

**Landmark Trees**

---

## **ARBORICULTURAL IMPACT ASSESSMENT REPORT:**

44 Canfield Gardens,  
London NW6 3EB

## **REPORT PREPARED FOR:**

Transformation Architects  
17 Bonny Street  
London  
NW1 9PE

## **REPORT PREPARED BY**

Adam Hollis  
MSc ARB MICFor FARbor A MRICS C Env

**Ref:** TRN/CNF/AIA/01

**Survey Date:** 10<sup>th</sup> June 2010

**Rev Date:** 24<sup>th</sup> August 2010

The content and format of this Report are for the exclusive use of the Client. It may not be sold, lent, hired out or divulged to any third party, not directly involved in the subject matter without Landmark Trees written consent.

---

**Web:** [www.landmarktrees.co.uk](http://www.landmarktrees.co.uk)  
**e-mail:** [info@landmarktrees.co.uk](mailto:info@landmarktrees.co.uk)  
**Tel:** 0207 851 4544

**London Office:** 20 Broadwick Street, W1F 8HT, London

**Registered Office:** Grange Cottage, All Cannings, Devizes, Wiltshire, SN10 3NR

Landmark Trees is the trading name of Landmark trees Ltd. Registered in Wales. Reg No. 3882076



**Institute of Chartered Foresters**  
Registered Consultant

<b>Section</b>	<b>Content</b>	<b>Page No</b>
1.0	SUMMARY	4
2.0	INTRODUCTION	5
2.1	Terms of Reference	5
2.2	Drawings Supplied	5
2.3	Scope of Survey	6
2.4	Survey Data	6
3.0	OBSERVATIONS	7
3.1	Site Descriptions	7
3.2	Subject Trees	8
3.3	Planning Status	8
4.0	DEVELOPMENT CONSTRAINTS	9
4.1	Primary Constraints	9
4.2	Secondary Constraints	11
5.0	ARBORICULTURAL IMPACTS	12
6.0	DISCUSSION	13
6.1	Rating of Primary Impacts	13
6.2	Rating of Secondary Impacts	14
6.3	Mitigation of Impacts	14
7.0	CONCLUSION	15
8.0	RECOMMENDATIONS	16
9.0	REFERENCES	20

## **APPENDICES**

APPENDIX 1	Survey Data	21
APPENDIX 2	Recommended Tree Works	24
APPENDIX 3	Trees for Constricted Sites	26
APPENDIX 4	Tree Constraints Plan	27
APPENDIX 5	Impact Assessment Plan	29

**Caveats**

This report is primarily an arboricultural report. Whilst comments relating to matters involving built structures or soil data may appear, any opinion thus expressed should be viewed as qualified, and confirmation from an appropriately qualified professional sought. Such points are usually clearly identified within the body of the report.

It is not a full safety survey or subsidence risk assessment survey. These services can be provided but a further fee would be payable. Where matters of tree condition with a safety implication are noted during an inspection they will of course appear in the report.

Inherent in tree inspection is assessment of the risk associated with trees close to people and their property. Most human activities involve a degree of risk, such risks being commonly accepted if the associated benefits are perceived to be commensurate.

Risks associated with trees tend to increase with the age of the trees concerned, but so do many of the benefits. It will be appreciated, and deemed to be accepted by the client, that the formulation of recommendations for all management of trees will be guided by the cost-benefit analysis (in terms of amenity), of tree work that would remove all risk of tree related damage.

Prior to the commencement of any tree works, an ecological assessment of specific trees may be required to ascertain whether protected species (e.g. bats, badgers and invertebrates etc) may be affected.

## 1. SUMMARY

- 1.1 This report comprises an arboricultural impact assessment of the proposals for 44 Canfield Gardens, London NW6 3EB, reviewing any conflicts between the proposals and material tree constraints identified in our survey.
- 1.2 There are 10 trees surveyed on or around the site, of which 1 is 'A' category \*(High Quality), 2 are 'B' category \*(Moderate Quality) and 8 'C' category \*(Low Quality). In theory, only the moderate-quality trees and above are material constraints on development and these are confined to the rear of the property away from the proposals. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting. In general, the proposals have taken into account and preserve, the existing tree population, removing only two C category (lime) trees.
- 1.3 The principal primary impacts in the current proposals are the removal of two semi-mature, lime pollards (T8 & 9) of indifferent quality with decay in the pollard heads. The unprofessionally topped trees obscure a perfectly serviceable tall laurel hedge (T10), providing adequate visual amenity for this small courtyard garden. New more appropriate and healthy, native fruit tree(s) could be replanted in their place, a little inset from the proposed sliding gates, which necessitate their removal, but given the presence of street trees nearby, it is not clear that the onus on the confined site would be necessary. The question can be resolved under condition.
- 1.4 There is a further small encroachment of T10 laurel's theoretical RPA by 5% / 1.5m<sup>2</sup> for the light well. The impact occurs within existing hard standing, where root activity is likely to have been limited and can be hand pruned.
- 1.5 Thus, the primary impacts are likely to be very low to T10 and low to the site in terms of the removal of T7 & 9. The impact to the laurel can be mitigated with hand excavation and the lime removals with new native planting.
- 1.6 Secondary impacts from the new lower ground floor may require the regular trimming of the laurel hedge to avoid shading. However, this is hardly onerous or prejudicial to the visual character of the local area.
- 1.7 Thus, with suitable mitigation and supervision the scheme is viable.

