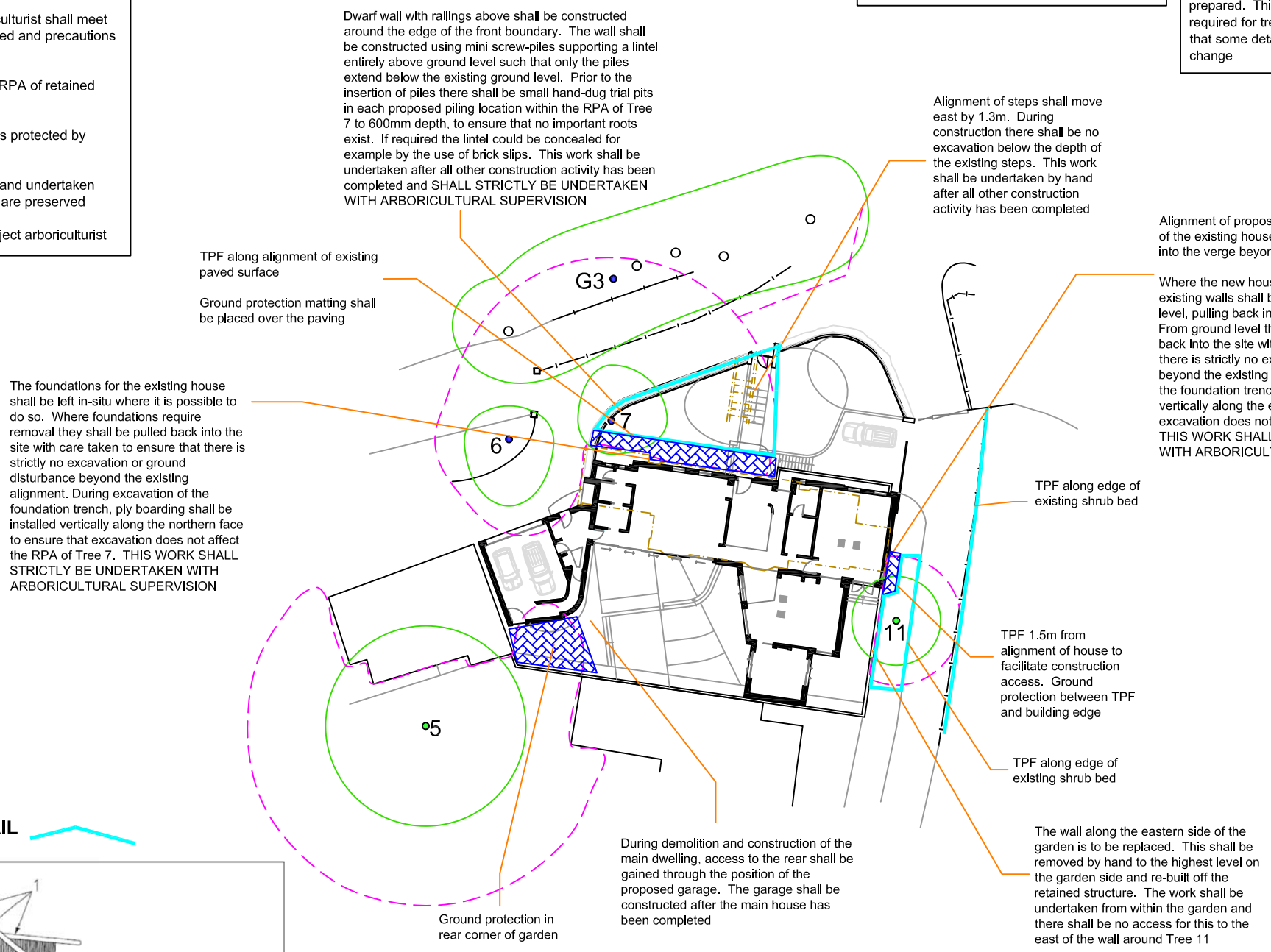
The following principles shall be followed within the RPA of retained trees:

- No machinery shall pass over the ground unless protected by temporary ground protection
- If excavation is required, this shall be localised and undertaken carefully by hand tools only ensuring that roots are preserved
- No changes in levels, unless agreed by the project arboriculturist

