Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT

& OUTLINE METHOD STATEMENT:

4 Greenaway Gardens

London

NW3 7DJ

REPORT PREPARED FOR:

KSR Architects LLP

14 Greenland Street

London

NW1 0ND

REPORT PREPARED BY

Adam Hollis

MSc ARB MICFor FArbor A MRICS C Env

Ref: KSR/4GNW/AIM/01

Date: 20th March 2015

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 a survey they will of course appear in the report.

A tree survey is generally considered invalid in planning terms after 2 years, but changes in tree condition may occur at any time, particularly after acute (e.g. storm events) or prolonged (e.g. drought) environmental stresses or injuries (e.g. root severance). Routine surveys at different times of the year and within two - three years of each other (subject to the incidence of the above stresses) are recommended for the health and safety management of trees remote from highways or busy access routes. Annual surveys are recommended for the latter.

Tree works recommendations are found in the Appendices to this report. It is assumed, unless otherwise stated ("ASAP" or "Option to") that all husbandry recommendations will be carried out within 6 months of the report's first issue. Clearly, works required to facilitate development will not be required if the application is shelved or refused. However, necessary husbandry work should not be shelved with the application and should be brought to the attention of the person responsible, by the applicant, if different. Under the Occupiers Liability Act of 1957, the owner (or his agent) of a tree is charged with the due care of protecting persons and property from foreseeable damage and injury.' He is responsible for damage and/or nuisance arising from all parts of the tree, including roots and branches, regardless of the property on which they occur. He also has a duty under The Health and Safety at Work Act 1974 to provide a safe place of work, during construction. Tree works should only be carried out with local authority consent, where applicable.

Inherent in a tree survey 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.

Tree Constraints & Protection Overview

Client:	KSR Architects LLP	**Case Ref:**	KSR/4GNW/AIM/01
Local Authority:	LB Camden	**Date:**	20/03/15
Site Address: 4 Greenaway Gardens, London NW3 7DJ			
Proposal: Side and rear extensions including demolition of the existing side extension to the West elevation and excavation of the basement to the rear and side of the existing dwelling			

Report Checklist	**Y/N**		**Y/N**
Arboricultural constraints on site	Y	Tree felling required	N
Tree Survey	Y	Full Topographical Survey	Y
BS5837 Report	Y	Conservation Area	Y
Tree Preservation Orders	N/k		
Tree Protection Plan:	Y		
Tree Constraints Plan:	Y		
Arboricultural Impact Assessment:	Y		

Site Layout				
Site Visit	Y	Date: 26/11/15	Access Full/Partial/None	F
Trees on Site	Y		Off site Trees	Y
Trees affected by development	Y		O/s trees affected by development	Y
Tree replacement proposed on plans:	Y		On or off-site trees indirectly affected by development	N

Trees with the potential to be affected

Very low encroachment of category B tree T31's theoretical RPA from built proposals. Minor impact to off-site T2 subject to proposed mitigation (manual excavation and no-dig replacement surfaces). Demolition within RPA/canopy of off-site T29 – pull back demolition and manual removal of existing hard surfaces. Minor tree works to category C tree T5.

Comments

Recommended works for 4 trees including further investigation of decay in T16 & T19; recommended on the grounds of sound husbandry but also pertinent to maintaining a safe work site.

Recommendations

1	Proposal will mean the loss of important trees (TPO/CA)	N
2	Proposal has sufficient amelioration for tree loss	Y
3	Proposals provide adequate tree protection measures	Y
4	Proposal will mean retained trees are too close to buildings	N
5	Specialist demolition / construction techniques required	Y
6	The Proposal will result in significant root damage to retained trees	N
7	Further investigation of tree condition recommended	Y

RPA= Root Protection Area
TPP= Tree Protection Plan
AMS= Arboricultural Method Statement
AIA = Arboricultural Implication Assessment
BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'

1. SUMMARY

1.1 This report comprises an arboricultural impact assessment of the proposed development at 4 Greenaway Gardens, London NW3 7DJ, reviewing any conflicts between the proposals and material tree constraints identified in our survey.

1.2 Of the 37 trees/shrubs surveyed on or around the site, of which 5 were category A (High Quality), 7 were B category (Moderate Quality) and 24 were C category *(Low Quality). In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting.

1.3 The current proposals have been designed in the light of existing tree constraints from the outset. The majority of the trees are concentrated on the boundaries and to the rear of the property. The application extends the current footprint a little to the rear and around the sides, and as such will not come into conflict with the trees. The rear extension would just encroach the RPA of the moderate quality cedar T31. The area encroached was previously occupied by a false cypress tree, and the cedar's canopy is clear of the proposed piling works. Therefore, no significant impacts accrue to the proposals.

1.4 Other low impacts will accrue to low quality trees T2 and T29, subject to the proposed mitigation (no-dig replacement hard landscaping, manual excavation of the basement line and pull back demolition of the existing shed). The landscape proposals essentially follow the new footprint and integrate with the garden. Again there should be no significant impacts.

1.5 There is always the possibility of secondary impacts / post-development conflicts when extending below / near cedar trees. However, the orientation is favourable, with the tree to the north west of the footprint. Design can factor in considerations of light and deposition in terms of lay-out, aspect and materials. The tree is already under cyclical management (the top has been removed), therefore the development cannot lead to excess pressure to prune. The status quo will pertain.

1.6 To conclude, the proposal is of a scale and form that would observe the material tree constraints on development. Thus, with suitable mitigation and supervision the scheme is recommended to planning.

* British Standards Institute: Trees in relation to design, demolition and construction BS 5837: 2012 HMSO, London

2. INTRODUCTION

2.1 Terms of reference

2.1.1 LANDMARK TREES were asked by KSR Architects LLP to provide a survey and an arboricultural impact assessment of proposals for the site: 4 Greenaway Gardens, London NW3 7DJ. The report is to accompany a planning application.

2.1.2 The proposals are for side, rear and basement extensions to the existing dwelling, including demolition of the existing side extension to the West elevation and excavation of the basement to the rear and side of the existing dwelling.

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 site survey: 22770A A-1 LAND SURVEY

Proposals: 14042_Planning_20150317-Sheet - P100 - Proposed Ground Floor Plan

2.3 Scope of survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, I surveyed the trees on site on 25th November 2015, recording relevant qualitative data in order to assess both their suitability for retention and their constraints upon the site, in accordance with British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations [BS5837:2012].

2.3.2 Our survey of the trees, the soils and any other factors, is of a preliminary nature. The trees were SURVEYED 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). LT have not taken any samples for analysis and the trees were not climbed, but inspected from ground level.

2.3.3 A tree survey is generally considered invalid in planning terms after 2 years, but changes in tree condition may occur at any time, particularly after acute (e.g. storm events) or prolonged (e.g. drought) environmental stresses or injuries (e.g. root severance). Routine surveys at different times of the year and within two - three years of each other (subject to the incidence of the above stresses) are recommended for the health and safety management of trees remote from highways or busy access routes. Annual surveys are recommended for the latter.

2.3.4 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 7.

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: 2012) overlain onto it. These constraints are then overlain in turn onto the client's proposals to create an Arboricultural Impact Assessment Plan in Appendix 8 and the Tree Protection Plan in Appendix 9. General observations and discussion follow below.