\* British Standards Institute. 2005. Trees in Relation to Construction BS 5837: 2005 HMSO, London

## 2. INTRODUCTION

### 2.1 Terms of reference

- 2.1.1 LANDMARK TREES were asked by Transformation Architects, 17 Bonny Street, London NW1 9PE, to undertake an arboricultural planning survey of the site: 44 Canfield Gardens, London NW6 3EB. The report is to accompany a planning application.
- 2.1.2 The proposals are for the construction of a new lower ground floor (LGF) and a sliding gate to the front gate. This report will assess the impact on the trees and their constraints, identified in our survey. Although the proposals were known at the time of the survey, Landmark Trees endeavour to survey each site blind, working from a topographical survey, wherever possible, with the constraints plan informing their evolution.
- 2.1.3 I am a Registered Consultant and Fellow of the Arboricultural Association and a Chartered Forester, with a Masters Degree in Arboriculture and 20 years experience of the landscape industry - including the Forestry Commission and Agricultural Development and Advisory Service. I am a UK Registered Expert Witness, trained in single joint expert witness duties. I am also Chairman of the UK & I Regional Plant Appraisal Committee, inaugurated to promote international standards of valuation in arboriculture.

### 2.2 Drawings supplied

- 2.2.1 The drawings supplied by the client and relied upon by Landmark Trees in the formulation of our survey plans are:
- Existing ground floor- 1744-001 Existing ground and site plan \*
- Proposed LG & G floor – File0001-4

\*In the absence of a full topographical survey, tree positions may be approximate only.

## 2.3 Scope of survey

- 2.3.1 As Landmark Trees' arboricultural consultant, I surveyed the trees on site on 10<sup>th</sup> June 2009, recording relevant qualitative data in order to assess both their suitability for retention and their constraints upon the site, in accordance with British Standard 5837:2005 Trees in relation to construction – Recommendations [BS5837].
- 2.3.2 Our survey of the trees, the soils and any other factors, is of a preliminary nature. The trees were inspected on the basis of the Visual Tree Assessment method expounded by Mattheck and Breloer (The Body Language of Trees, DoE booklet Research for Amenity Trees No. 4, 1994). I have not taken any samples for analysis and the trees were not climbed, but inspected from ground level.
- 2.3.3 The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

## 2.4 Survey data & report layout

- 2.4.1 Detailed records of individual trees are given in the survey schedule in Appendix 1 to this report.
- 2.4.2 A site plan identifying the surveyed trees, based on the client's drawings / topographical survey is provided in Appendix 4.
- 2.4.3 This plan also serves as the Tree Constraints Plan with the theoretical Recommended Protection Areas (RPA's), tree canopies and shade constraints, (from BS5837: 2005) overlain onto it. These constraints are then overlain in turn onto the client's proposals to create an Arboricultural Impact Assessment Plan in Appendix 5. General observations and discussion follow, below.

### 3.0 OBSERVATIONS

#### 3.1 Site description

- 3.1.1 The site is a residential property off the Finchley Road with small southeast-facing courtyard garden to the front and more substantial northwest facing lawn area to the rear. The front is laid to hard standing with two limes (T8 & 9) and a laurel (T10) somewhat crowded in. The rear area is mostly grassed over and surrounded by trees (T1-7) on adjoining properties.
- 3.1.2 The site is relatively level.
- 3.1.3 In terms of the Soil Survey of England and Wales, the soil lies within the unsurveyed area of Greater London where the soils are generally, highly shrinkable clay; e.g. slowly permeable seasonally waterlogged fine loam over clay. Such soils are prone to compaction during development. Damage to soil structure can have a serious impact on tree health. Design of foundations near problematic tree species will also need to take into consideration subsidence risk. A structural engineer may be able to advise further on the local geology and its implications for development.

### 3.2 Subject trees

3.2.1 There are 10 trees surveyed on or around the site, of which 1 is 'A' category \*(High Quality), 2 are 'B' category \*(Moderate Quality) and 8 'C' category \*(Low Quality).

3.2.2 In terms of age demographics there is a preponderance of mature trees on the site with few younger, replacement trees in the population.

3.2.3 The lime tree pollards at the front of the site (T8 & 9) are of indifferent quality: they have been unprofessionally topped (crown and canopy removed arbitrarily at 2-3m above ground) and have decay in the pruning heads. They are semi-mature.