This drawing must be viewed in colour

NOTE

At the time of preparing this plan a Construction Management Plan had not been prepared. This plan sets out the principles required for tree protection and it is possible that some details shown may be subject to change



TREE PROTECTION PLAN

SITE ADDRESS
115 Frognal, London, NW3 6XR

CLIENT
Paul Crocker

JOB REF
DS23031601

DRAWING NO
DS23031601.04

DATE
08/10/2016

Patrick Stileman Ltd
9 Chestnut Drive, Berkhamsted, Herts,
HP4 2JL 01442 866112

N

KEY

- Tree / tree group to be retained
- Root Protection Area (RPA) for tree / tree group to be retained
- Position of Tree Protection Fencing (TPF) to be erected prior to the commencement of any work on site
- Position of temporary ground protection

BS 5837 category key

- Category U tree
- Category A tree
- Category B tree
- Category C tree

SCALE
1:500 @ A3

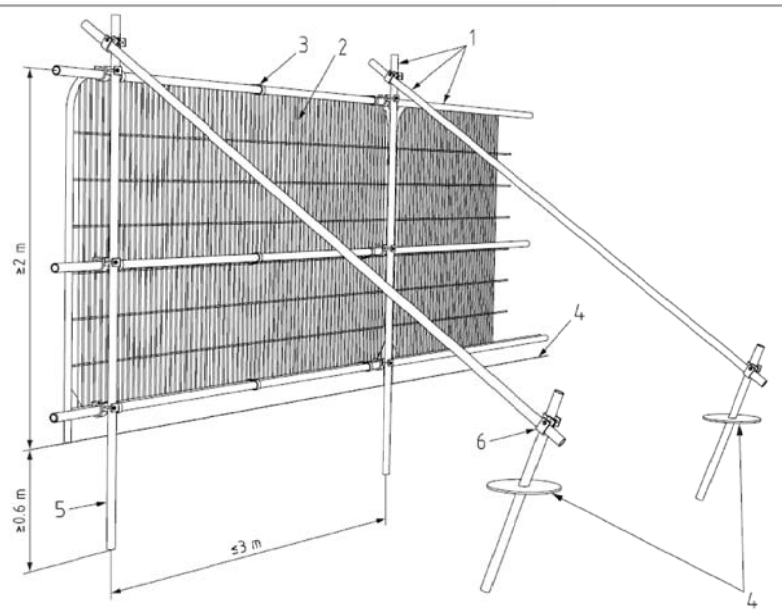
0 10m 20m

NOTE:

Stem diameters are not drawn to scale. See schedule for dimensions

This drawing is based on the topographic survey supplied to us by the client. The following tree was not included on the topographic survey and its location shown is indicative only

TREE PROTECTION FENCING DETAIL



Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

TEMPORARY GROUND PROTECTION SPECIFICATION

Temporary ground protection shall be positioned in the locations shown on this plan by the blue hatching. It shall be installed prior to any demolition or construction commencing, and retained in-situ until construction work has been completed. Temporary ground protection shall comprise:

- A geotextile membrane (eg *Terram)* laid on the ground
- A minimum depth of 100mm compressible fill such as woodchip laid on the membrane
- Proprietary ground protection matting such as Greentek 'ground guards' or Terrafirma 'durabase' shall be laid over the compressible pill layer and pinned securely in place

The ground protection shall be maintained in good order, and the compressible fill topped up if necessary

Care should be taken when planning site operations to ensure that wide or tall loads, or plant with booms, jibs and counterweights 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

NOTE:

The construction exclusion zone (CEZ) is the area protected by tree protection fencing, and temporary ground protection. Within the CEZ the following exclusions shall apply:

- **No excavation**
- **No storage of materials or equipment over unprotected ground**
- **No changes in levels**
- **No access within area protected by tree protection fencing**

The fencing and ground protection shall be maintained in a condition fit for purpose throughout the construction process

NOTE:

No work shall commence on site until an arboricultural pre-commencement meeting has taken place

APPENDIX 3

Greentek *ground guards* product brochure

Ground-Guards

GreenTek

Ground protection and site access system

Ground-Guards are an "Instant Roadway" system of lightweight plastic panels, capable of taking vehicles of up to 50 tonnes weight.

Introduction The GreenTek Ground-Guards have become established as a proven alternative to the conventional method of stripping and stoning-up access roads on construction sites. By using this roadway system, ground damage and reinstatement work are minimised. This is an ideal method to use where there are tree roots under the surface as it avoids the need for excavation.