3.0 OBSERVATIONS

3.1 Site description

Photograph 1: 4 Greenaway Gardens, London NW3 7DJ

3.1.1	4 Greenaway Gardens comprises a substantial residential dwelling with landscaped front gardens and a large garden. The site is bounded to the south (rear) by Bracknell Gardens, to the East by No 3 Greenaway Gardens, to the West by No. 5 Greenaway Gardens and to the North (front) by the Greenaway Gardens access roads.
3.1.2	The site levels vary with the existing hard and soft landscaping.
3.1.3	In terms of the British Geological Survey, the site overlies the Claygate Member / Beds (see dark area on plan extract overleaf). As the youngest part of the London Clay, they form a transition between the clay and the sandier Bagshot Beds above (shown in yellow). Unlike the Bagshot Beds, more typical of Hampstead Heath, the associated soils are generally, highly shrinkable clay; e.g. slowly permeable seasonally waterlogged fine loam over clay. Such highly plastic soils are prone to movement: subsidence and heave.
3.1.4	The actual limits of soil series are not as clearly defined on the ground as on plan and there may be anomalies between them. Further advice from the relevant experts on the specific soil properties can be sought as necessary.
3.1.5	Clay 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.

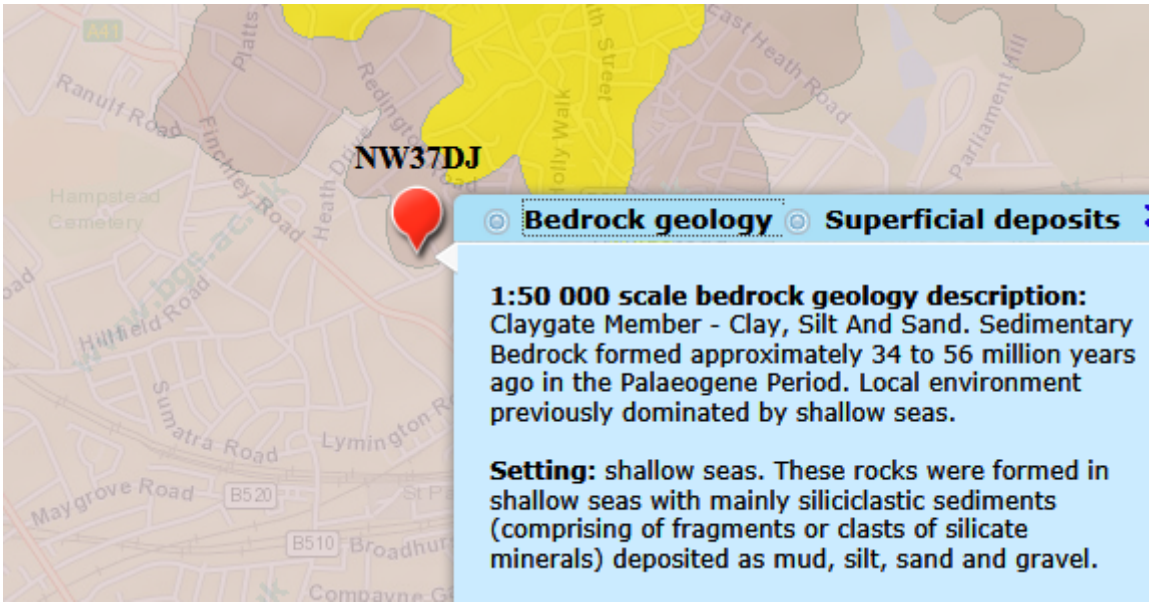


Figure 1: Extract from the BGS Geology of Britain Viewer

3.2 Subject trees

3.2.1	Of the 37 trees/shrubs surveyed on or around the site, of which 5 were category A (High Quality), 7 were B category (Moderate Quality) and 24 were C category *(Low Quality).
3.2.2	Further details on the surveyed trees are contained in Appendix 1 of this report.
3.2.3	There are existing recommended tree works on the grounds of sound husbandry for 4 trees (T16, T19, T20 and T40). These are listed in Appendix 2.

3.3 Planning Status

3.3.1	There is no on-line information on Tree Preservation Orders. However, the site stands within the Redington/Frognal Conservation Conservation Area, which will affect the subject trees: it is a criminal offence to prune, damage or fell such trees without permission from the local authority.

4.0 DEVELOPMENT CONSTRAINTS

4.1 Primary constraints

4.1.1 BS5837: 2012 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 12-x stem diameter at 1.5m above ground level, except where composite formulae are used in the case of multi-stemmed trees.

4.1.2 Circular RPA's are appropriate for individual specimen trees grown freely, but where there is ground disturbance, the morphology of the RPA can be modified to an alternative polygon, as shown in the diagram below (Figure 2). Alternatively, one need principally remember that RPA's are area-based and not linear – notional rather than fixed entities. **No modifications have been made in this instance (please see overleaf).**

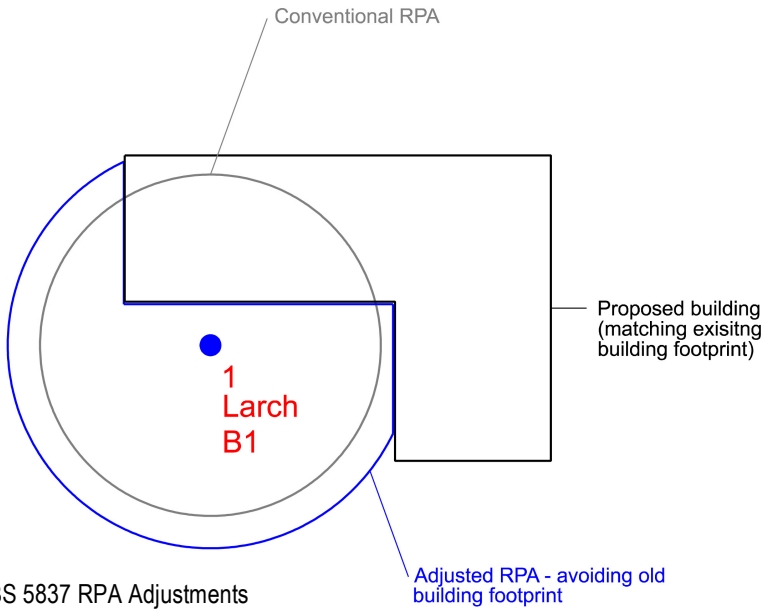


Figure 2 – Generic BS 5837 RPA Adjustments

4.1.3 In BS5837, paragraph 4.6.2 states that RPA's should reflect the morphology and disposition of the roots; where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution. Not infrequently, LT are requested by LPA Tree Officers to modify the RPA's to reflect their assumptions that e.g. a road will have drastically limited root growth.

4.1.4 Such assumptions cannot be proved without prior site investigations / trial pits. Where it is not always possible to conduct site investigations (e.g. below busy roads), we can always look to the published science. There seems little support for the popular myth that roads and services will curb root growth: research for the International Society of Arboriculture by Kopinga J (ISA 1994), found that "a constant high moisture content of the soil directly underneath the pavement surface can be considered as a major soil factor in attracting the trees' roots to develop there." By contrast, grass in lawns may actively antagonise tree roots with natural pathogens. Similarly, Professor F Miller (ISA 1994) found that service trenches at > 3m distances from trees had minimal impact on growth or crown shape.