### 3.3 Planning Status

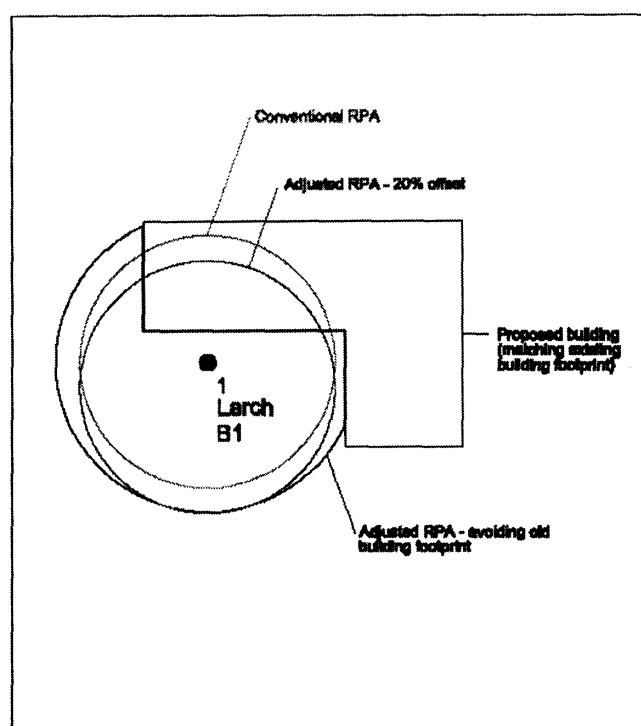
3.3.1 We are not aware of the existence of any Tree Preservation Orders or Conservation Areas, which may affect trees on the site. It is a criminal offence to disturb or damage such trees without permission from the local authority.



## 4.0 DEVELOPMENT CONSTRAINTS

### 4.1 Primary constraints

- 4.1.1 BS5837: 2005 gives Recommended Protection Areas (RPA's) for any given tree size. The individual RPA's are calculated in the Tree Schedule in Appendix 1 to this report, or rather the notional radius of that RPA, based on a circular protection zone. The prescribed radius is generally 12-x stem diameter at 1.5m above ground level, except where basal diameters are used in the case of multi-stemmed trees, and the radius is set at 10x the diameter.
- 4.1.2 Circular RPA's are appropriate for individual specimen trees grown freely such as these, but where there is ground disturbance, the morphology of the RPA can be modified to an alternative polygon, and where appropriate shifted 20% in the direction of undisturbed ground, as shown in the diagram below. In less fanciful terms, one needs to remember that RPA's are area-based and not linear. **No modifications have been made in this instance.**



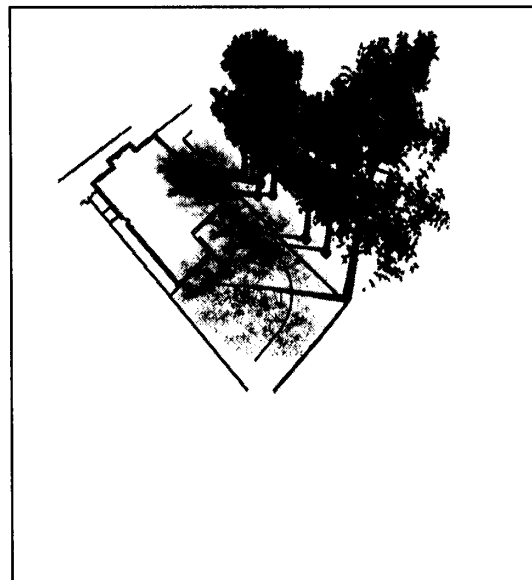
4.1.3 R Category trees are discounted from the process. Category-C trees would not normally constrain development individually, unless they provide some external screening function. As discrete, internal trees, their removal will not affect the wooded envelope that encloses much of the site.

4.1.4 "Care should be exercised over misplaced tree preservation. Attempts to retain too many or unsuitable trees on a site are liable to result in excessive pressure on the trees during development work and subsequent demands for their removal. The end result is usually fewer and less suitable trees than would be the case if proper planning, selection and conservation had been applied from the outset." (BS5837: 2005)

4.1.5 In theory, only the moderate-quality trees and above are material constraints on development and these are confined to the rear of the property away from the proposals. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting. In general, the proposals have taken into account and preserve, the existing tree population, removing only two C category (lime) trees.

## 4.2 Secondary Constraints

4.2.1 The second type of constraint produced by trees that are to be retained is that the proximity of the proposed development to the trees should not threaten their future with ever increasing demands for tree surgery or felling to remove nuisance shading, honeydew deposition or perceived risk of harm.



4.2.3 The shading constraints are crudely determined from BS5837 by drawing an arc from northwest to east of the stem base at a distance equal to the height of the tree, as shown in the diagram opposite. Shade is less of a constraint on non-residential developments, particularly where rooms are only ever temporarily occupied. This arc represents the effects that a tree will have on layout through shade, based on shadow patterns of 1x tree height for a period May to Sept inclusive 10.00-18.00 hrs daily.

4.2.4 The principal secondary constraint would be shading on to the site from trees along the south and west boundaries. However, development at LGF level is less vulnerable to shading.

