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ARBORICULTURAL CONSULTANCY M.D.A

TREE SURVEY AND ARBORICULTURAL METHOD ASSESSMENT

A report to accompany a Planning Application for development at 18 Redington Road, London, NW3 7RG

Report by Dr Martin Dobson

6 September 2010

Arboricultural Association® REGISTERED CONSULTANT

Contents

1. Introduction

1.1 On 25 September 2009 Martin Dobson Associates were instructed by Design Solutions architects to carry out a tree survey at 18 Redington Road, London, NW3 7RG. The aim of the survey was to provide information that would assist in creating an appropriate design for proposed development at the property.

1.2 The British Standard 5837: 2005 *Trees in relation to construction – Recommendations* provides guidance on how to decide which trees are appropriate for retention within a development, the means of protecting trees to be retained during the development (which may include both demolition and construction work), and the means of incorporating trees into the developed landscape. This report complies with the recommendations of the British Standard.

1.1 Development proposals have been prepared in the light of the tree survey that take account of the presence of trees. The proposal the subject of this report is to demolish the existing two-storey dwelling on the site and construct a replacement building with three storeys and a basement.

1.2 Sixteen trees were surveyed and all of them are to be retained and protected during and after development. The method of tree protection is described.

2. Tree Survey

2.1 The tree survey was carried out by Dr Martin Dobson on 21 October 2009.

2.2 Appended at **MD1** is a copy of the tree survey schedule which lists sixteen trees present within or near to the property. Details of tree dimensions and condition are given along with an appraisal of the suitability of the trees for retention within the proposed development. The explanation of abbreviations used in the schedule is given at the end of the table.

2.3 The site survey drawing appended at **MD2** shows the positions of the trees surveyed and gives a reasonable indication of their comparative branch spreads. The drawing has been colour coded as follows:

A trees (high quality and value, minimum 40 years useful life)	LIGHT GREEN
B trees (moderate quality and value, minimum 20 years useful life)	MID BLUE
C trees (low quality and value, minimum 10 years useful life)	GREY
R trees (unsuitable or dead/dying/dangerous, less than10 years useful life)	RED

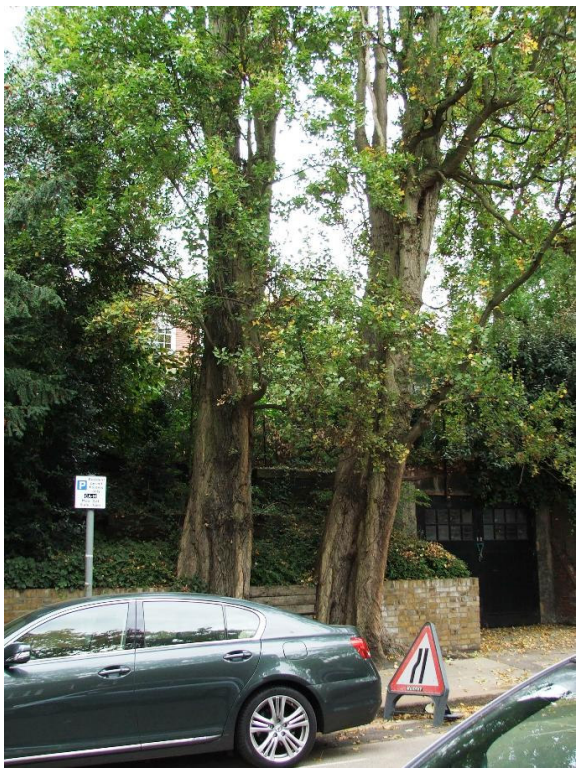
2.4 It should be understood that no individual safety inspection has been carried out on any tree. Similarly, any suggestions for tree work should not be taken as a specification for tree works.

