Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT:

101 Camley Street

London

NW1 0PF

REPORT PREPARED FOR:

Gateway Evolution Ltd

C/o KSR Architects LLP

14 Greenland Street

London

NW1 0ND

REPORT PREPARED BY

Adam Hollis

MSc ARB MICFor FArbor A MRICS C Env

Ref: KSR/101CS/AIA/01a

Date: 1st July 2014

Appendices

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:	Gateway Evolution Ltd	**Case Ref:**	KSR/101CS/AIA/01a
Local Authority:	LB Camden	**Date:**	1st July 2014
Site Address: 101 Camley Street, London NW1 0PF			
Proposal: Demolition of existing building and replacement with 121 new homes and 2,200sq.m of flexible commercial space			

Report Checklist	**Y/N**		**Y/N**
Arboricultural constraints on site	Y	Trees removal proposed	Y
Tree Survey	Y	Topographical Survey	Y
BS5837 Report	Y	Conservation Area	Y
Tree Preservation Orders	N/k		
Tree Protection Plan:	N/a	(Include in future method statement)	
Tree Constraints Plan:	Y		
Arboricultural Impact Assessment:	Y		

Site Layout					
Site Visit	Y	Date: 06/08/13		Access Full/Partial/None	P
Trees on Site			Y	Off-site Trees	Y
Trees affected by development			Y	O/s trees affected by development	Y
Tree replacement proposed:			Y	On or off-site trees indirectly affected by development	N

Trees with the potential to be affected

Felling of category C/u tree group G11 and category C tree T13.

Theoretical impacts to category B plane trees T1 – 4 from proposed lowering of ground levels to be investigated with trial pits; supervised working required during the excavation.

Theoretically low – high impacts to off-site trees T18 – 22 from new amenity area/playground – all under existing hard surfaces therefore impacts mitigated by no-dig construction.

Comments

Recommended works for T12 tree, regardless of development, 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	N

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 proposals for 101 Camley Street, London NW1 0PF, reviewing any conflicts between the proposals and material tree constraints identified in our survey.

1.2 There are 22 trees surveyed on or around the site, of which 10 are B category *(Moderate Quality), 10 are C category *(Low Quality), 1 is C/u (Low Quality/Unsuitable for Retention) and 1 is U category *(Unsuitable for Retention). In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees would comprise a constraint in aggregate, in terms of any collective loss / removal, where replacement planting would be appropriate. (In this instance, no such collective impact is proposed).

1.3 The principal primary impacts in the current proposals are the felling of a category C/u cypress group G11 and the category C tree T13; the proposals will also require the removal of the category U tree T12, which is requires removal on the grounds of sound husbandry therefore has not been rated as an impact. The loss of these trees/tree group is rated as a low impact, with no significant effect on the visual character of the local conservation area. The scheme also includes replanting to mitigate these losses.

1.4 Other primary impacts include the theoretical impacts to category B plane trees T1 – 4 from proposed lowering of the existing high ground level by 1500mm. The balance of probability from the proposed lowering to the street level is that there will be no damage to significant roots from these plane trees. In order to confirm this, trial pits have been recommended to investigated existing root colonisation, with supervised working required during the excavation works.

1.5 There are also theoretically low – high impacts to off-site trees T18 – 22 from new amenity area/playground area. However these impacts can be mitigated by the use of no dig construction techniques for the new surfaces, as the whole area is currently under existing hard surfaces. Whilst rooting beneath this area cannot be ruled out, the no-dig construction techniques using the existing subsurface will protect the roots that have colonised this area.

1.6 The secondary impacts from the new elevation reduce the existing requirement for cyclical pruning to maintain convenient canopy clearance. Thus, the proposed elevations are less demanding than the current elevations.

1.7 There will always be marginal secondary impacts of litter deposition and partial shade on this site, regardless of development. The status quo is unlikely to change with further development, which is the salient point for planning to consider. Thus, the secondary impacts of development are minimal.

1.8 The site has potential for development without impacting significantly on the wider tree population or local landscape. 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 Gateway Evolution Ltd, C/o KSR Architects to provide a survey and an arboricultural impact assessment of proposals for the site: 101 Camley Street, London NW1 0PF. The report is to accompany a planning application.