4.1.5 A key misunderstanding, even among professionals, is that we conflate the RPA with the actual root system: RPA's are *prima facie* a notion / convention / treaty and almost entirely theoretical, but readily calculable. Conversely roots are a "known unknown," spatial entity that we predict at our folly. Yet, many are quick to do so.

4.1.6 LT favour the neutrality of a circular RPA, because in a difference of opinion, the tree officer will always have the prerogative to dictate the final modification of shape. With the best will in the world, the free allowance of modifications will tend to lead to inequitable outcomes, prejudicing the applicant and the practice is in our view, best avoided. The neutral circle dispenses with this inequity.

4.1.7 Ultimately, the point of the circular RPA is to illustrate areas of concern. The purpose of this report is to consider areas of concern (not to modify them to suit our argument or findings). Therefore, no modifications are made here to the RPA's, regardless of roads etc.

4.1.8 The quality of trees will also be a consideration: U Category trees are discounted from the planning process in view of their limited service life. Again, 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.

4.1.9 At paragraph 5.1.1. BS5837: 2012 notes that "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 demolition or construction work, or post-completion demands on their removal."

4.1.10 In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting.

4.1.11 In this instance, the main constraint comprises the category B cedar tree, which lies to the south east of the existing building.

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 (Figure 3), honeydew deposition or perceived risk of harm.

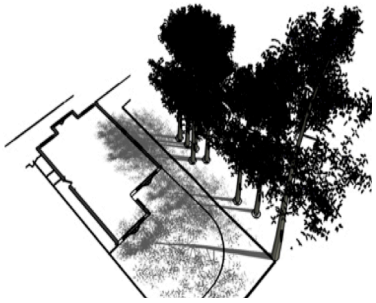


Figure 3 –
Generic Shading Constraints

4.2.2 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.

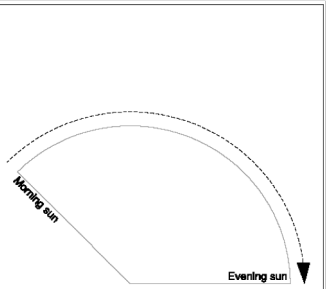


Figure 4 – Shading Arc

4.2.3 This arc (see Figure 4) 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 off-site trees along the southern boundary have the potential to provide a variety of secondary constraints, including shading, organic deposition and the potential need to maintain crown clearance in the future. The low quality internal site trees within the rear garden could also potentially provide secondary impacts. The significance of these constraints will vary depending on the location and proximity to the proposed re-development.

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

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (1998))

Hide irrelevant | Show All Trees

Ref: KSR/4GWG/AIM

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	2	Bay, Sweet	Basement Construction within RPA (all existing hard surfacing/building) Amenity space within RPA/below canopy - all existing hardstanding. removal/replacement surfaces	3.5 m^2 6.45 %	Early Mature	Normal	Good	Low	N/A	Airspade / manual excavation of top 750mm of basement line No-dig construction with porous replacement surfaces
C	3	Smoke Bush	Felled to Facilitate Development	m^2 N/A %	Early Mature	Normal	N/A	N/A	Low	New planting / landscaping
C	5	Birch, Downy	Basement Construction within Canopy	m^2 N/A %	Semi-mature	Moderate	Moderate /poor	Low	N/A	Minor remedial tree surgery (see Rec. Works)
C	29	Cotoneaster	Demolition of existing shed Removal/replacement of existing hard landscaping	m^2 N/A %	Mature	Moderate	Moderate	Very Low	N/A	Pull-back demolition No-dig construction
B	31	Cedar, Atlantic	Basement Construction within RPA	3.5 m^2 4.39 %	Early Mature	Moderate	Good	Very Low	N/A	Airspade / manual excavation of top 750mm of basement line

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 The current proposals have been designed in the light of existing tree constraints from the outset. The majority of the trees are concentrated on the boundaries and to the rear of the property. The application extends the current footprint a little to the rear and around the sides, and as such will not come into conflict with the trees. The rear extension would just encroach the RPA of the moderate quality cedar T31. The area encroached was previously occupied by a false cypress tree, and the cedar's canopy is clear of the proposed piling works. Therefore, no significant impacts accrue to the proposals.

6.1.2 Other low impacts will accrue to low quality trees T2 and T29, subject to the proposed mitigation (no-dig replacement hard landscaping, manual excavation of the basement line and pull back demolition of the existing shed). The landscape proposals essentially follow the new footprint and integrate with the garden. Again there should be no significant impacts.

6.1.3 All of the retained trees will be protected during construction works (see Tree Protection Plan in Appendix 9).

6.1.4 The principal of RPA encroachment is established within BS5837:2012 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 confused with the NJUG Prohibited Zone, when they clearly correlate with the NJUG Precautionary Zone.

6.1.5 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 BS5837:2012 and other published references to healthy trees tolerating up to 30-50% root severance (Coder, Helliwell and Watson in CEH 2006). The trees in question are healthy specimens of species with a good resistance to development impacts, and quite capable of tolerating these low impacts.

6.1.6 "**In practice 50% of roots can sometimes be removed with little problem**, provided there are vigorous roots elsewhere. Inevitably, this degree of root loss will temporarily slow canopy growth and even lead to some dieback" (Thomas 2000). LT do not recommend annexing such high proportions of the root system; rather that within the context of the published science, planning should not be unduly concerned by impacts that are well below the subcritical threshold – *tree health is not at stake.*

6.2 Rating of Secondary impacts

6.1.7	There is always the possibility of secondary impacts / post-development conflicts when extending below / near cedar trees. However, the orientation is favourable, with the tree to the north west of the footprint. Design can factor in considerations of light and deposition in terms of lay-out, aspect and materials. The tree is already under cyclical management (the top has been removed), therefore the development cannot lead to excess pressure to prune. The status quo will pertain. .

6.2 Mitigation of Impacts

6.2.1	All plant and vehicles engaged in excavation works should either operate outside the RPA, or should run on a temporary surface designed to protect the underlying soil structure. The existing paved hardstanding should be retained to provide adequate protection within the RPA, reinforced if required with temporary surfaces such as infraweb or Ground Guards.
6.2.2	The path of the LGF extension through the RPAs of T2 & T31 will be manually excavated to 750mm depth under arboricultural supervision; any roots encountered within the trenches / pits will be cleanly pruned back to an appropriate junction 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.

6.3.3	Any replacement hardstandings within an RPA will require a no-dig construction technique, either using a cellular confinement system with no fines aggregate for the sub-base or simply building upon the existing sub-base without disturbing the ground below. Choice of construction method will initially depend upon root penetration within the existing sub-grade. The key principle is not to excavate in the presence of roots and to provide a porous surface to promote healthy soil water relations for future root growth.
6.3.5	Nuisance deposition can be mitigated with regular crown cleaning and filtration traps on the guttering (see Figure 5 below). Alternatively, elements of green roof construction might be considered, where applicable.
6.3.6	The shading impacts can be mitigated by building design, with the provision of dual aspect windows and choice of room layout. Some minor crown reduction may be necessary, but not such as to impose a burden of frequent, repetitive management.
6.3.7	The landscape impact of tree losses can be offset by the landscape proposals, ideally involving new planting of ornamental varieties of native species, and where appropriate with columnar or compact form. A selection of columnar tree species cultivars for constricted sites is provided in Appendix 4.