*Note: Sections 5 & 6 will now assess the impacts upon constraints identified in Section 4. Table 1 in Section 5 presents the impacts in tabular form (drawing upon survey data presented in Appendices 1 & 2). Impacts are presented in terms of whole tree removal and the effect on the landscape or partial encroachment (% of RPA) and its effect on individual tree health. Section 6 discusses the table data, elaborating upon the impacts' significance and mitigation.*

5.0 Table 1: Arboricultural Impact Assessment for Retained Trees  
(Impacts assessed prior to mitigation and rated with reference to From Matheny & Cark (1998))

Hide irrelevant Show All Trees

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
C	8	Lime, Common	Felled to Facilitate Development	m <sup>2</sup> N/A %	Semi-mature	Moderate	N/A	N/A	Low	New planting / landscaping
C	9	Lime, Common	Felled to Facilitate Development	m <sup>2</sup> N/A %	Semi-mature	Moderate	N/A	N/A	Low	New planting / landscaping
C	10	Laurel, Cherry	Lightwell excavation within RPA	1.5 m <sup>2</sup> 5.3 %	Semi-mature	Normal	Good	Very Low	N/A	Airspade / manual excavation within RPA

## 6.0 DISCUSSION

### 6.1 Rating of Primary Impacts

6.1.1 The principal primary impacts in the current proposals are the removal of two semi-mature, lime pollards (T8 & 9) of indifferent quality with decay in the pollard heads. The unprofessionally topped trees obscure a perfectly serviceable tall laurel hedge (T10), providing adequate visual amenity for this small courtyard garden.

6.1.2 There is a further small encroachment of T10 laurel's theoretical RPA by 5% / 1.5m<sup>2</sup> for the light well. The impact occurs within existing hard standing, where root activity is likely to have been limited and can be hand pruned.

6.1.3 The principal of RPA encroachment is established within BS5837 and supported by the source document, National Joint Utilities Guidelines 10 / Vol. 4 1995 / 2010. NJUG introduced the x12 diameter *Precautionary Zone* for supervised working and *Prohibited Zone* at a universal 1m from the base of the tree. RPA's are frequently misinterpreted as *Root Prohibition Areas* – a category error on the part of those making this assumption. In logic, a category error occurs when someone acts as though an object had properties, which it does not or cannot have (QED).

6.1.4 An RPA encroachment of <20% of RPA may be considered as low impact, given the permissive references to 20% RPA relocation and impermeable paving within BS5837 and other published references to healthy trees tolerating up to 30-50% root severance (Coder, Helliwell and Watson in CEH 2006).

6.1.5 **Thus, the primary impacts are likely to be very low to T10 and low to the site in terms of the removal of T7 & 9. The impact to the laurel can be mitigated with hand excavation and the lime removals with new native planting.**

## 6.2 Rating of Secondary impacts

6.2.1 Secondary impacts from the new lower ground floor may require the regular trimming of the laurel hedge to avoid shading. However, this is hardly onerous or prejudicial to the visual character of the local area.

## 6.3 Mitigation of Impacts

6.3.1 New more appropriate and healthy, native fruit tree(s) could be replanted in the place of limes T8 & 9, a little inset from the proposed sliding gates, which necessitate their removal, but given the presence of street trees nearby, it is not clear that the onus on the confined site would be necessary. The question can be resolved under condition.

6.3.2 The lightwell encroachment of the laurel (T10) will be preemptively excavated by hand or with an Airspade under site supervision. Roots smaller than 25mm diameter may be cut cleanly with a sharp pruning saw or secateurs back to a junction. Roots larger than 25mm diameter may only be cut in consultation with an arboriculturalist. If the latter is not present (though supervision is recommended) larger roots should be temporarily wrapped in dry, clean hessian sacking to prevent desiccation and exposure to extreme temperature fluctuations.

## 7.0 CONCLUSION

- 7.1 The potential impacts of development are all low in terms of both landscape impacts of removal and RPA percentage encroachments to retained trees / shrubs.
- 7.2 The full potential of the impacts can be largely mitigated through design and precautionary measures. These measures can be elaborated in Method Statements in the discharge of planning conditions.
- 7.3 The (laurel) species affected is generally tolerant of root disturbance / crown reduction and the retained trees are generally in good health and capable of sustaining these reduced impacts.
- 7.4 The semi-mature lime trees that are recommended for felling are of little individual significance, such that their loss will not affect the visual character of the wider area.
- 7.5 Therefore, the proposals will not have any significant impact on either the retained trees or wider landscape.

## 8.0 RECOMMENDATIONS

### 8.1 Specific Recommendations

- 8.1.1 Tree surgery recommendations are found in Appendix 2 to this report, with a selection of columnar tree species cultivars for constricted sites provided in Appendix 3. Any tree removals recommended within this report should only be carried out with local authority consent.
- 8.1.2 Excavation and construction impacts within the RPA's of trees identified in Table 1 above, will need to be controlled by method statements specifying mitigation methods suggested in para 6.3 above and by consultant supervision as necessary. These method statements can be provided as part of the discharge of conditions.
- 8.1.3 If replacement should be required, replace felled trees 8 & 9 with e.g. 1-2 x native hawthorn (*Crataegus monogyna*) or other species to be agreed with client and LB Camden, pit-planted (at 2m centres) as 10-12 cm girth nursery stock under current best practice; i.e. conforming to and planted in accordance with the following:

- BS 3936:1980 Nursery Stock;
- BS 4043:1966 Transplanting Semi-Mature Trees; and
- BS 5236:1975 Cultivation and Planting of Trees in the Advanced Nursery Stock Category.
- All replacement stock should be planted and maintained as detailed in BS 4428:1989 (Section 7): Recommendations for General Landscape Operations.