3. Landscape Appraisal of the Site

3.1 The site comprises a detached two storey family house set back from the road and largely screened from view by mature trees and shrubs and is located in a leafy part of Camden near to Hampstead Heath. The site slopes from back to front and the front garden is above street level; the front boundary being formed by a 1 m high retaining wall. On the line of the retaining wall, at street level, are two mature Lombardy poplars (Plate 1) which are a significant feature in the local landscape. The future growth of their trunks may well be

constricted by their position in relation to the retaining wall but at present they are considered to be trees of high value and have therefore been given an A rating.

Figure 1. Two Lombardy poplar trees (T1 and T2) at the front of the property.



3.2 In the middle of the front boundary a garage entrance has been formed at street level. The walls of the garage therefore also double as retaining walls. The roof of the garage supports soil and lawn above it. To the right of the garage and on a bank leading up from the retaining wall there is a young Birch (T3) and a mature Hawthorn (T4) which contribute to screening at the front but otherwise possess no special merit and have been graded as C trees. Behind these trees there is a semi-mature Honey locust (T5) which is of good health and form and has been given a B rating.

3.3 To the front left of the front garden there is a mature Hawthorn (T6) and a young Sorbus (T7) which have both been rated as B trees. T8 is a young Whitebeam, T9 a young Rowan and T10 a young Bay. None of them has any special merit and they have therefore all been given a C grading. T10 is a mature Oak which has been substantially cut back on a number of occasions due to its inappropriate location in the narrow space between two houses. The forks at low level producing a low wide-spreading crown. It appears unsuited to its position and will require repeated pruning in the future. The tree has been given a B rating. Tree T12 is an over-mature Crab apple with little value which has been given a C rating.

3.4 There is a row of three trees (T13 – T15) on neighbouring property to the right (when looking at No. 18 from the road). A Birch (T13) and Yew (T14) have been graded as B trees and the one-sided Birch has been graded C. Birch T16 is a large mature tree located in the garden to the left of the property which has been given an A rating.

3.5 It is proposed that all of the trees on site should be retained and protected with the exception of the Oak (T11) and the Crab apple (T12) which are to be felled. It is proposed to move the young Whitebeam and Rowan trees (T8 and T9) to positions towards the rear right hand corner of the garden. Plans have been designed with the assumption that all the remaining trees will be retained and protected.

4. Root Protection Areas

4.1 Trees can very easily be damaged during construction activities through their branches being broken by traffic passing close to the canopy or by root severance during the digging of foundation or service trenches. The majority of roots are to be found in the upper 600 mm of soil and so even relatively shallow trenches can sever the majority of roots growing across the direction of the trench. Similarly, the diameter of tree roots tapers sharply within a few metres of the trunk of a tree, so that what might seem to an uninitiated site worker to be an insignificant root (perhaps only a couple of centimetres in diameter) may actually be highly important.

4.2 Tree roots can also be damaged indirectly, often inadvertently, through soil compaction, which disrupts soil structure and can lead to root death through the development of anaerobic soil conditions. Spillage of toxic materials (e.g. oil or diesel) can also result in root damage and ultimately the death of a tree.

4.3 Adequate protection, both above and below ground, is therefore essential for trees that are to be retained as part of a new development. The British Standard BS5837: 2005 *Trees in Relation to Construction - Recommendations* advises that there should be a root protection area (RPA) around trees which is kept free of all construction activities by means of an exclusion zone enforced by protective fencing and/or ground protection. The RPA is calculated as the area equivalent to a circle with a radius of 12 times the trunk diameter at a height of 1.5 m above ground level. Based on the tree survey data root protection areas (and radial distances from the trunk to be protected) have been calculated and these are illustrated at **MD2** and tabulated at **MD3**.

4.4 The proposed positions of protective fencing and ground protection are shown at **MD4**. The existing garage falls within the protection zone for the Honey locust T5 but it is considered that the retaining wall together with its foundations will create a barrier to root growth and therefore it is probable that there will be very few, and no significant, roots beneath the garage. Roots are likely to grow in other directions. The area of the existing drive cannot be fenced as it will be used temporarily for access to the site until a new access is formed through the existing garage. Nonetheless, roots will be protected from severance and compaction by the existing driveway surface. Once a new access has been formed the area shaded purple will be fenced until final landscaping commences. It is intended that the existing drive will be replaced by pedestrian access and steps. The steps will be formed above the existing driveway level so as not to disturb roots and the foundations will be formed on piles rather than strip footings.

