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TREE SURVEY
and
ARBORICULTURAL METHOD STATEMENT

A report to accompany a Planning Application for development on land at 86 Canfield Gardens, London, NW6 3EE

Report by Dr Martin Dobson

7 November 2007

Contents

1 Introduction

1.1 Number 86 Canfield Gardens, London, NW6 3EE is an end-of-terrace dwelling located in a sought-after residential area of South Hampstead, London.

1.2 In order to increase available living space it is proposed that a basement will be excavated beneath the footprint of the existing building and new habitable rooms will be constructed. Clearly this will involve a substantial amount of work and since there are a number of trees within the curtilage of the property and in neighbouring gardens a tree survey report has been commissioned in order to give details of the tree species present and how the trees, including their roots, will be protected during development.

1.3 It is the purpose of this report to demonstrate that trees on and adjacent to the site can be protected during and after development such that there would be no detriment to their health and vitality. This report fully adopts all relevant recommendations contained in the British Standard 5837: 2005 *Trees in relation to construction – recommendations* in order to ensure that soil, roots, trunk and branches will not be damaged.

2 Tree Survey

2.1 On 22nd October 2007 Martin Dobson Associates carried out a survey of the trees on or adjacent to 86 Canfield Gardens as instructed by Canfield Gardens Ltd. The survey was carried out in line with British Standard 5837: 2005 *Trees in Relation to Construction - Recommendations*. Appended at **MD1** is a copy of the tree survey schedule, which lists 9 trees present within or adjacent to the land which could potentially be affected by development. 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.

2.2 The site survey drawing appended at **MD2** shows the positions of the surveyed trees and gives a reasonable indication of the comparative branch spreads of the trees. 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

2.3 The information gathered from the survey has allowed a suitable root protection area to be calculated for each tree and the details of these are given below (**MD3** and **MD4**).

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 To the rear of 86 Canfield Gardens there is a modest sized garden mostly laid to lawn with some trees and shrubs at the edges near to the boundary with properties to the left and right. T1 is a mid-aged Lime in the rear garden of 88 Canfield Gardens which is in good condition other than a large wound at the base which is becoming decayed. The tree does not pose an unreasonable danger at present but as decay progresses it will become dangerous and therefore

its condition should be monitored. Due to its limited safe useful life the tree has been given a C grading. T2 is a large mid-aged Sycamore also in the rear garden of 88 Canfield Gardens which is in good condition. It casts substantial shade over the garden which will only worsen as the tree gets larger. It is suggested that the tree be reduced by about 30% to contain its size. Because of its significant contribution to the landscape the tree has been given an A grading. T3 is a modest sized Purple plum which provides interest within the garden, but otherwise is of little amenity value. It has therefore been given a C grading. T4 is a young Beech which is located within the rear garden of No. 88 and very close to the rear conservatory of No. 86. It has been pruned in the past to control its size and this treatment may need to be repeated from time to time. Due to its close proximity to the building it is not advisable to allow the tree to reach its full potential size and therefore since it will need regular maintenance it has been given a B grading. T5 is a Robinia (False acacia) which is a substantial mid-aged tree of good form. It has been given an A grading. T6 is a mid-aged Pear in fair condition, but since Pears are reasonably short-lived and this particular one does not have good form it has been given a C grading.

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 foundations 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 a large proportion of roots growing in the direction of the trench. Similarly, the diameter of 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* gives advice for ensuring that the negative impacts of development on trees are minimised.

4.4 Essentially the guidance recommends 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 through protective fencing 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, or for multi-stemmed trees 10 times the diameter at ground level. Based on the tree survey data root protection areas have been calculated and these are shown at **MD3** and illustrated at **MD2**. The British Standard recommends that the position of protective fencing should be shown on development plans as polygons rather than circles and thus fencing to enclose root protection areas illustrated at **MD2** (a thick black line for fencing) is shown using straight lines rather than curves, but nonetheless encompasses the requisite area.

4.5 Fencing will consist of a scaffold framework (not wooden posts), 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 not be used as these are not resistant to impact and are too easily removed by site operatives.

4.6 In one position only (adjacent to the doorway to the rear conservatory – shown on the plan shaded purple) fencing will be replaced by ground protection in the form of a raised timber walkway on ground bearing beams placed above existing ground level.