## 8.2 General Recommendations

- 8.2.1 Any trees which are in close proximity to buildings proposed for demolishing should be protected with a Tree Protection Barrier (TPB). This TPB should comprise steel, mesh panels 2.2m in height ('Heras') and should be mounted on a scaffolding frame (shown in Fig 2 of BS5837). The position of the TPB can be shown on plan as part of the discharge of conditions, once the lay out is agreed with the planning authority. The TPB should be erected prior to commencement of works, remain in its original form on-site for the duration of works and removed only upon full completion of works.
- 8.2.2 A TPB may no longer be required during soft landscaping work but a full arboricultural assessment must be performed prior to the undertaking of any excavations within the RPA of a tree. This will inform a decision about the requirement of protection measures. It is important that all TPBs have permanent, weatherproof notices denying access to the RPA.
- 8.2.3 The use of heavy plant machinery for building demolition, removal of imported materials and grading of surfaces should take place in one operation. The necessary machinery should be located above the existing grade level and work away from any retained trees. This will ensure that any spoil is removed from the RPAs. It is vital that the original soil level is not lowered as this is likely to cause damage to the shallow root systems.
- 8.2.4 Any pruning works must be in accordance with British Standard 3998:1989 Tree work [BS3998].
- 8.2.5 Where sections of hard surfacing are proposed in close proximity to trees, it is recommended that "No-Dig" surfacing be employed in accordance with BS5837:2005 and 'The Principles of Arboricultural Practice: Note 1, Driveways Close to Trees, AAIS 1996 [APN1]'.

- 8.2.6 Where scaffolding installation is required within the RPA the provisions of Figure 3 of BS5837 with regard to ground protection must be employed.
- 8.2.7 If the RPA of a tree is encroached by underground service routes then BS5837 and NJUG 10 provisions should be employed. If it is deemed necessary, further arboricultural advice must be sought.
- 8.2.8 Numerous site activities are potentially damaging to trees e.g. parking, material storage, the use of plant machinery and all other sources of soil compaction. In operating plant, particular care is required to ensure that the operational arcs of excavation and lifting machinery, including their loads, do not physically damage trees when in use.

- 8.2.9 To enable the successful integration of the proposal with the retained trees, the following points will need to be taken into account:
- 1) Plan of underground services.
  - 2) Schedule of tree protection measures, including the management of harmful substances.
  - 3) Method statements for constructional variations regarding tree proximity (e.g. foundations, surfacing and scaffolding).
  - 4) Site logistics plan to include storage, plant parking/stationing and materials handling.
  - 5) Tree works: felling, required pruning and new planting. All works must be carried out by a competent arborist in accordance with BS3998.

- 6) Site supervision: the Site Agent must be nominated to be responsible for all arboricultural matters on site. This person must:
- \* be present on site for the majority of the time
  - \* be aware of the arboricultural responsibilities
  - \* have the authority to stop work that is causing, or may cause harm to any tree
  - \* ensure all site operatives are aware of their responsibilities to the trees on site and the consequences of a failure to observe these responsibilities.
  - \* make immediate contact with the local authority and/or a retained arboriculturalist in the event of any tree related problems occurring.
- 8.2.10 These points can be resolved and approved through consultation with the planning authority via their Arboricultural Officer.
- 8.2.11 The sequence of works should be as follows:
- \* initial tree works: felling, stump grinding and pruning for working clearances
  - \* installation of TPB for demolition & construction
  - \* installation of underground services
  - \* installation of ground protection
  - \* main construction
  - \* removal of TPB
  - \* soft landscaping

## 9.0 REFERENCES

- British Standards Institute. 2005. Trees in Relation to Construction BS 5837: 2005 HMSO, London.
- Barlow JF & Harrison G. 1999. Shade By Trees, Arboricultural Practice Note 5, AAIS, Farnham, Surrey.
- Lonsdale D 1999. Research for Amenity Trees No.7: Principles of Tree Hazard Assessment and Management, HMSO, London.
- Centre for Ecology & Hydrology. 2006. Tree Roots in the Built Environment, HMSO, London.
- Matheny, N; Clark, J. R.1998. Trees and Development: A Technical Guide to Preservation of Trees during Land Development. Champaign
- Mattheck C. & Breloer H. 1994. Research for Amenity Trees No.2: The Body Language of Trees, HMSO, London.
- Thomas P, 2000. Trees: Their Natural History, Cambridge University Press, Cambridge.