2.1.2 The proposals are to demolish the existing building and replace it with 121 new homes, plus 2,200sq.m of flexible commercial space. Public accessible amenity spaces will be provided adjacent to the canal to the north, at the junction of Camley Street and Granary Street to the south and on Granary Street, opposite the main route through St Pancras Hospital site. 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 25 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: 41357511

Proposals: CML-Sheet - 101 - L-GROUND LEVEL PLAN

2.3 Scope of survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, James Bell surveyed the trees on site on 6th August 2013, 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

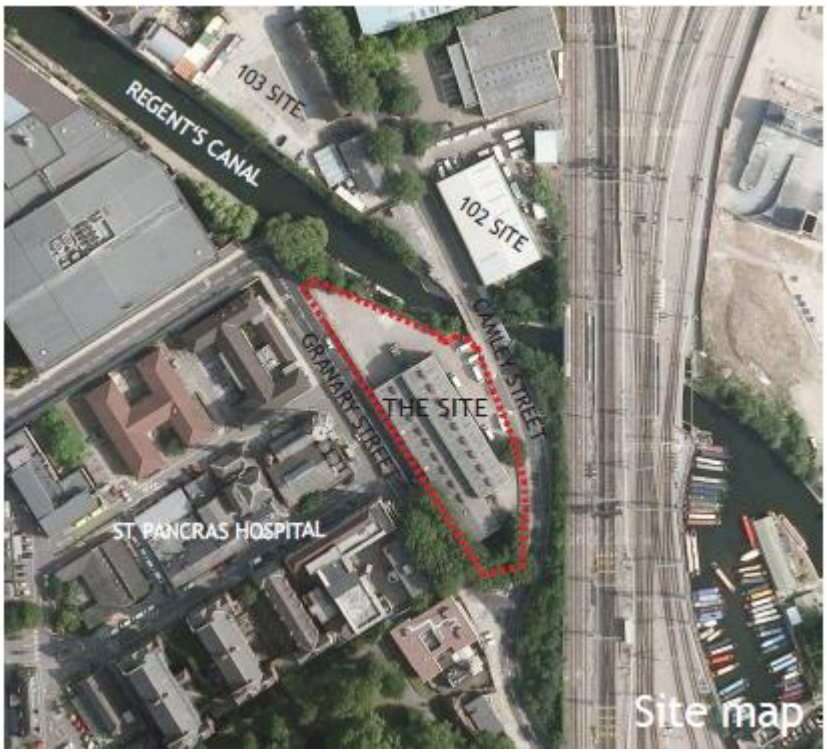
2.4.1 Detailed records of individual trees are given in the survey schedule in Appendix 1 to this report.

2.4.2 A site plan identifying the surveyed trees, based on the client's drawings / topographical survey is provided in Appendix 5.

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 6. General observations and discussion follow, below.

3.0 OBSERVATIONS

3.1 Site description



3.1.1	The site is located between Camley Street and Granary Street. The site is currently occupied by DPD, a postal distribution centre. The site contains warehousing, storage, parking and a loading area for large lorries.
3.1.2	The site is relatively level.
3.1.3	In terms of the British Geological Survey, the site overlies the London Clay Formation (see indicated location on Fig.1 plan extract below). 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. The actual distribution of the soil series are not as clearly defined on the ground as on plan and there may be anomalies in the actual composition of clay, silt and sand content.
3.1.4	Clay soils are prone to compaction during development with damage to soil structure potentially having a serious impact on tree health. The design of foundations near problematic tree species will also need to take into consideration subsidence risk. Further advice from the relevant experts on the specific soil properties can be sought as necessary.