5. Method Statement for Tree Protection

5.1 **This report should be made available to and be read by all professionals involved with implementing any planning consent obtained before any demolition or construction activities commence on site. The site manager must inform site operatives of the content of this, or any subsequent, tree report and be responsible for enforcing root protection zones.**

5.2 The sequence of events on site is described below and methods necessary to avoid damage to tree roots and/or branches are detailed.

5.3 Prior to contracts being awarded an arboricultural consultant will be appointed to oversee tree protection for the duration of the contract. The arboricultural consultant will be consulted on any issues that may arise concerning trees and will visit the site as often as necessary to ensure that trees are protected and/or at the following key stages:

- During the felling of Oak T11 and Crab apple (T12) and the transplanting of T8 and T9 to their new positions (**MD4**) in order to ensure that an agreed transplanting method statement is adhered to and that no other trees are harmed by machinery or equipment during transplanting.

- Prior to contractors commencing works on site in order to meet with the supervising architect and/or the contractor's nominated site manager to ensure that the principles of tree protection are understood and the procedure, timescale and materials for installation of tree protection are agreed.

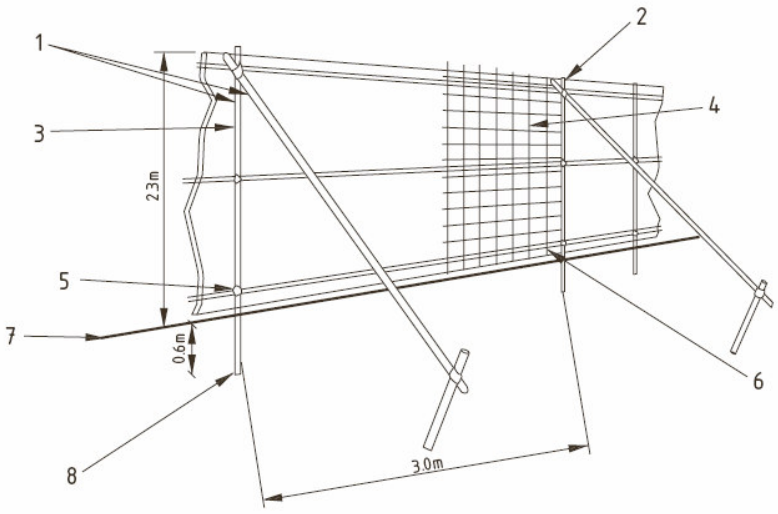
- Following installation of tree protection, but before any other works commence on site, to inspect and confirm that it is fit for purpose.

- At the completion of construction works to confirm that tree protection may be removed to enable final landscaping. Installation of the new pedestrian access and steps will be overseen by the arboricultural consultant to ensure that roots are not damaged.

5.4 Protective fencing will be installed in the positions shown at **MD2** before any materials are delivered to site or construction work takes place. The fencing will consist of a scaffold framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3 m (Figure 1). Onto this, weld mesh panels or 2 m high shuttering board will be securely fixed with wire or scaffold clamps. Weld mesh panels on rubber or concrete feet will <u>not</u> be used as these are not resistant to impact and are too easily removed by site operatives.