**APPENDIX 1****TREE SCHEDULE** - Notes for Guidance

Dm -	is the diameter of the trunk in millimetres at 1.5m above ground level.
Spread -	is in metres at the points of the compass relevant to the woodland boundary
Class/Colour -	refers to the retention classifications in Section 5.2 BS5837: 2005 and colouring on the site map - Highly High Quality (A) (Green), Moderate Quality (B) (Blue), Low Quality (C) (Grey), Poor Quality (R) (Red)

# BS5837 Tree Constraints Survey Schedule

Site: 44 Canfield Gardens

Surveyor(s): Adam Hollis

Date: 10th June 2010

Ref:

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
1	Sycamore	12	3333	2	Semi-mature	150 e	12	1.8	Normal	Good	Low	C	1	>40	
2	Elder	10	4343	2	Mature	500 e	10	5.0	Normal	Fair	Low	C	2	20-40	Multi stem weakness
3	Sycamore	14	4455	3	Mature	500 e	12	6.0	Normal	Fair	Medium	B	2	20-40	
4	Laurel, Bay	7	2222	2	Early Mature	300	10	3.0	Normal	Fair	Low	C	2	20-40	Multi stem weakness
5	Laurel, Bay	7	1111	2	Semi-mature	200 e	10	2.0	Moderate	Fair	Low	C	2	20-40	
6	Lime, Common	16	5546	2	Mature	700 e	12	8.4	Normal	Good	High	B	2	>40	Deadwood (minor) throughout crown Pollarded with weak unions in new growth Scale
7	Beech, Copper	14	7775	2	Mature	800	12	9.6	Normal	Fair	High	A	1	>40	Deadwood (minor) throughout crown

## Notes:

1. Height describes the approximate height of the tree measured in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is expressed as an average of NSEW aspect if symmetrical.
3. Ground Clearance is the height in meters of crown clearance above adjacent ground level.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level for single stemmed trees or at ground level for multi-stemmed trees. Stem Diameter may be estimated where access is restricted.
5. Protection Multiplier is 12 for single stemmed and 10 for multi-stemmed trees and is the number used to calculate the tree's protection radius and area.

6. Protection Radius is a radial distance measured from the trunk centre.
7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak), Dead (dead or dying tree).
8. Structural Condition - Good (no or only minor defects), Fair (remediable defects), Poor - Major defects present.
9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to (British Standard 5837:2005 Table 1) and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'R' - Remove.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

# BS5837 Tree Constraints Survey Schedule

Site: 44 Canfield Gardens

Date: 10th June 2010

Surveyor(s): Adam Hollis

Ref:

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
8	Lime, Common	7	2222	3	Semi-mature	290	12	3.5	Moderate	Poor	Low	C	2	20-40	Unprofessionally topped/lopped Decay in heads
9	Lime, Common	6	2222	2	Semi-mature	260	12	3.1	Moderate	Poor	Low	C	2	20-40	Unprofessionally topped/lopped Decay in heads
10	Laurel, Cherry	5	2222	0	Semi-mature	300	10	3.0	Normal	Good	Low	C	2	20-40	

## Notes:

1. Height describes the approximate height of the tree measured in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is expressed as an average of NSEW aspect if symmetrical.
3. Ground Clearance is the height in meters of crown clearance above adjacent ground level.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level for single stemmed trees or at ground level for multi-stemmed trees. Stem Diameter may be estimated where access is restricted.
5. Protection Multiplier is 12 for single stemmed and 10 for multi-stemmed trees and is the number used to calculate the tree's protection radius and area.

6. Protection Radius is a radial distance measured from the trunk centre.
7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak), Dead (dead or dying tree).
8. Structural Condition - Good (no or only minor defects), Fair (remediable defects), Poor - Major defects present.
9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to (British Standard 5837:2005 Table 1) and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'R' - Remove.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

**APPENDIX 2****RECOMMENDED TREE WORKS**



Landmark Trees Ltd  
Tel: 0207 851 4544

## Recommended Tree Works

Hide Irrelevant

Show All Trees

Site: 44 Canfield Gardens

Surveyor(s): Adam Hollis

Page

Date: 10th June 2010

Ref:

Tree No.	English Name	Height	Stem Diameter	Crown Spread	Recommended Works	Comments/ Reasons
6	Lime, Common	16	700 e	5546	CCL Monitor	Deadwood (minor) throughout crown Pollarded with weak unions in new growth Scale Advisable for good arboricultural practice
7	Beech, Copper	14	800	7775	CCL	Deadwood (minor) throughout crown Advisable for good arboricultural practice
8	Lime, Common	7	290	2222	Fell	Unprofessionally topped/lopped Decay in heads  Recommended to permit development
9	Lime, Common	6	260	2222	Fell	Unprofessionally topped/lopped Decay in heads  Recommended to permit development
10	Laurel, Cherry	5	300	2222	Trim i.e. cut back NE side by 1m	Recommended to permit development

### Notes:

- CB - Cut Back to boundary/clear from structure.
- CL# - Crown Lift to given height in meters.
- CT#% - Crown Thinning by identified %.
- CCL - Crown Clean (remove deadwood/crossing and hazardous branches and stubs).
- CR#% - Crown Reduce by given maximum % (of outermost branch & twig length)
- DWD - Remove deadwood.
- Fell - Fell to ground level.
- FlInv - Further Investigation (generally with decay detection equipment).
- Pol - Pollard or re-pollard.
- Mon - Monitor ongoing condition (annually by staff / owners & every 2-3 yrs by consultant).
- Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