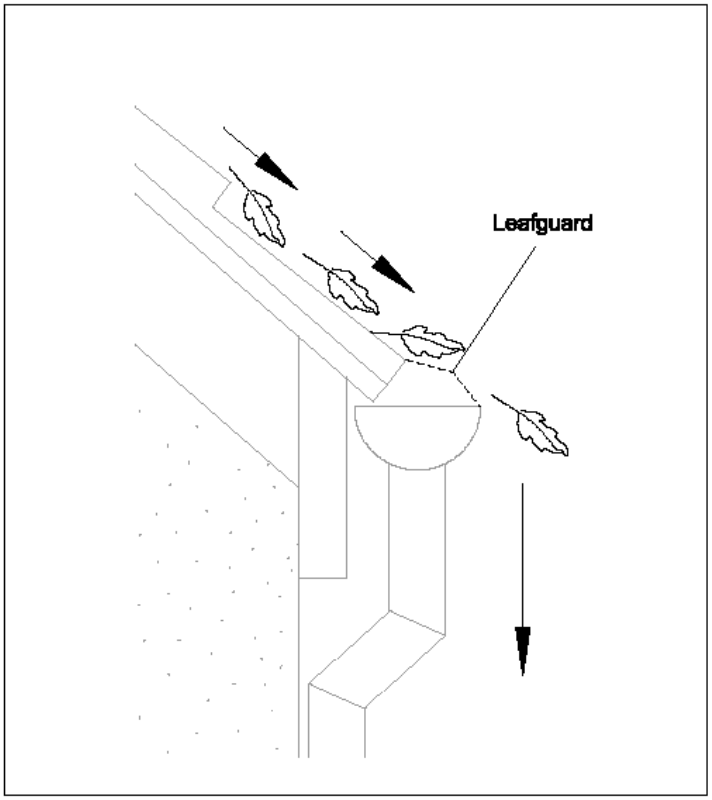


Figure 5: Filtration traps, as shown above, could be fitted on the gutters which can easily be maintained at 2-3m above ground.

7.0 CONCLUSION

7.1	The potential impacts of development are all relatively low in terms of both quality of trees removed and also RPA encroachments of trees retained.
7.2	The full potential of the impacts can be mitigated through design and precautionary measures. These measures are provided in the Outline Method Statement in Section 9.0 of this report, to assist the discharge of planning conditions.
7.3	The species affected are 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 shrub that is recommended for felling is of little individual significance, such that its loss will not affect the visual character of the area.
7.5	Therefore, the proposals will not have any significant impact on either the retained trees or wider landscape. Thus, with suitable mitigation and supervision the scheme is recommended to planning.

8.0 RECOMMENDATIONS

8.1 Specific Recommendations

8.1.1 Current tree works recommendations are found in Appendix 2 to this report, with works to facilitate development in Appendix 3 and a selection of columnar tree species cultivars for constricted sites provided in Appendix 4. 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 the outline method statement below.

8.1.3 Replace felled tree/shrub T3 with native ornamental nursery stock to be agreed with Richmond's Tree Officers and 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.

9.0 METHOD STATEMENT

9.1 Outline Method Statement (to be read in conjunction with Appendix 9: Tree Protection Plan)

9.1.1 This outline method statement has been prepared for assistance with the discharge of planning conditions at 4 Greenaway Gardens, London NW3 7DJ. The statement will address the precautions that will be undertaken to protect the trees on and around this site during the proposed construction works.

9.1.2 This section of the report lays down the methodology for any proposed works that may have an effect upon the retained trees. It is essential within the scope of any contracts related to the development proposals that this method statement is observed and adhered to. It is recommended that this section form part of the work schedule and specification issued to the building contractors and can be used to form part of the contract.

9.1.3 Copies of this method statement and the Tree Protection Plan (see Appendix 9) will be available for inspection on site. The developer will inform the local planning authority within twenty-four hours if the arboricultural consultant is replaced.

9.2 Sequence of Works

9.2.1 The sequence of works should be as follows:

i) initial tree works: pruning for working clearances;
ii) installation of TPB for demolition & construction;
iii) installation of underground services;
iv) installation of ground protection (if paving not retained);
v) main construction;
vi) removal of TPB;
vii) soft landscaping;

9.2.2 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.
- Contact details for Landmark Trees are provided on the cover to this report.
- Contact details for Local Authority Tree Officer are as follows:

Nick Bell
Arboricultural Officer
London Borough of Camden
5th Floor Town Hall Extension
Argyle Street
London
WC1H 8ND

E-mail: nick.bell@camden.gov.uk
Telephone: 020 7974 5939

9.3 Site Monitoring

9.3.1 Landmark Trees are to be retained as Arboricultural Consultants responsible for site monitoring for the duration of the development. Key personnel are in the main Adam Hollis MSc (Arb) and occasionally James Bell Tech Cert, subject to any new staff intake. Site monitoring will be undertaken by a qualified and experienced arboriculturalist at pre-determined and agreed time intervals.

9.3.2 The arboriculturalist will arrive at the site, check in at the site office and be safely escorted around the site by the site agent, checking the maintenance of tree protection measures. Routine visits will generally be unannounced. However, the arboriculturalist will also visit subject to advance notification and agreement to supervise any agreed works within the RPA.

9.3.3 Monitoring will involve a schedule of routine visits (monthly for the first 6 months and quarterly thereafter, including both site-setup and sign-off inspections) and reports to ensure contractor compliance with tree protection measures and to provide ongoing liaison with all personnel involved in the site development (including the LPA). Any defects requiring rectifying must be notified to the Site Agent and the Client and copied to the LPA by email. Emergencies will be notified to the LPA by phone. Appropriate records will be kept and be made available to the LA if required to show evidence of site monitoring (Appendix 5).

9.3.4 Supervision will not require the arboriculturalist to be present throughout all operations to ensure tasks are carried out as per the approved methodology, but certainly, during the key elements of proposed (and any other unplanned) incursions into the protection areas (subject to LPA agreement and for whatever reasons). Such supervision would require the arboriculturalist to attend site, if not the whole task, to ensure the arboricultural objectives were met. However, where tasks are ongoing, provided the arboriculturalist is satisfied, and after an appropriate briefing, the supervision may be reduced to telephone and email contact between the site foreman/ contractor and arboriculturalist.

9.3.5 In addition, a site log book will be kept by the Site Agent to record all stages of the development from the installation of the fence protection, to routine checks of the fencing through to the completion of the project. This should be made available to the LA if required to show evidence of site monitoring. Site monitoring should include:

- Construction Site Agent Briefing
- Installation of site facilities
- Demolition of hard surfaces / structures within RPA's
- Construction of new of hard surfaces / structures within RPA's
- Site completion meeting

9.3.6 The arboricultural consultant should be given responsibility for monitoring of all arboricultural works and issuing a certificate of practical completion. In addition, the arboricultural consultant should be instructed to inspect and monitor any works within exclusion zones; i.e. demolition of hard standing. A record of site visits should be maintained for inspection on site and copies forwarded to the developer / agent and to the local planning authority.