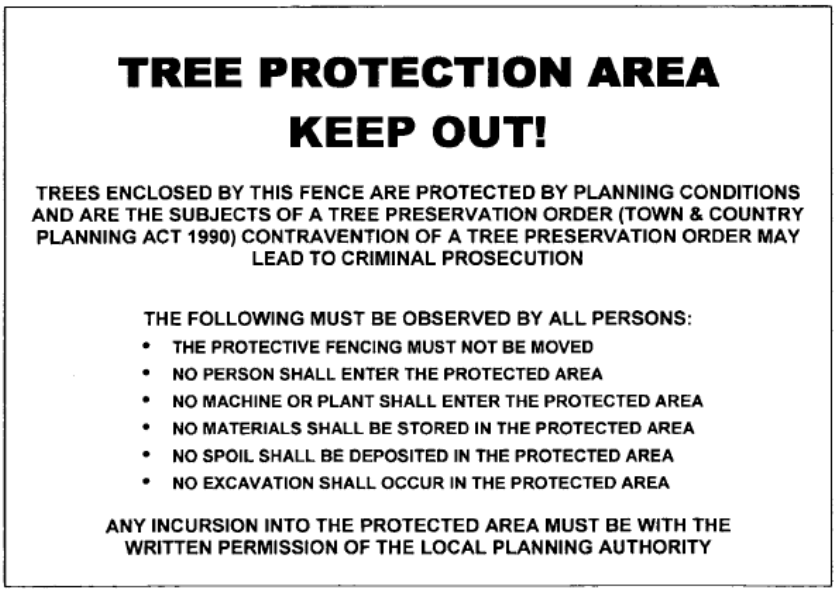
5.5 High visibility all weather notices will be securely attached to the barrier around each protection zone with wording as shown in Figure 2. Where long lengths of barrier are erected a sign will be attached at intervals of no less than 6 m. Once tree protection is in place then excavation and construction can begin. Fencing will not be taken down under any circumstances during construction unless with the express approval of the Council. If in any doubt the site manager must contact the nominated arboricultural consultant.

Figure 1. Specification for protective fencing.



1 Scaffold poles
2 Uprights, to be driven into ground
3 Panels, secured to uprights with wire tires and where necessary scaffold clamps
4 Weldmesh, wired to the uprights and horizontals
5 Clamp
6 Wire, twisted and secured
7 Ground level
8 Approx 0.6 m driven into the ground

Figure 2. Wording to be included in high visibility all-weather sign attached to protective fencing



5.6 A new access will be formed through the existing garage early on in the development of the site and subsequently the area shaded purple in **MD4** will also be fenced for the duration of the construction works.

Burning of waste

5.7 No fires at all will be lit on site due to the danger of scorching of leaves and branches of overhanging trees but rather all waste materials will be removed and taken to landfill or appropriate recycling facilities.

Changes in level

5.8 There are no proposed changes in level within tree root protection zones. The existing retaining wall near to T5 will need to be rebuilt to accommodate the proposed new underground garage. The existing retaining wall will be dismantled by hand and any roots exposed will be protected from desiccation by wrapping or covering them with damp Hessian cloth until the new retaining wall has been constructed. Care will be taken that no roots are severed during reconstruction and the retaining wall will include a compressible layer of minimum 50 mm thickness behind it to accommodate future root growth.

Space for machinery, parking of vehicles, storage of materials

5.9 All machinery will operate outside of root protection areas within the footprint of the proposed new garage and house.

5.10 Parking of vehicles will be off-site.

5.11 Delivery and storage of materials will initially be on-site in the driveway area to the front of the permitted dwelling and away from root protection areas until such a time as a new access is formed.

Services

5.12 Incoming and outgoing services will all be installed at the front of the property underneath the proposed garage and away from tree protection areas. There will therefore be no need to dig service trenches within root protection zones (**MD4**).

Landscaping

5.13 Once construction has demonstrably finished (to the satisfaction of the nominated arboriculturist) the fencing may be removed in order to allow final landscaping to be undertaken. Landscaping will not involve any changes in soil levels or the digging of any trenches within root protection areas. The installation of the new pedestrian steps to the right of the property will be carefully supervised by the arboricultural consultant to ensure that roots are not damaged.

6. Conclusions

6.1 A survey of trees in the garden of and adjacent to 18 Redington Road, London has been carried out. Sixteen trees were surveyed and all but two (Oak T11 and Crab apple T12) were considered suitable for retention within the development.