### APPENDIX 3: TREE SELECTION FOR CONSTRICTED SITES

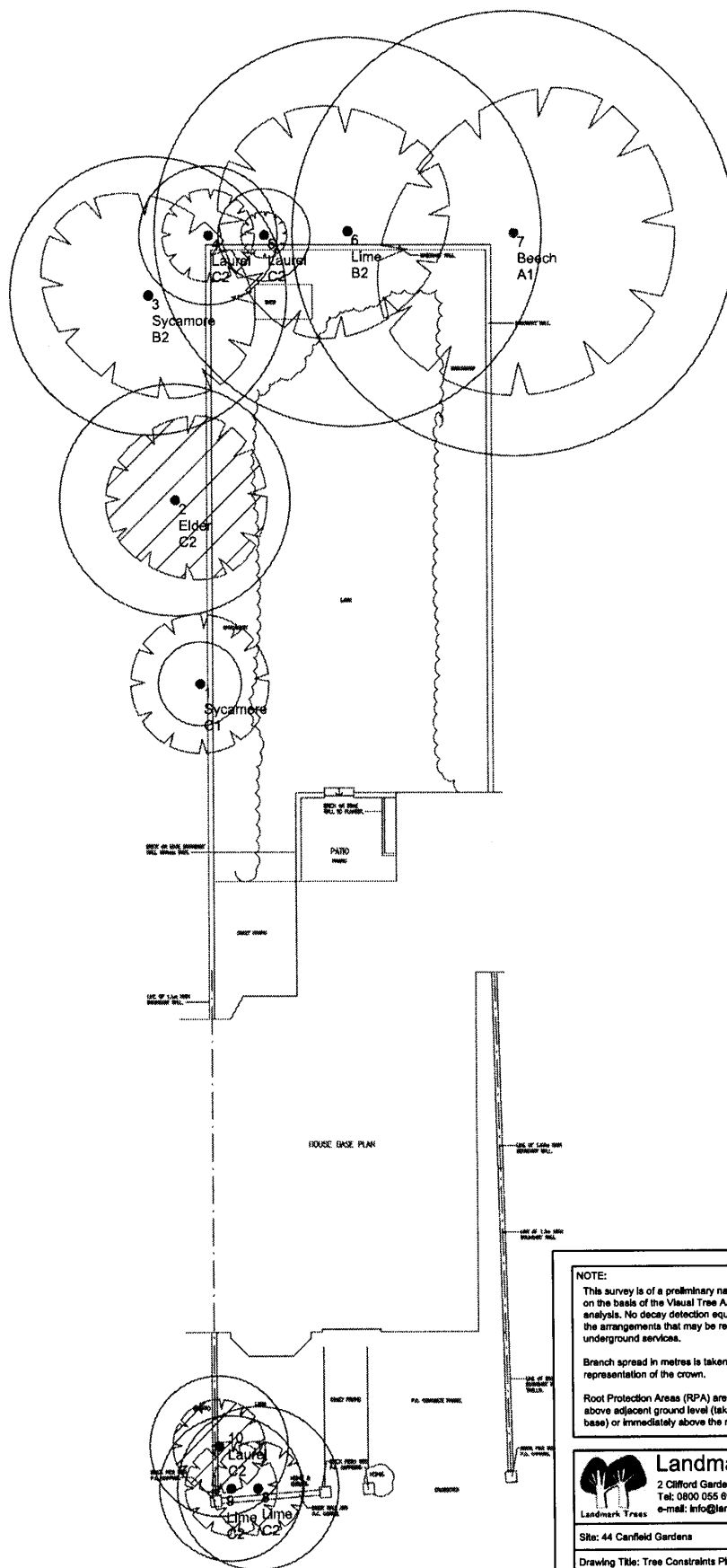
Table 4: Rosaceous Tree Species for Constricted Planting Sites

Common Name	Species	Selected Form
Hawthorn	<i>Crataegus monogyna</i>	Stricta
Cockspur	<i>Crataegus prunifolia</i>	Splendens
Cherry	<i>Prunus x hillieri</i>	Spire
Bird cherry	<i>Prunus padus</i>	Albertii
Rowan / Mountain ash	<i>Sorbus aucuparia</i>	Cardinal Royal
Rowan / Mountain ash	<i>Sorbus aucuparia</i>	Rossica Major
Rowan / Mountain ash	<i>Sorbus aucuparia</i>	Sheerwater Seedling
Swedish whitebeam	<i>Sorbus intermedia</i>	Brouwers
Bastard whitebeam	<i>Sorbus x thuringiaca</i>	Fastigiata

Table 5: Specimen Tree Species for Constricted Planting Sites

Common Name	Species	Selected Form
Chinese red bark birch	<i>Betula albosinensis</i>	Fascination
Swedish birch	<i>Betula pendula</i>	Dalecarlica
Hornbeam	<i>Carpinus betulus</i>	Fastigiata Frans Fontaine
Turkish Hazel	<i>Corylus columna</i>	
Maidenhair tree	<i>Ginkgo biloba</i>	
Pride of India	<i>Koelreuteria paniculata</i>	Fastigiata
European larch	<i>Larix decidua</i>	Sheerwater Seedling
Tulip tree	<i>Liriodendron tulipifera</i>	Fastigiata

**APPENDIX 4****TREE CONSTRAINTS PLAN**



#### NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base) or immediately above the root flare for multi-stemmed trees.