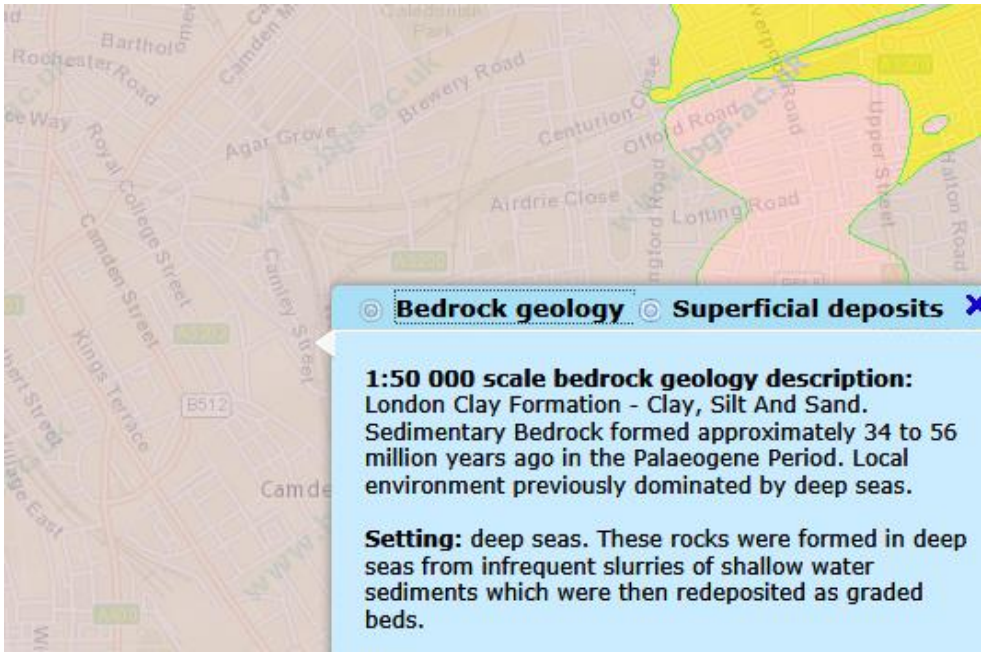


Figure 1: Extract from the BGS Geology of Britain Viewer

3.2 Subject trees

3.2.1	Of the 22 surveyed trees and tree group 10 are B category (Moderate Quality), 10 are C category (Low Quality), 1 is a C/u category tree (Low Quality/Unsuitable for Retention) and 1 is U category (Unsuitable for Retention).
3.2.2	The tree species found on site comprise mainly London plane and sycamore, with some willow species, a tree of heaven, false acacia, Leyland cypress and an ash.
3.2.3	In terms of age demographics there is a preponderance of early mature and mature trees on the site with a few young and semi-mature trees in the population.

3.2.4	Full details of the surveyed trees can be found in Appendix 1 of this report.
3.2.5	The recommended works relate to the felling of T12 only, which should be undertaken within the next three months regardless of development, but also pertinent to maintaining a safe work site. This is listed in Appendix 2.

3.3 Planning Status

3.3.1	There no on-line information regarding Tree Preservation Orders on or around the site. For trees that are privately owned, enquiries about TPO's should be made to Tree and Landscape Officer (020 7974 4444), or for street trees contact the Tree Section (020 7974 1544). The site stands within the Kings Cross St Pancras 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).**

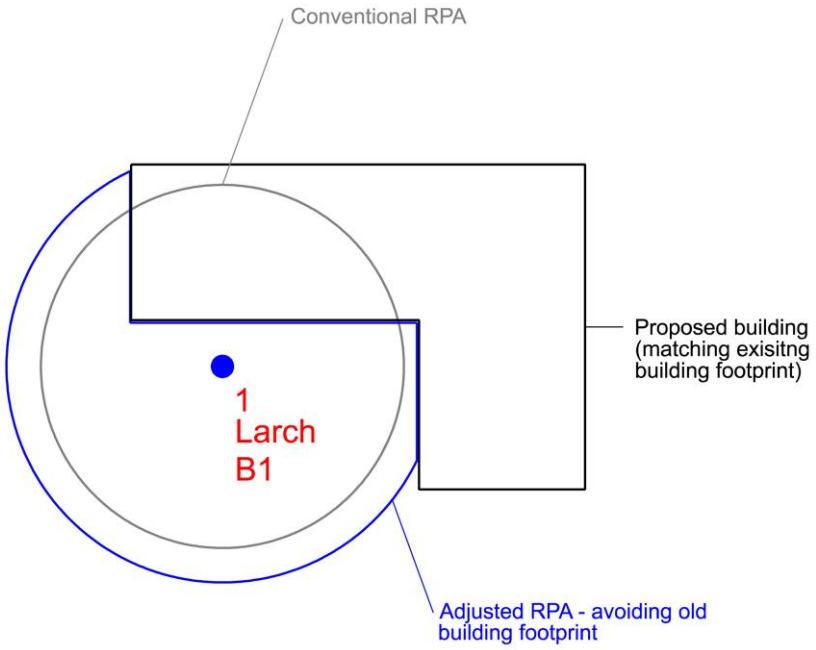


Figure 2 – Generic BS 5837 RPA Adjustments

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.

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 would comprise a constraint in aggregate, in terms of any collective loss / removal, where replacement planting would be appropriate.

4.1.11 In this instance, the main constraints to development lie on the southern boundary, where the majority of the on and off-site category B trees are located (T1 – T10). It is important to note the level changes between the site and the street trees T4, T8, T9 & T10 (see below).

Photograph 2: Level differences between the site and street trees T4, T8, T9 and T10

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.

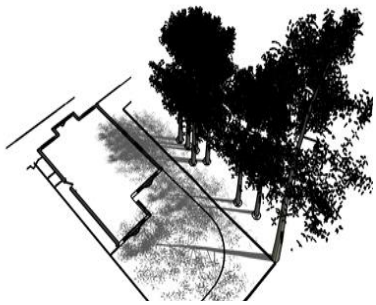


Figure 3 –
Generic Shading Constraints

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.