6.2 Methods for ensuring the protection of the fourteen trees to be retained have been described.

6.3 It is considered that the proposed development should pose no threat to trees to be retained and is sympathetic to the sylvan character of the area.

Dr Martin Dobson
BSc DPhil FArborA

6 September 2010

APPENDIX MD1
Tree survey schedule (BS5837: 2005) for 18 Redington Road

Tree No.	Species	Height (m)	Trunk diameter (mm)	Crown spread (m)	Height of crown clearance (m)	Age class[1]	Physiological condition	Structural condition	Useful life (y)	Management notes	BS5837 Grade
T1	Lombardy poplar	25.0	840	N 3.0 S 1.0 E 4.0 W 2.5	3.0	MA	Good	Good	40+	Trunk constricted by adjacent brick wall	A
T2	Lombardy poplar	25.0	830	N 1.0 S 5.0 E 4.0 W 5.0	4.0	MA	Good	Good.	40+	Trunk constricted by adjacent brick wall	A
T3	Birch	8.0	120	N 2.0 S 3.0 E 0.0 W 5.0	3.0	Y	Good	Good, but one sided crown	20 – 40	Unbalanced tree growing predominantly over road	C
T4	Hawthorn	8.0	250	N 2.0 S 2.0 E 2.0 W 2.0	3.0	MA	Good	Good	40+		C
T5	Honey locust	12.0	270	N 3.0 S 4.0 E 5.0 W 3.0	3.0	Y	Good	Good	40+		B
T6	Hawthorn	12.0	370	N 3.0 S 4.0 E 4.0 W 2.0	3.0	MA	Good	Good	20 – 40	Various pruning wounds on stem. One-sided crown	B/C
T7	Sorbus	12.0	190	N 3.0 S 3.0 E 3.0 W 1.0	2.0	Y	Good	Good	20 – 40		B
T8	Whitebeam	3.0	80	N 1.5 S 1.5 E 1.5 W 1.5	1.0	Y	Good	Good	40+		C