9.4 Pre- Development Site Preparation

9.4.1 The pruning works must be in accordance with British Standard 3998:2010 Tree work and any other prevailing good professional practice. Specific works recommended to facilitate development are the removal of tree/shrub T3. Pruning works include the cutting back of the overhanging branches of T5. These specific works to facilitate development and any other husbandry works are listed in Appendices 2 and 3.

9.4.2 The retained trees should be protected with the Tree Protection Barriers (TPB) as shown on the Tree Protection Plan (TPP) in Appendix 9. Where appropriate, the boundary hoarding to be erected as part of the Construction Management Plan (CMP) will be incorporated into the TPB, particularly for the off-site trees. The TPBs should comprise either individual boxed hoarding (for T1) or steel, mesh panels 2.4m in height ('Heras') mounted on a scaffolding frame (this is also Figure 2 of BS5837: Trees in Relation to Design, Demolition and Construction in paragraph 6.2.2.2 – see below). The position of the TPBs are shown on the TPP in Appendix 9, which can be used as part of the discharge of conditions.

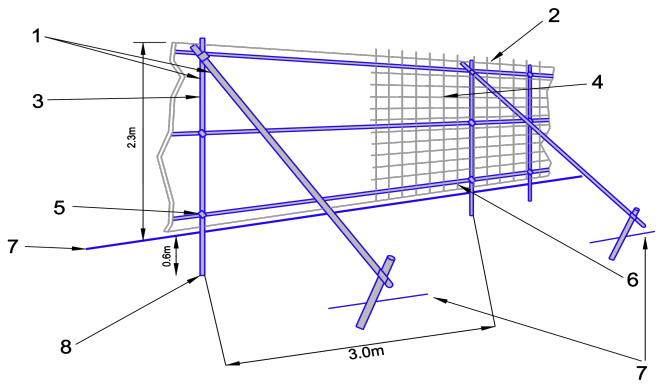
9.4.3 These TPBs are to be erected before any work commences on site, is to remain 'in situ' undamaged for the duration of all work or each phase, and only to be removed once all work is completed. If any work is deemed necessary prior to the erection of fencing a Landmark Trees representative should be informed to enable their presence to oversee the work being carried out.

9.4.4 The only other exception is the completion of soft landscaping but if any excavations, however minor, are to be carried out as part of soft landscaping within RPAs, an arboricultural assessment must be carried out beforehand and any arboricultural protection measures incorporated. The TPBs should carry waterproof warning notices denying access within the RPA.

9.4.5 The Tree Protection Plan in Appendix 9 illustrates where the protective fencing will be located to form the boundary of the Construction Exclusion Zone (CEZ). The CEZ is an exclusion zone and suitable steps will be taken to prevent access by pedestrians and vehicles and the storage of any works materials and equipment will be located outside of the CEZ.

9.4.6 Ground outside the CEZ must be protected from site traffic and not left exposed during construction. As far as practical, existing hard surfaces should be retained as initial ground protection (where fit for purpose for anticipated loading) until the landscaping phase and / or substituted / supplemented with appropriate materials (e.g. Infraweb, Ground Guards etc.), capable of withstanding anticipated loads. **NB the provision of ground protection on plan does not prohibit the consented laying of services and related works in those areas. It means that those operations should proceed under caution and protect adjacent ground to that immediately requisitioned for the work in hand.**

9.4.7 Upon completion of the tree works and installation of the protection measures, the standard of work can be checked by the retained arboricultural consultant who can then liaise with the local authority. If there are any amendments to either the tree works or additional protection measures, they will be agreed at this meeting and confirmed in writing.



1 Standard scaffold poles
2 Uprights to be driven into the ground
3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps
4 Weldmesh wired to the uprights and horizontals
5 Standard clamps
6 Wire twisted and secured on inside fence of fencing to avoid easy dismantling
7 Ground level
8 Approx 0.6m driven into the ground

Fig 2 of BS5837:2012

9.5 Development Phase

9.5.1 The following general precautions will apply:

- No fires shall be made on any part of the site, or within 20m of any tree to be retained.
- No spilling or pouring of fuels, oils, solvents, tar shall be made on any part of the site.
- No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within 10 metres of the trunk of a tree that is to be retained.
- No spillage or discharge of wet mortar or concrete shall be made on any part of the site.
- No storage of materials shall be made within the protective fences.
- No breaching or moving of the protective fences without the approval of an arboriculturist.
- Alterations in levels within the tree protection fence areas shall be avoided.

9.5.1 Site access will be as existing. The site welfare facilities and site offices for the principle contractor and their subcontractors will be located within a secure compound to the rear of the site area. The Contractor may seek to use the existing building and its facilities as part of the site welfare.

9.5.2 Pedestrian access will be through a further gated access to the front of the site via a protected route. The protected route will be constructed using Heras fencing and will serve to keep pedestrians away from construction traffic.

9.5.3 Delivery lorries will be excluded from RPA by the tree protection fencing and ground protection. Adequate allowance will be made for vehicle heights and ground clearance, where the tree canopy overhangs the access route. Any further pruning for working clearances must be discussed first with the arboriculturalist; once agreed in principle these works should be approved by the appropriate tree officer and approved in writing by the LPA. Materials can be unloaded onto protected ground within RPA's and stored throughout the interior of the site away from protected trees. Delivery of materials to site will be coordinated to ensure that unloading and loading of materials only takes place within designated times and in the correct location on site. The contractor and any subcontractors will be asked to produce a procurement schedule for their materials which will be monitored on a weekly basis to ensure that delivery of materials is fully coordinated across the site.

9.5.4 Wherever practicable, the "Just in Time" scheduling system will be employed to ensure that materials are not stored on site for any longer than necessary and to minimise having to double handle those materials thus minimise site congestion.

9.5.5	The storage areas for the site will be marked up on site plans along with details of areas outlined for moving and storing materials through the course of the construction phase.
9.5.6	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.

9.6 Routing & Installation of Services

9.6.1	Every effort should be made to ensure that the routing and instillation of services avoid the RPA at the design stage; however if unavoidable then it may be possible with written permission from the LPA to implement the provisions of BS5837 and NJUG VOLUME 4 (e.g. radial trenching and /or mole trenching) under arboricultural supervision.

9.7 Changes in Grade

9.7.1	The upper layer of top soil contains the majority of a tree's roots and if this is disturbed by a reduction in ground level, serious damage can be caused. If such soil is to be disturbed within the CEZ / RPA, it will be done only with hand tools and the supervising arborist will be informed if roots are exposed. If ground levels need to be marginally altered within the RPA of any tree, prior agreement must be sought from the Tree Preservation Officer and given in writing by Camden Council.

9.8 Construction Measures

Detailed method statements and risk assessments will be obtained from all specialist subcontractors involved in the new build and these will be scrutinised by the site agent to ensure the AMS requirements have been considered therein.