Applications The Ground-Guards site access system is designed to form temporary roads, car parks and footpaths. It is suitable for protecting grassed areas from erosion and rutting during construction projects and for the protection of tree roots where site access routes need to pass close to trees.

Green issues Ground-Guards are a very environmentally friendly product. They:

- Protect sensitive ground from erosion
- Are made from 100% recycled plastic, which is itself fully recyclable
- Provide a sustainable alternative to using up sheets of plywood for ground protection purposes

DESCRIPTION

The Ground-Guards site access system consists of virtually indestructible, lightweight plastic boards which clip together without tools to quickly form temporary roads, car parks and footpaths. They are made from 100% HDPE recycled plastic and are guaranteed unbreakable by vehicles of up to 50 tonnes.

These track mats can be easily moved around the site by just two people, without the need for a crane lorry.

Ground-Guard mats are available with a choice of different tread patterns. The "Standard" tread pattern creates a track way with a high level of traction for vehicles, whilst the "walk" pattern is designed for pedestrian walkways and event flooring.

Ground-Guards are also available with one side smooth which is ideal for trenching and utilities work as it enables the spoil to be easily backfilled into the trench afterwards.

When being used to protect tree roots, a base layer of Ground-Guard sheets should be covered by a cushioning layer of 150 mm of wood chippings. The Ground Guard trackway is then laid over the top of this in the normal way.

Dimensions Ground-Guard mats are available in sizes ranging from 1829 mm (6') x 610 mm (2') to 2438 mm (8') x 1219 mm (4'), with a choice of different tread patterns.

SUPPLY

GreenTek both supplies and hires Ground-Guards direct to construction companies nationally.

SERVICES

Ground Guards provides technical advice to specifiers and contractors. Brochures and samples are available on request.

Ground-Guard trackways may be used with a cushion of woodchips to protect tree roots

Greensward Engineering
GreenTek
Manor Farm
Otley Road
Adel
Leeds
LS16 7AL

Tel: +44 (0)113 267 6000
Fax: +44 (0)113 267 2222
Email: info@ground-guards.co.uk
Website:
www.ground-guards.co.uk
Contact: Phil Ellis
rps no: 21329

APPENDIX 4

Qualifications and experience of Patrick Stileman BSc(Hons), MICFor, Dip.Arb(RFS), M.Arbor.A

I am Patrick Stileman, director of Patrick Stileman Ltd Arboriculltural Consultancy.

My qualifications in arboriculture are as follows:

National Certificate in Arboriculture *Nch(arb)*

The Arboricultural Associations Technicians Certificate *Tech.Cert (Arbor.A)*

The Royal Forestry Society's Professional Diploma in Arboriculture *Dip.Arb(RFS)*

In addition to the qualifications listed above which are specific to the field of arboriculture, I also hold an honours degree in Environmental Science *BSc(Hons).*

I hold chartered status, being a Chartered Arboriculturist and professional member of the Institute of Chartered Foresters *MICFor.*

I am a registered consultant and professional member of the Arboricultural Association.

I am a trained expert witness, and hold the Cardiff University Bond Solon Expert Witness Certificate.

I am a member of the Royal Forestry Society.

I have been actively involved in the arboricultural industry since 1994 and have been working as a consultant since 2001. I am frequently instructed by professionals to provide advice and assistance relating to trees within the planning process; I have a wide client base in this field including developers, architects, planning consultants, and Local Planning Authorities. I am experienced with providing arboricultural input in planning appeals as written representation, informal hearing and public local inquiry.

I am regularly instructed to assist with tree risk assessments, and to provide guidance relating to tree safety. Past clients for this work include Local Authorities, schools, residents associations, large organisations including zoos and estates, and private individuals.

I provide advice in relation to alleged tree-related damage to buildings. Clients for this work are typically domestic homeowners, but have also included Hertfordshire County Council and Dacorum Borough Council. Other work that I undertake involves the provision of tree planting schemes; and advice relating to the general management of trees.

I have worked as an arboricultural expert witness for public and private sector clients.

Prior to running my current consulting practice, I was a partner in an arboricultural contracting business in which I was involved with the practical aspect of organising, and execution of contract tree work.