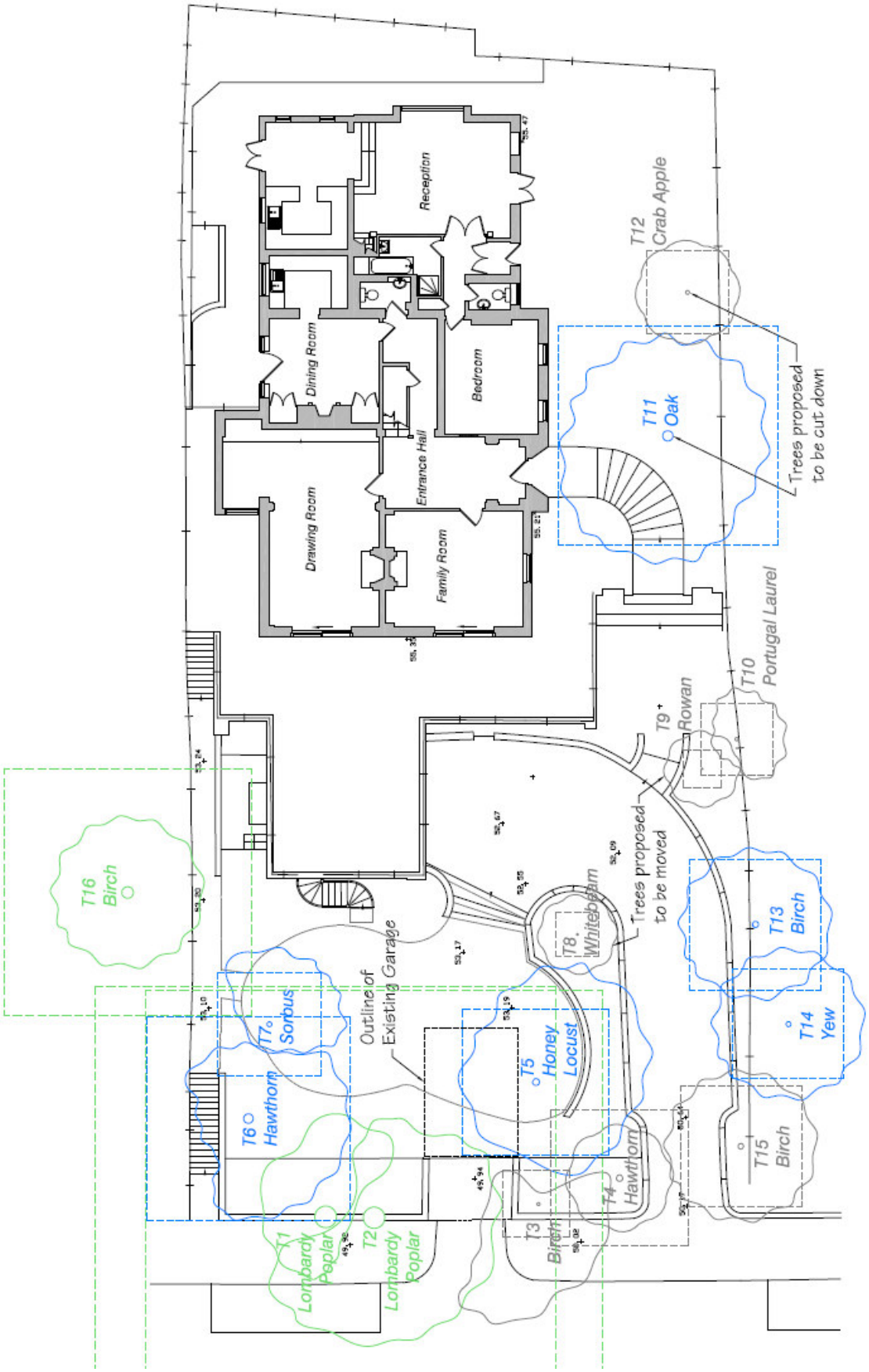
[1] Y = Young (<1/3 life expectancy). MA = Mid aged (1/3 – 2/3 life expectancy). M = Mature (>2/3 life expectancy). OM = Over mature (reaching end of safe useful life)

Tree No.	Species	Height (m)	Trunk diameter (mm)	Crown spread (m)	Height of crown clearance (m)	Age class[2]	Physiological condition	Structural condition	Useful life (y)	Management notes	BS5837 Grade
T9	Rowan	6.0	70	N 1.5 S 1.5 E 1.5 W 1.5	1.0	Y	Good	Good	40+		C
T10	Portugal laurel	6.0	130	N 1.0 S 2.0 E 2.0 W 1.0	1.0	Y	Good	Good	20 – 40	.	C
T11	Oak	8.0	400	N 4.0 S 4.0 E 4.0 W 5.0	2.0	Y	Good	Poor	20 – 40	Low fork resulting in low spreading crown. Previously reduced. Wrong location	B/C
T12	Crab apple	7.0	150	N 2.0 S 2.0 E 2.0 W 2.0	2.0	Y	Good	Good	20 – 40		C
T13	Birch	11.0	240	N 3.0 S 3.0 E 3.0 W 3.0	2.0	Y	Good	Good	40+		B
T14	Yew	8.0	200	N 3.0 S 3.0 E 3.0 W 3.0	2.0	Y	Good	Good	40+	Two stems at ground level	B
T15	Birch	12.0	220	N 3.0 S 3.0 E 3.0 W 3.0	4.0	Y	Good	Good	20 – 40	Contained within retaining wall. Restricted room for growth	C
T16	Birch	14.0	450	N 3.0 S 3.0 E 3.0 W 3.0	4.0	MA	Good	Good	40+		A

[2] Y = Young (<1/3 life expectancy). MA = Mid aged (1/3 – 2/3 life expectancy). M = Mature (>2/3 life expectancy). OM = Over mature (reaching end of safe useful life)

APPENDIX MD2

Site survey drawing showing existing plot layout with tree numbers and BS5837 colour codes (A – Green, B – Blue, C – Grey) and root protection areas