9.8.1	The piling rigs should operate from inside the piling line where possible, to reduce the potential for canopy encroachment. The excavation of the basement should proceed inwards in a "pull back" fashion. Hard surfacing can be lifted with caution by a skilled machine operator again working away from the trees.
9.8.2	JCB to excavate to required depth. All spoil to be loaded into trucks/skips located to avoid canopy conflicts.
9.8.3	During the construction phase and throughout dry periods on site regular hosing down will be carried out to control dust pollution. In the event of dust build up on trees occurring arboricultural advice will be sort and if necessary remedial measures such as hosing down the trees will be taken.

9.8.4	Any replacement paving/hard landscaping will require a no-dig construction technique, either using a cellular confinement system with no fines aggregate for the sub-base or simply building upon the existing sub-base without disturbing the ground below. Choice of construction method will initially depend upon root penetration within the existing sub-grade. The key principle is not to excavate in the presence of roots and to provide a porous surface to promote healthy soil water relations for future root growth. .

9.9 Removal of Ground Protection & Post Construction Landscaping & Treatment

9.9.1	The tree protection may be removed upon completion of the construction phase and when all drainage and service runs have been installed and any site machinery has been removed from the RPA.
9.9.2	Any further landscaping works should avoid the changing of ground levels or deep digging. Heavy machinery should not be used in the vicinity of the retained tree.
9.9.3	If herbicides are to be used they should be appropriate to their purpose and not in such a way as to damage the retained tree or vegetation; they must be applied by a suitably qualified person i.e. a holder of a recognised 'certificate of competence'.
9.9.4	Ideally, the retained trees should remain in a shrub area as this reduces the chances of compaction and disturbance of root systems.
9.9.5	Any new planting schemes adopted should consider aspects of the site such as current design, layout and future use. Consideration should also be given to the soil type, climate and overall character of the landscape.

9.10 Completion

9.10.1	Following completion of the works listed above, a Landmark Trees consultant will meet with a local authority representative and agree upon any remedial works deemed necessary.
9.10.2	A separate LT post-development tree inspection (with specific reference to the retained tree) is recommended to facilitate a constructive meeting. Any works agreed in this meeting will be confirmed in writing and will be performed to BS 3998: 2010 Tree Works.
9.10.3	It is recommended that, in due course, acceptance of the recommendations in this section is demonstrated by, for example, the architect specifying in writing to the building contractor that tree care conditions apply in execution of the contract, and by an estimate or written undertaking from the contractor to the architect demonstrating that the practical aspects of observation of such recommendations have been priced in.

10.0 REFERENCES

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APPENDIX 1

TREE SCHEDULE

Notes for Guidance:

1. Height describes the approximate height of the tree measured in metres 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 metres of crown clearance above adjacent ground level.
4. Stem Diameter (Dm) is the diameter of the stem measured in millimetres at 1.5m from ground level for single stemmed trees. BS 5837:2012 formula (Section 4.6) used to calculate diameter of multi-stemmed trees. Stem Diameter may be estimated where access is restricted and denoted by '#'.
5. Protection Multiplier is 12 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 5837:2012 section 4.5) and refers to tree/group quality and value; 'A' – High, 'B' - Moderate, 'C' - Low, 'U' - Unsuitable for retention. The following colouring has been used on the site plans:
    - High Quality (A) (Green),
    - Moderate Quality (B) (Blue),
    - Low Quality (C) (Grey),
    - Unsuitable for Retention (U) (Red)
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.

Landmark Trees

Site: 4 Greenaway Gardens

Date: 26 November 2014

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: KSR/4GWG/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
1	Privet	7	2				0.0						Remote survey only
2	Bay, Sweet	10	3	2.0	346	Early Mature	4.2	Normal	Fair	C	2	20+	Multi stem weakness Remote survey only
3	Smoke Bush	4	3220	1.5	90	Early Mature	1.1	Normal	Fair	C	2	20+	Asymmetry (major) Unprofessionally topped/lopped
5	Birch, Downy	12	5352	6.0	250	Semi-mature	3.0	Moderate	Fair	C	2	10+	Suppressed by nearby tree Broken branches
6	Birch, Downy	14	6446	4.5	330	Early Mature	4.0	Normal	Good	A	2	>40	Minor storm damage Broken branches
7	Birch, Downy	10	2	4.5	120	Young	1.4	Moderate	Fair	C	2	10+	Suppressed by nearby tree

Landmark Trees

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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
8	Viburnum	7	3	2.0	200	Mature	2.4	Normal	Fair	C	2	20+	A tree with insignificant defects Remote survey only
9	Cherry, Ornamental	8	2	2.0	200	Semi-mature	2.4	Normal	Fair	C	2	20+	A tree with insignificant defects Columnar cv Remote survey only
10	Viburnum	7	3	2.0	224	Mature	2.7	Normal	Fair	C	2	20+	A tree with insignificant defects Remote survey only
11	Magnolia, Southern	8	4	3.0	300	Mature	3.6	Normal	Fair	C	2	20+	A tree with insignificant defects Remote survey only
12	Box	7	2331	2.0	173	Mature	2.1	Normal	Fair	C	2	20+	A sparser than normal canopy Remote survey only
13	Plane, London	16	7457	7.0	800	Mature	9.6	Normal	Fair	A	2	20+	Pollarded Remote survey only

Landmark Trees

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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
14	Lime, Common	15	3	7.0	400	Early Mature	4.8	Normal	Fair	B	2	20+	Pollarded Remote survey only
15	Plane, London	15	3	9.0	600	Mature	7.2	Normal	Fair	A	2	20+	Pollarded Remote survey only
16	Lime, Common	12	3734	5.0	370	Early Mature	4.4	Moderate	Poor	C	2	10+	Pollarded Decay in trunk / heads Historic root disturbance from hard standing
18	Lime, Common	14	4422	6.0	370	Early Mature	4.4	Normal	Fair	B	2	>40	Pollarded
19	Plane, London	15	2833	6.0	490	Mature	5.9	Moderate	Poor	C	2	10+	Pollarded Decay in trunk / heads Basal cavity; strong asymmetry to S / erratic habit
20	Lime, Common	7	2	4.5	640	Mature	7.7	Moderate	Poor	C	3	20+	Pollarded Basal cavity

Landmark Trees

Site: 4 Greenaway Gardens

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Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

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Ref: KSR/4GWG/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
21	Bay, Sweet	7	2	1.0	300	Mature	3.6	Normal	Good	C	2	>40	Remote survey only Basal cavity
22	Lime, Common	18	5353	3.0	700	Mature	8.4	Normal	Fair	A	2	20+	Remote survey only Deadwood (minor) thru crown
23	Lime, Common	18	6444	3.0	700	Mature	8.4	Normal	Fair	A	2	20+	Remote survey only Deadwood (minor) thru crown
24	Yew, Common	13	3	2.0	450	Early Mature	5.4	Normal	Good	B	2	>40	A tree with insignificant defects Remote survey only
25	Yew, Common	10	2	1.5	250	Semi-mature	3.0	Normal	Good	B	2	>40	A tree with insignificant defects Remote survey only
26	Hawthorn, Common	10	3214	4.0	450	Post-Mature	5.4	Moderate	Fair	C	3	10+	Decay in trunk Remote survey only

Landmark Trees

Site: 4 Greenaway Gardens

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Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