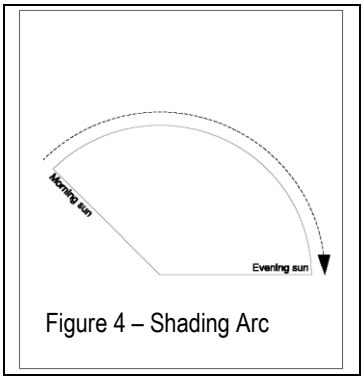


Figure 4 – Shading Arc

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 on-site and off-site trees on the southern boundary have the potential to provide a variety of secondary constraints, including shading, organic deposition and the need to maintain crown clearance in the future. 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

Hide irrelevant | Show All Trees

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (19

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
B	1	Plane, London	Ground to be lowered in RPA Existing canopy encroachment reduced	m^2 N/A %	Mature	Normal	Good	Low - TBC	N/A	Trial pits to confirm root distribution; supervised working Current cyclical management of trees to be maintained
B	2	Plane, London	Ground to be lowered in RPA Existing canopy encroachment reduced	m^2 N/A %	Early Mature	Normal	Good	Low - TBC	N/A	Trial pits to confirm root distribution; supervised working Current cyclical management of trees to be maintained
B	3	Plane, London	Ground to be lowered in RPA Existing canopy encroachment reduced	m^2 N/A %	Early Mature	Normal	Good	Low - TBC	N/A	Trial pits to confirm root distribution; supervised working Current cyclical management of trees to be maintained
B	4	Plane, London	Ground to be lowered in RPA - NB existing level changes Existing canopy encroachment reduced	m^2 N/A %	Early Mature	Normal	Good	Low - TBC	N/A	Trial pits to confirm root distribution; supervised working Current cyclical management of trees to be maintained
B	8	Plane, London	Amenity space within RPA - existing development and level differences will ensure impacts are negligible	m^2 N/A %	Early Mature	Normal	Good	N/A	N/A	Tree protection only
B	9	False Acacia	Amenity space within RPA - existing development and level differences will ensure impacts are negligible	m^2 N/A %	Early Mature	Normal	Moderate	N/A	N/A	Tree protection only

5.0 Table 1: Arboricultural Impact Assessment

Hide irrelevant | Show All Trees

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (19

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
B	10	Ash spp	Amenity space within RPA - existing development and level differences will ensure impacts are negligible	m^2 N/A %	Early Mature	Normal	Moderate	N/A	N/A	Tree protection only
C/u	G11	Cypress, Leyland	Felled to Facilitate Development	m^2 N/A %	Early Mature	Poor	N/A	Very Low	N/A	New planting / landscaping
U	12	Sycamore	To be removed for good husbandry	m^2 N/A %	Semi-mature	Poor	N/A	N/A	N/A	New planting / landscaping
C	13	Tree of Heaven	Felled to Facilitate Development	m^2 N/A %	Early Mature	Normal	N/A	N/A	Low	New planting / landscaping
C	17	Willow, Sallow	Minor canopy encroachment from new elevation	m^2 N/A %	Early Mature	Normal	Good	Very Low	N/A	Remedial tree surgery (see Rec. Works)
C	18	Sycamore	Amenity space/play ground in RPA - 15m2 All existing hard standing	15 m^2 36.84 %	Semi-mature	Normal	Moderate	Medium	N/A	No-dig construction

5.0 Table 1: Arboricultural Impact Assessment

Hide irrelevant | Show All Trees

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (19

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	19	Sycamore	Amenity space/play ground in RPA (49m2) All existing hard standing	49 m^2 47.75 %	Early Mature	Normal	Moderate	High	N/A	No-dig construction
C	20	Willow, Sallow	Amenity space/play ground in RPA - 3m All existing hard standing	3 m^2 10.44 %	Mature	Normal	Good	Low	N/A	No-dig construction
C	21	Sycamore	Amenity space/play ground in RPA (96m2) All existing hard standing	96 m^2 57.83 %	Early Mature	Normal	Moderate	High	N/A	No-dig construction
C	22	Willow, Crack	Amenity space/play ground in RPA (38m2) All existing hard standing	38 m^2 28.8 %	Mature	Normal	Good	Medium	N/A	No-dig construction

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 The principal primary impacts in the current proposals are the felling of a category C/u cypress group G11 and the category C tree T13; the proposals will also require the removal of the category U tree T12, which is requires removal on the grounds of sound husbandry therefore has not been rated as an impact. The loss of these trees/tree group is rated as a low impact, with no significant effect on the visual character of the local conservation area. The scheme also includes replanting to mitigate these losses.