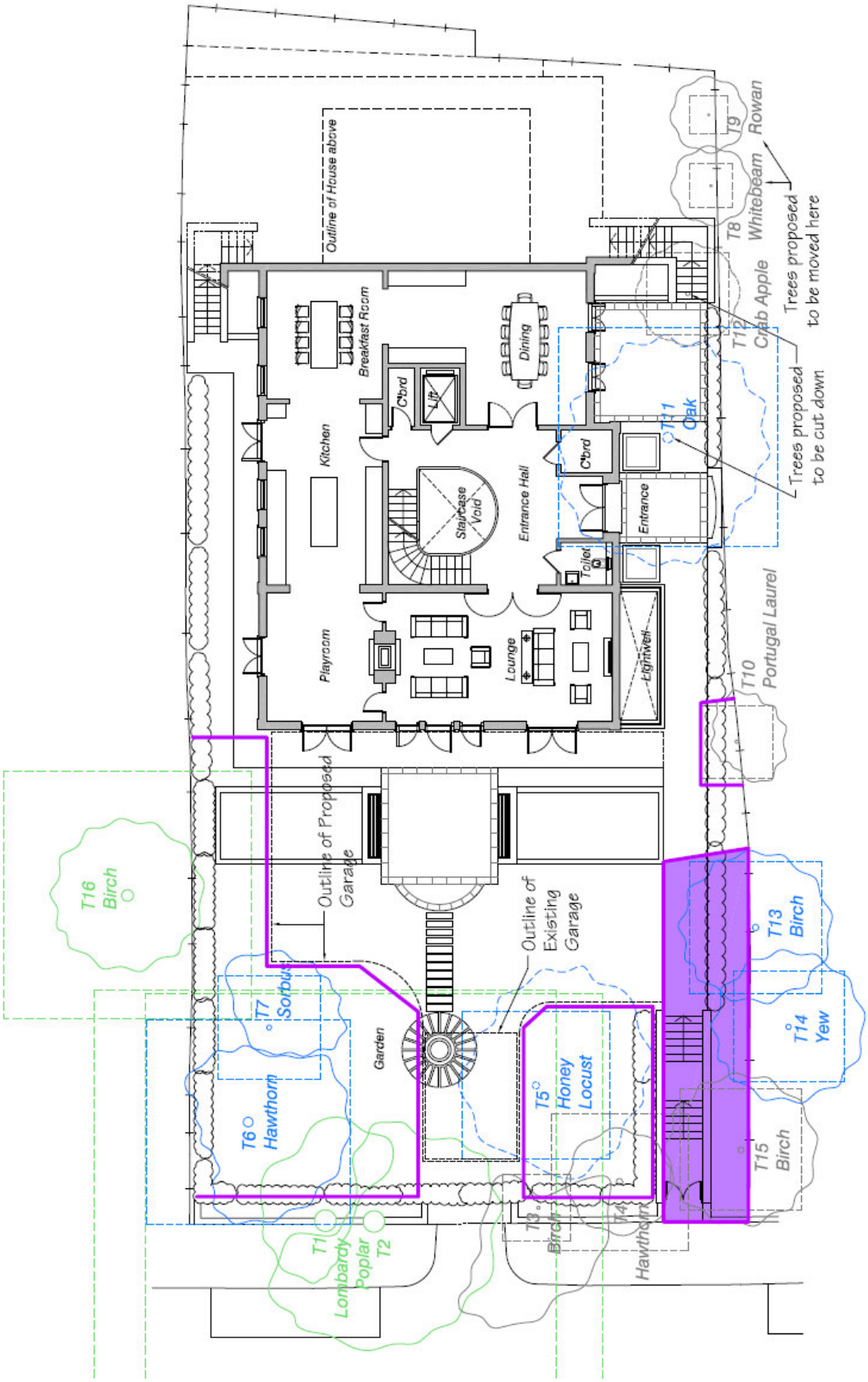


APPENDIX MD3
BS5837 schedule of protection zones

Tree No.	Species	Trunk diameter (mm)	BS5837: 2005 Root protection area, RPA, (m^2)	BS5837: 2005 Radial protection distance (m)	BS5837: 2005 Length of side of RPA if represented as a square (m)
T1	Lombardy poplar	840	319.2	10.1	17.9
T2	Lombardy poplar	830	311.7	10.0	17.7
T3	Birch	120	6.5	1.4	2.6
T4	Hawthorn	250	28.3	3.0	5.3
T5	Honey locust	270	33.0	3.2	5.7
T6	Hawthorn	370	61.9	4.4	7.9
T7	Sorbus	190	16.3	2.3	4.0
T8	Whitebeam	80	2.9	1.0	1.7
T9	Rowan	70	2.2	0.8	1.5
T10	Portugal laurel	130	7.6	1.6	2.8
T11	Oak	400	72.4	4.8	8.5
T12	Crab apple	150	10.2	1.8	3.2
T13	Birch	240	26.1	2.9	5.1
T14	Yew	200	18.1	2.4	4.3
T15	Birch	220	21.9	2.6	4.7
T16	Birch	450	91.6	5.4	9.6

APPENDIX MD4

Proposed plan showing location of tree protection zones, protective fencing (heavy purple lines) and ground protection (purple shading)



APPENDIX MD5
Qualifications and Experience

Dr Martin Dobson has been engaged in research and advisory work on trees since graduating in 1986 with a BSc (Hons) Degree in Biology. Subsequent postgraduate research led to the award of a Doctor of Philosophy (DPhil) Degree in Tree Physiology in 1990.

Postgraduate studies began in 1986 at the University of Ulster and continued in 1987 at the Forestry Commission's Research Station in Hampshire and focussed on the influence of air pollution on trees. Upon completion of this research in 1989 Dr Dobson was employed by the Forestry Commission and worked in both the Tree Pathology and Environmental Research Branches. During the next six years he was responsible for Department of Environment research contracts focussing on air pollution, climate change, de-icing salt damage to trees, woodland establishment on landfills and tree root research. He has authored two books: *De-icing Salt Damage to Trees and Shrubs* and *The Potential for Woodland Establishment on Landfill Sites.* He concluded his time at the Forestry Commission as Project Manager for research into the interaction between trees, roots and clay soils which included laboratory investigations, testing of root barriers and a three-year field-scale monitoring programme investigating the influence of woodland and grassland on the moisture status of clay soils.