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Ref: KSR/4GWG/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
27	Hawthorn, Common	8	4123	4.0	350	Post-Mature	4.2	Dead	Fair	U			Dead Ivy clad Remote survey only
28	Holly	10	2.5	1.5	250	Semi-mature	3.0	Normal	Good	C	2	>40	Ivy clad Remote survey only
29	Cotoneaster	10	1333	3.0	224	Mature	2.7	Moderate	Fair	C	2	20+	Remote survey only
31	Cedar, Atlantic	15	3424	4.0	420	Early Mature	5.0	Moderate	Fair	B	2	20+	Co-dominant limbs Unprofessionally topped/lopped
32	Cherry, Flowering	2.5	2	2.0	200	Mature	2.4	Normal	Fair	C	1	10+	Decay in trunk Decay at trunk base
33	Indian Bean Tree	7	3231	2.0	150	Semi-mature	1.8	Normal	Fair	C	2	>40	A tree with insignificant defects

Landmark Trees

Site: 4 Greenaway Gardens

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Appendix 1

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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
34	Magnolia, Saucer	9	2431	3.0	212	Semi-mature	2.5	Normal	Fair	C	2	>40	Co-dominant stems
35	Katsura Tree	11	3.5	3.0	250	Semi-mature	3.0	Normal	Fair	C	2	>40	Co-dominant stems
36	Cotoneaster	8	2	2.0	120	Semi-mature	1.4	Normal	Fair	C	2	>40	
37	Holly	9	3	3.5	200	Early Mature	2.4	Normal	Good	C	1	>40	
38	Cherry, Flowering	6	2	3.0	122	Semi-mature	1.5	Normal	Fair	C	2	20+	
39	Magnolia, Saucer	6	3242	2.0	245	Semi-mature	2.9	Normal	Fair	C	2	>40	Co-dominant stems

Landmark Trees

Site: 4 Greenaway Gardens

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Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: KSR/4GWG/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
40	Elder, Box	10	7367	2.0	500	Mature	6.0	Normal	Fair	B	2	20+	Leaning (significantly) Dense vegetation around base
41	Sycamore	14	7566	7.0	500	Mature	6.0	Normal	Good	B	1	>40	Remote survey only

Appendix 2

Recommended Tree Works

Notes for Guidance:

1, 2, 3 - Urgent (ASAP), Standard (within 6 months), Non-urgent (2-3 years)
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.
FInv - Further Investigation (generally with decay detection equipment).
Pol - Pollard or re-pollard.
Mon - Check / monitor progress of defect(s) at next consultant inspection which should be <18 months in frequented areas and <3 years in areas of more occasional use. Where clients retain their own ground staff, we recommend an annual in- house inspection and where practical, in the aftermath of extreme weather events.
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

Landmark Trees

Site: 4 Greenaway Gardens
Date: 26 November 2014

Surveyor(s): Adam Hollis
Ref: KSR/4GWG/AIA

Appendix 2

Recommended Tree Works

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
16	Lime, Common	C	12	5.0	3734	POL FInv Repollard and inspect	Pollarded Decay in trunk / heads Historic root disturbance from hard standing Recommended husbandry 2
19	Plane, London	C	15	6.0	2833	POL FInv Repollard and inspect	Pollarded Decay in trunk / heads Basal cavity; strong asymmetry to S / erratic habit Recommended husbandry 2
20	Lime, Common	C	7	4.5	2	POL 5m	Pollarded Basal cavity Recommended husbandry 3
40	Elder, Box	B	10	2.0	7367	Clr bs Clear base to facilitate fuller survey	Leaning (significantly) Dense vegetation around base

Appendix 3

RECOMMENDED TREE WORKS TO FACILITATE DEVELOPMENT (See Table 1)

Notes for Guidance:

RP - Pre-emptive root pruning of foundation encroachments under arboricultural supervision.
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.
FInv - Further Investigation (generally with decay detection equipment).
Pol - Pollard or re-pollard.
Mon - Check / monitor progress of defect(s) at next consultant inspection which should be <18 months in frequented areas and <3 years in areas of more occasional use. Where clients retain their own ground staff, we recommend an annual in- house inspection and where practical, in the aftermath of extreme weather events.
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

Landmark Trees

Site: 4 Greenaway Gardens
Date: 26 November 2014

Surveyor(s): Adam Hollis
Ref: KSR/4GWG/AIM

Appendix 3

Recommended Tree Works To Facilitate Development

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
3	Smoke Bush	C	4	1.5	3220	Fell	Asymmetry (major) Unprofessionally topped/lopped To facilitate development
5	Birch, Downy	C	12	6.0	5352	CB Cut-back/tie back from piling works	Suppressed by nearby tree Broken branches To facilitate development

APPENDIX 4: TREE SELECTION FOR CONSTRICTED LOCATIONS

Table A4.1: Rosaceous Tree Species for Constricted Planting Locations

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

Table A4.2: Specimen Tree Species for Constricted Planting Locations

Common Name	Species	Selected Form
Chinese red bark birch	Betula albosinensis	Fascination
Swedish birch	Betula pendula	Dalecarlica
Hornbeam	Carpinus betulus	Fastigiata Frans Fountaine
Turkish Hazel	Corylus colurna	
Maidenhair tree	Gingko biloba	
Pride of India	Koelreuteria paniculata	Fastigiata
European larch	Larix decidua	Sheerwater Seedling
Tulip tree	Liriodendron tulipfera	Fastigiata

Appendix 5 General Guidelines & Sample Site Monitoring Sheet

5.1 All work must be to BS 3998:2010 - '*Recommendations for tree work*'.

5.2 Staff carrying out the work must be qualified, experienced and ideally be Arboricultural Association approved contractors, and will be covered by adequate public liability insurance.

5.3 Any defects seen by a contractor or the client that were not apparent to the consultant must be brought to the consultant's attention immediately.

5.4 No liability can be accepted by the consultant in respect of the trees unless the recommendations of this method statement are carried out under the supervision of a Landmark Trees consultant.

5.5 It is advisable to have trees inspected by a consultant regularly. On this site it is recommended that these inspections are made every year.

Landmark Trees

Site Monitoring Report Sheet

Client:		**Planning Ref:**	
Local Authority:		**Date:**	
Site Address:			
Proposal:			

Visit Checklist	**Y/N**		**Y/N**
Tree protection barrier (TPB) in place		TPB as per approved	
Ground protection (GP) in place		GP as per approved	
TPB / GP breached		Trees damaged	
Site Agent briefed by LT			
LT briefed by Site Agent			
LPA informed			
Remedial action required			