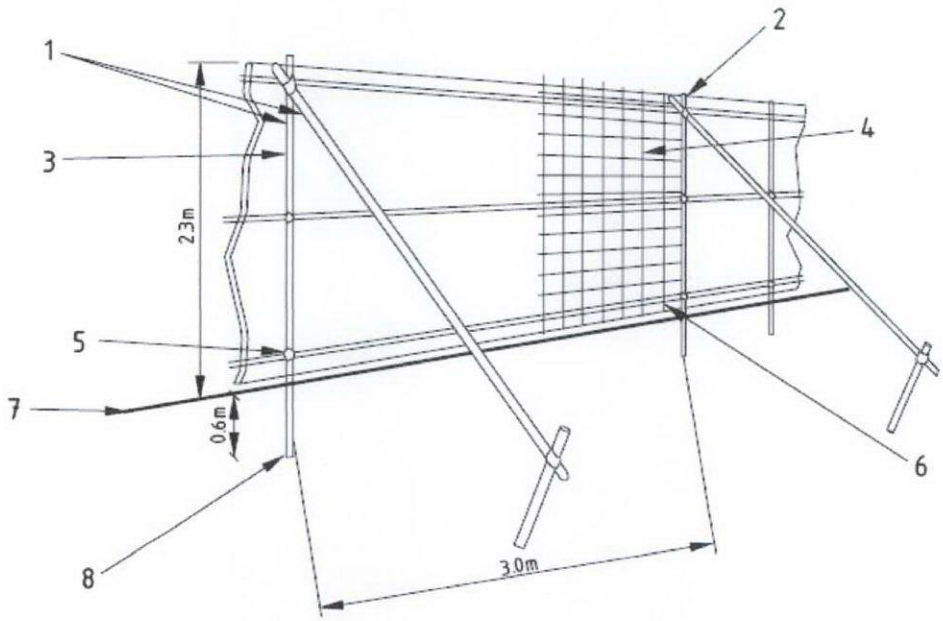
4.7 High visibility all weather notices will be securely attached to the barrier around the protection zone with the words '*Tree Protection Zone. No Construction Allowed – Keep Out*'. Where long lengths of barrier are erected a sign will be attached at intervals of no less than 6 m.

4.8 The barrier will remain in place throughout the succeeding construction phase and will not be removed without written permission from the Council under any circumstances until construction is completed.

4.9 No fires will be lit under the canopies of trees and any fires must be at least 4 m beyond the furthest branch tip. Likewise, potentially toxic liquids such as diesel will be stored at least 3 m away from the protective fencing.

4.10 Any new service runs will be positioned outside root protection areas, but it is anticipated that all service runs will be located at the front of the house rather than at the rear.

Diagram to illustrate suitable protective fencing



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

5. Method Statement

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

5.2 Before any construction work takes place on site the protective fencing and ground protection will be installed in the positions shown at **MD3**. This will be approved and checked by a competent arboriculturist.

5.3 Once tree protection is in place then excavation and construction can begin. Fencing should not be taken down under any circumstances during construction unless with the express approval of the Council.

5.4 Once construction has demonstrably finished (to the satisfaction of a competent arboriculturist) the fencing and ground protection may be removed in order to allow any final landscaping to be undertaken. Landscaping should not involve any changes in soil levels or the digging of any trenches.

6. Conclusions

6.1 A survey of trees in the garden of and adjacent to 86 Canfield Gardens, London has been carried out. Six trees were surveyed and out of these two were considered to be of high importance (Sycamore T2 and Robinia T5), one was considered to be of moderate importance (Beech T4) and the remaining three trees were considered to be of low value (Lime T1, Purple plum T3 and Pear T6). Nonetheless, all of these trees are to be retained and protected during development.