In 1995 Martin joined the Arboricultural Advisory and Information Service as a senior Arboricultural Advisor. The AAIS advised the (then) Department of the Environment on policy matters and is the principal source of technical advice and information to the arboricultural profession as well as landscape architects, engineers, the horticultural industry and private individuals. A large proportion of advisory work focuses on issues relating to trees and buildings.

In 1997 he started an arboricultural consultancy practice specialising in subsidence and tree root claims, planning and development, tree safety issues and disease diagnosis. He has been a local authority retained consultant providing expertise on tree protection practice and legislation from 1999 - 2006 and has dealt with several thousand Tree Preservation Order and Conservation Area applications.

He has extensive experience as an Expert Witness in the High Court, County Court and Magistrates Court.

He is an examiner for the Professional Diploma in Arboriculture for the Royal Forestry Society and has been a part-time lecturer for the Middlesex University Countryside Management MSc course. He has further significant experience lecturing at technical conferences and seminars.

In addition to over 30 publications in scientific and technical journals he is the author of Arboriculture Research and Information Note 130/95/ARB *Tree Root Systems*, and leading author of:

Driveways Close to Trees. Arboricultural Practice Note 1. AAIS, Farnham.
Trees in Dispute. Arboricultural Practice Note 3. AAIS, Farnham.
Root Barriers and Building Subsidence. Arboricultural Practice Note 4. AAIS, Farnham.

He is a Fellow and Registered Consultant of the Arboricultural Association.