#### Landmark Trees

2 Clifford Gardens, London, NW10 5JD  
Tel: 0800 055 6912 Mobile: 07812 989928  
e-mail: [info@landmarktrees.co.uk](mailto:info@landmarktrees.co.uk) Web: [www.landmarktrees.co.uk](http://www.landmarktrees.co.uk)

Site: 44 Canfield Gardens

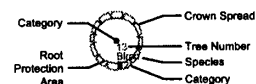
1-200@A3

Drawing Title: Tree Constraints Plan

June 2010

#### Key:

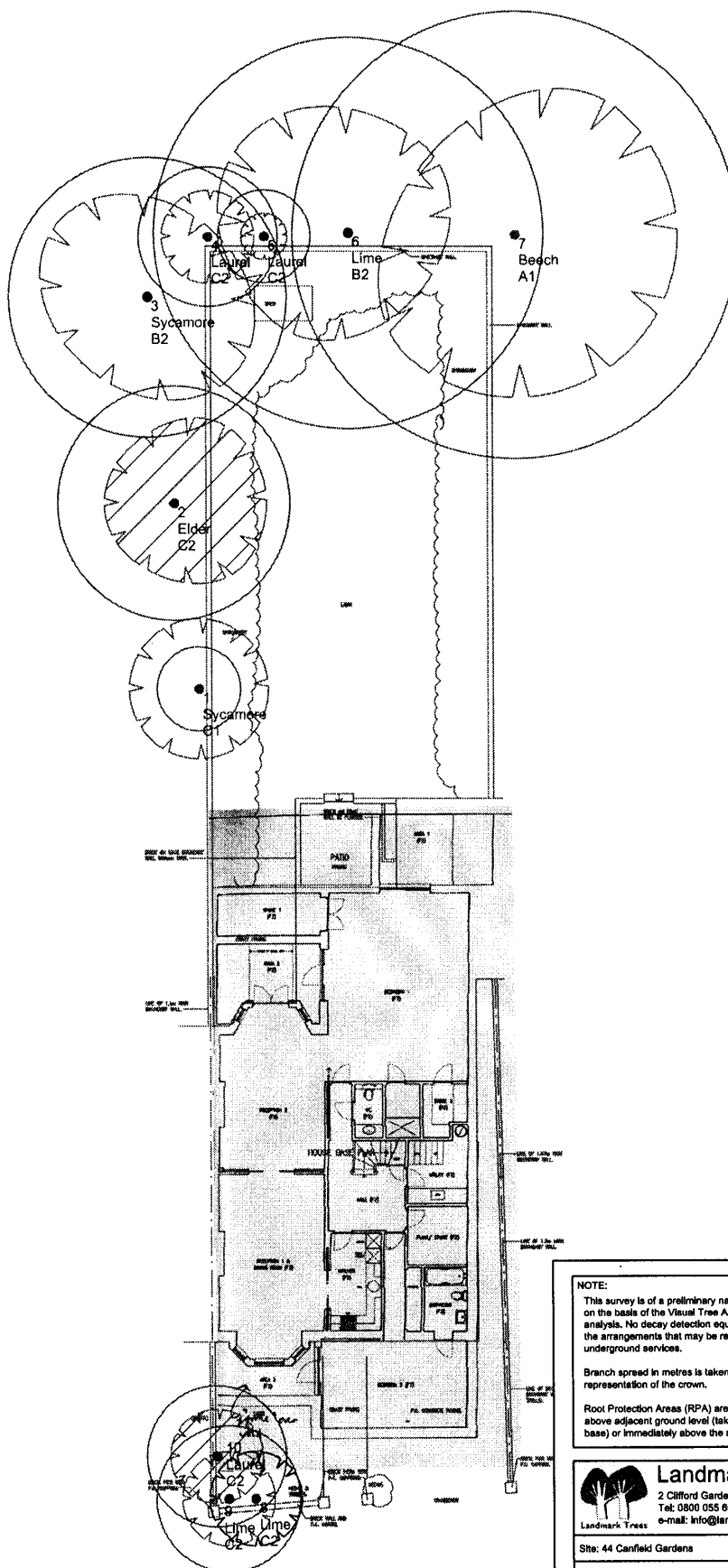
- Category A  
High Quality
- Category B  
Moderate Quality
- Category C  
Low Quality
- Category R  
Poor Quality



Tree Position Approximate  
(not shown on original survey)

## **APPENDIX 5**

### **ARBORICULTURAL IMPACT ASSESSMENT PLAN**



#### NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base) or immediately above the root flare for multi-stemmed trees.



#### Landmark Trees

2 Clifford Gardens, London, NW10 5JD  
Tel: 0800 055 8812 Mobile: 07812 989928  
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 44 Canfield Gardens

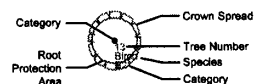
1-200@A3

Drawing Title: Arboricultural Impact Assessment

June 2010

#### Key:

- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category R Poor Quality



Tree Position Approximate (not shown on original survey)

Tree Proposed for Removal