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

6.3 It is considered that the proposed development will pose no threat to the trees to be retained.

Dr Martin Dobson
6 November 2007

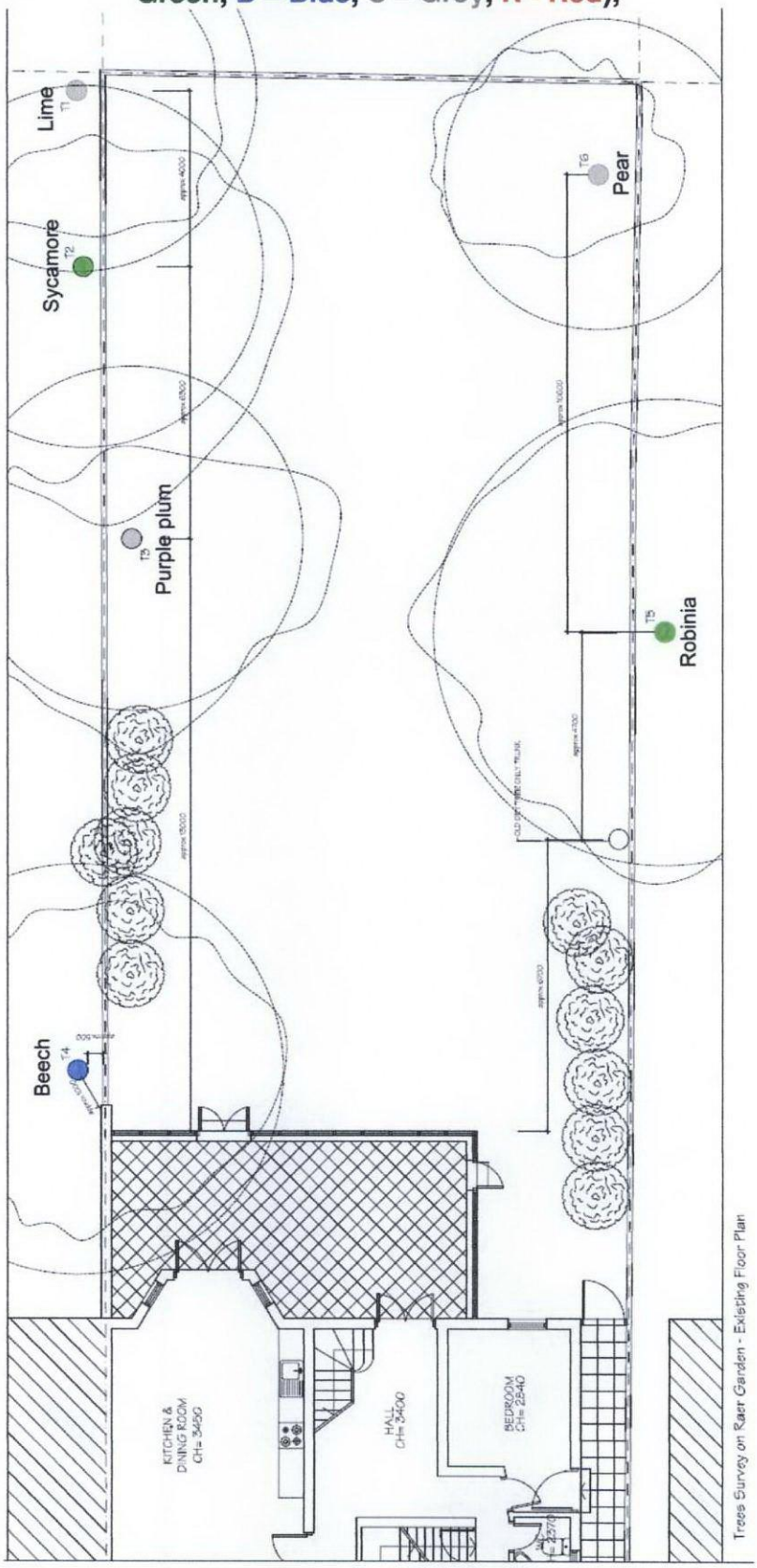
APPENDIX MD1
Tree survey schedule (BS5837: 2005) for 86 Canfield Gardens

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	Lime	14.0	350	N 3.5 S 3.5 E 3.5 W 3.5	3.0	MA	Fair	Poor. Basal damage and decay	10 – 20	Limited safe life because of decay	C
T2	Sycamore	14.0	350	N 3.0 S 6.0 E 5.0 W 5.0	5.0	MA	Good	Good	40+	Reduce by 30% to minimise shading of garden	A
T3	Purple plum	7.0	400 at ground level	N 2.0 S 5.0 E 5.0 W 4.0	3.0	MA	Good	Fair	10 – 20	Reduce by 30%	C
T4	Beech	10.0	400	N 4.0 S 4.0 E 5.0 W 4.0	4.0	Y	Good	Substantially pollarded in the past	40+		B
T5	Robinia	14.0	450	N 5.0 S 6.0 E 5.0 W 6.0	6.0	MA	Good	Good	40+		A
T6	Pear	10.0	300	N 3.0 S 2.0 E 2.0 W 4.0	2.0	MA	Fair	Fair	10 – 20	Next to wall – may cause structural damage	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)