Comments

Recommendations

Outcome		
1		
2		
3		
4		

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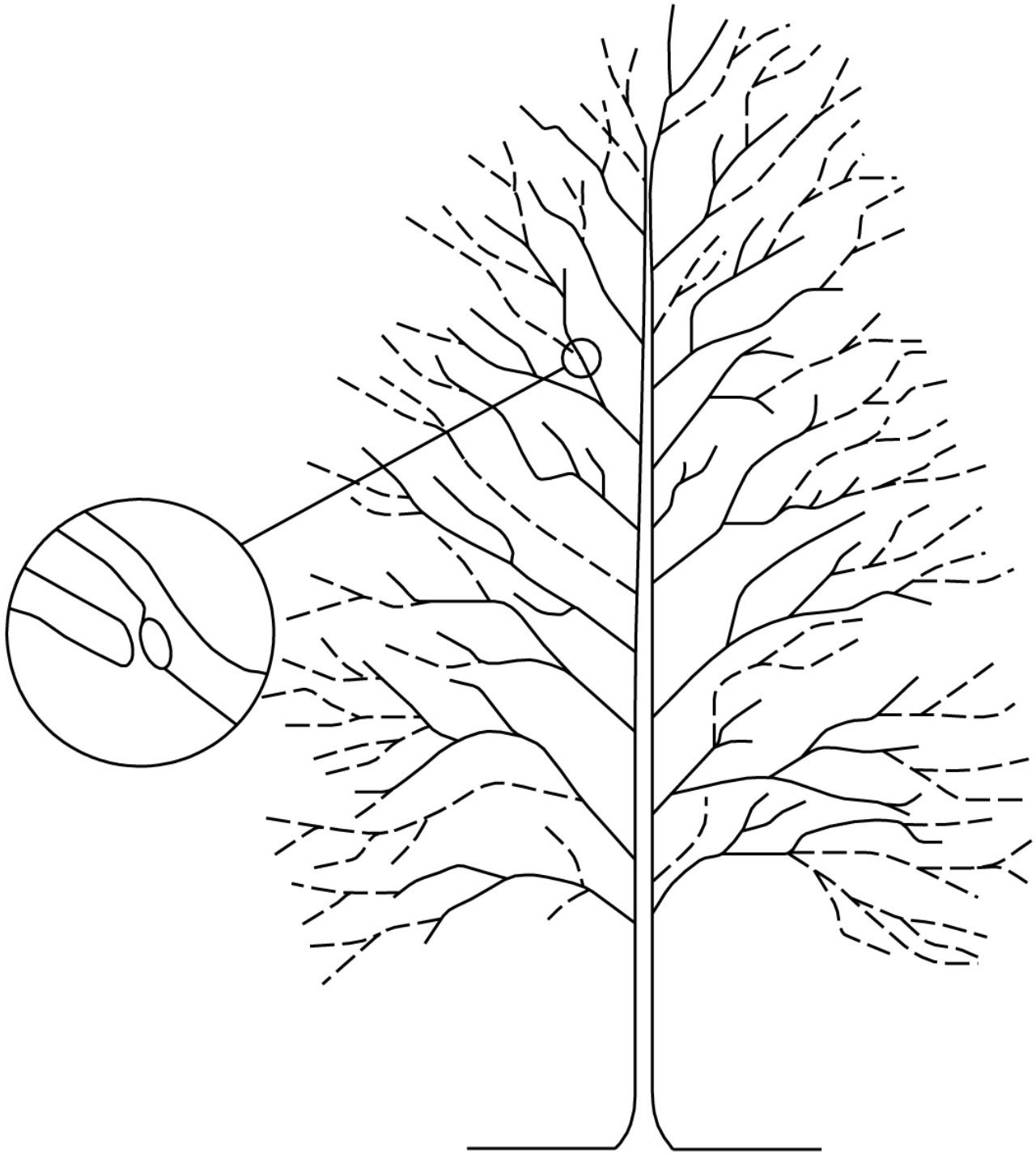
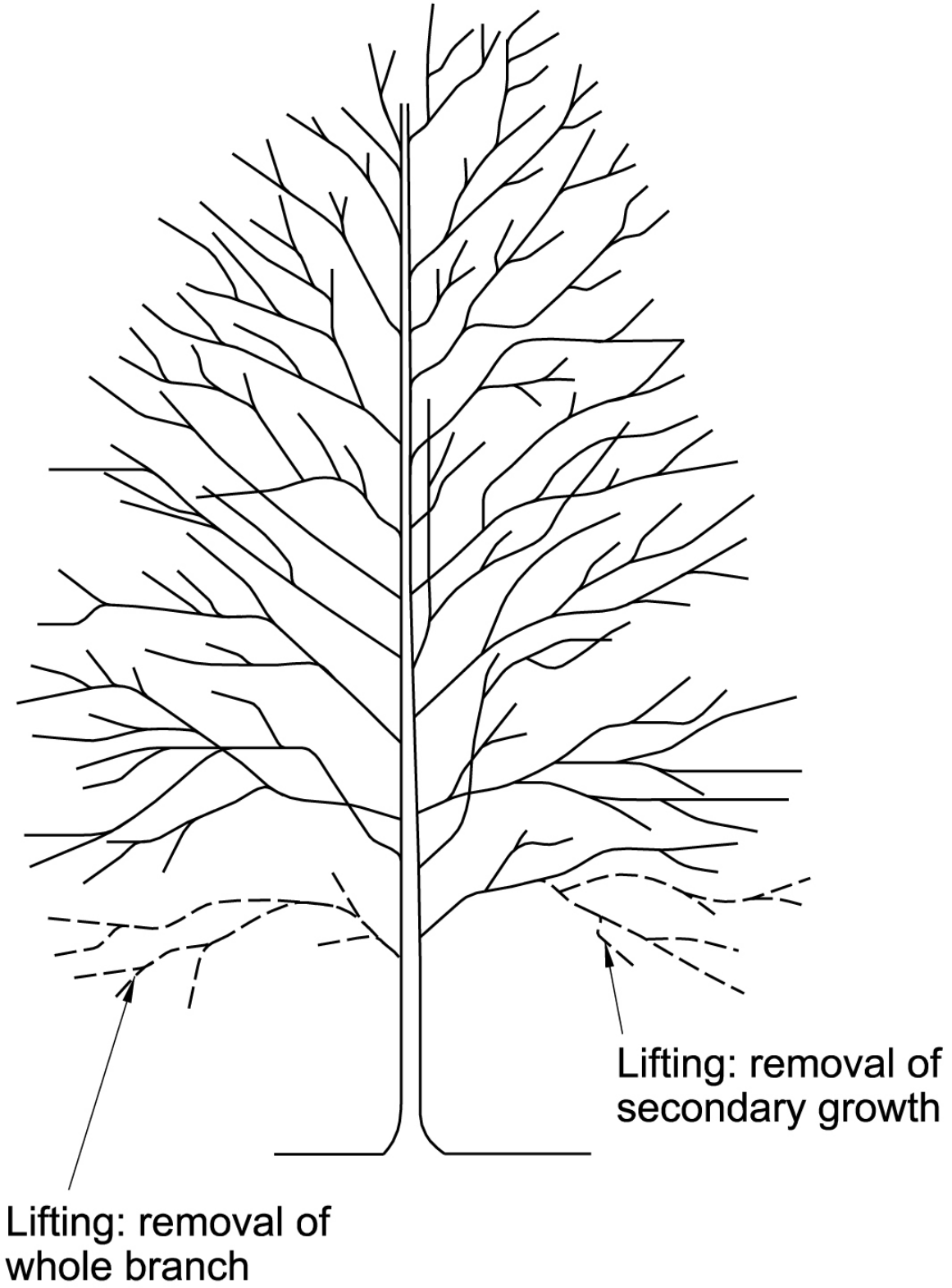
Appendix 6: Indicative Pruning Guidelines



NOTE: Branches pruned back to suitable outward pointing bud or small branch.

REDUCING THE CROWN



CROWN LIFTING

APPENDIX 7

TREE CONSTRAINTS PLAN