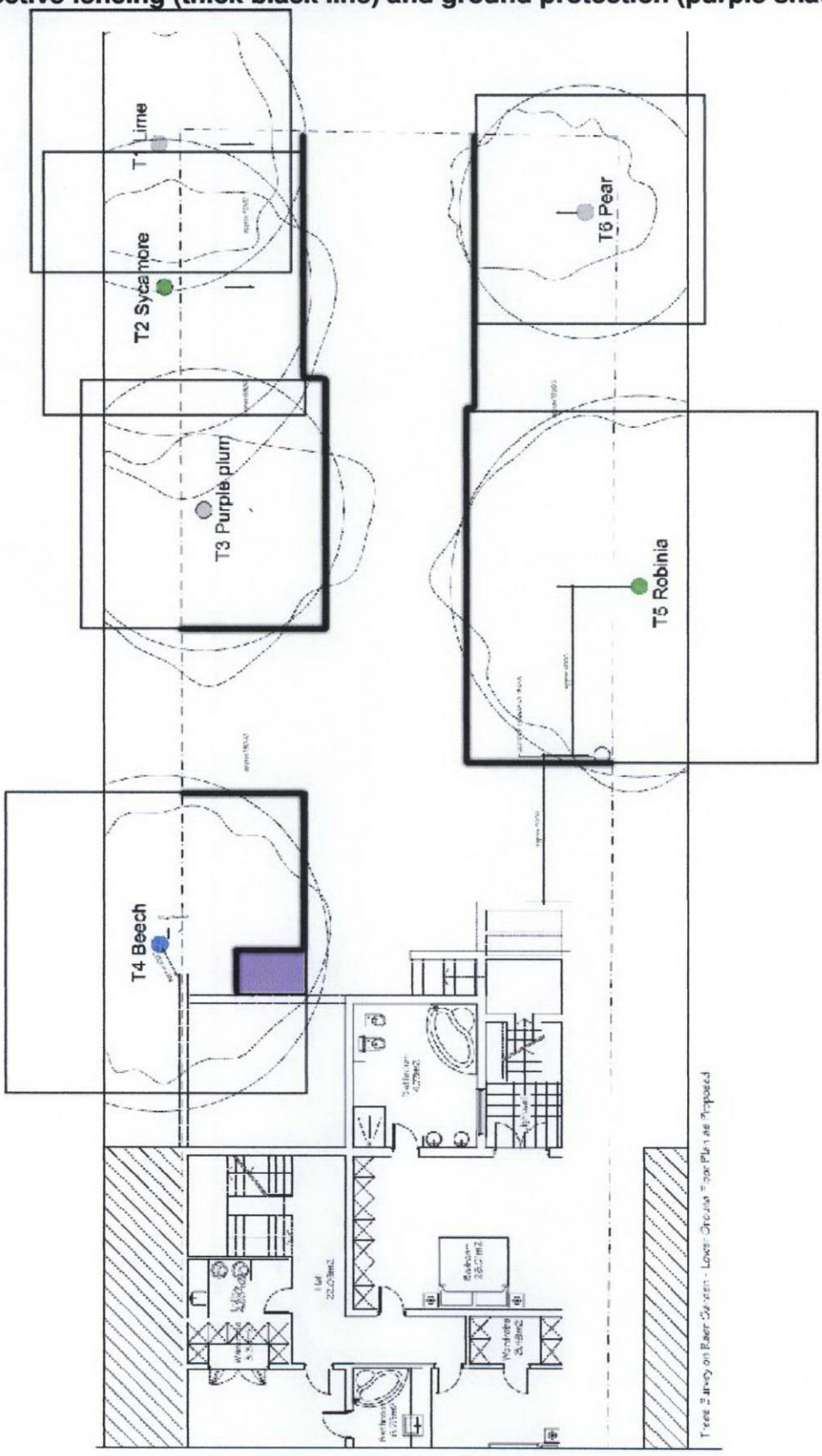
APPENDIX MD2

Site survey drawing showing tree numbers and BS5837 colour codes (A – Green, B – Blue, C – Grey, R - Red),



APPENDIX MD3

Proposed new layout and positions of root protection zones (thin black lines), protective fencing (thick black line) and ground protection (purple shading)



APPENDIX MD4
BS5837 schedule of protection zones

Tree No.	Species	BS5837: 2005 Root protection area, RPA, (m^2)	BS5837: 2005 Radial protection distance (m)	BS5837: 2005 Diameter of RPA if represented as a square (m)
T1	Lime	55.4	4.2	7.4
T2	Sycamore	55.4	4.2	7.4
T3	Purple plum	50.3	4.0	7.0
T4	Beech	72.4	4.8	8.6
T5	Robinia	91.6	5.4	9.6
T6	Pear	40.7	3.6	6.4