6.1.2 Other primary impacts include the theoretical impacts to category B plane trees T1 – 4 from proposed lowering of the existing high ground level by 1500mm. The balance of probability from the proposed lowering to the street level is that there will be no damage to significant roots from these plane trees. In order to confirm this, trial pits have been recommended to investigate existing root colonisation, with supervised working required during the excavation works.

6.1.3 There are also theoretically low – high impacts to off-site trees T18 – 22 from new amenity area/playground area. However these impacts can be mitigated by the use of no dig construction techniques for the new surfaces, as the whole area is currently under existing hard surfaces. Whilst rooting beneath this area cannot be ruled out, the no-dig construction techniques using the existing subsurface will protect the roots that have colonised this area.

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

6.2.1 The secondary impacts from the new elevation reduce the existing requirement for cyclical pruning to maintain convenient canopy clearance. Thus, the proposed elevations are less demanding than the current elevations.

6.2.2 There will always be marginal secondary impacts of litter deposition and partial shade on this site, regardless of development. The status quo is unlikely to change with further development, which is the salient point for planning to consider. Thus, the secondary impacts of development are minimal

6.3 Mitigation of Impacts

6.3.1 All plant and vehicles engaged in demolition works should either operate outside the RPA, or should run on a temporary surface designed to protect the underlying soil structure. The demolition of the building should proceed inwards in a "pull down" fashion. Hard surfacing can be lifted with caution by a skilled machine operator again working away from the tree.

6.3.2 Subject to the outcome of the trial pits, it is proposed that the limits of excavation within RPAs will be undertaken manually; any roots encountered 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 The amenity area/playground encroachment 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. A further consideration in the use of a more expensive cellular confinement system or similar, may be the claimed reduction in risk of possible future slab / surface displacement by roots of trees growing in paved areas.

6.3.4 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.

6.3.5 The shading impacts can be mitigated by building design, with the provision of dual aspect windows and choice of room layout.

6.3.6 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.

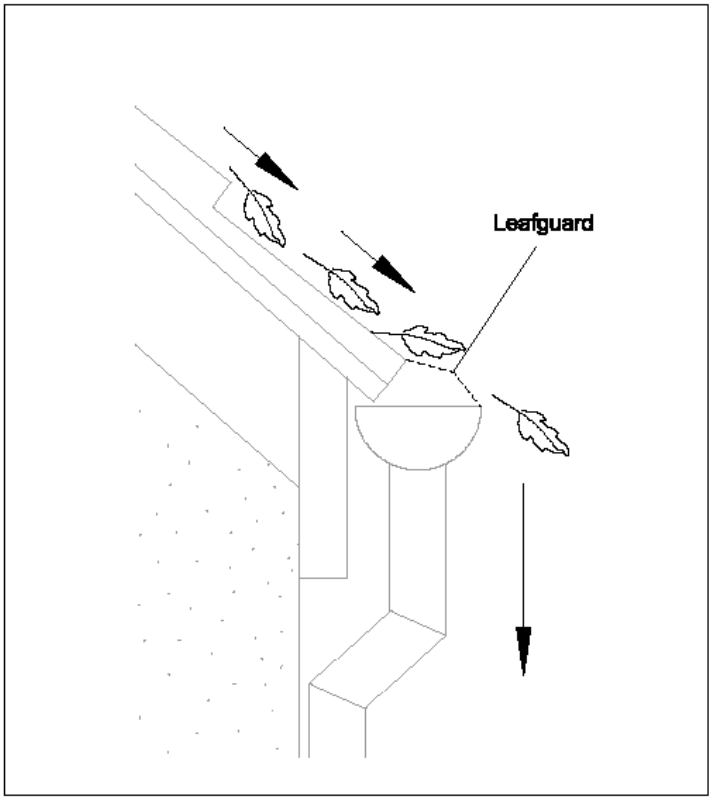


Figure 5: Filtration traps, as shown above, could be fitted on the gutters which can easily be maintained at 2-3m above ground.

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 Subject to the outcome of the proposed trial pits, the balance of probability is that 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 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 trees that are recommended for felling are of little individual significance, such that their loss will not affect the visual character of the conservation 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 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 Replace felled trees with native ornamental 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 the proposed development should be protected with a Tree Protection Barrier (TPB). Protective barrier fencing should be installed immediately following the completion of the tree works, remaining in situ for the entire duration of the development unless otherwise agreed in writing by the council. It should be appropriate for the intensity and proximity of the development, usually comprising steel, mesh panels 2.4m in height ('Heras') and should be mounted on a scaffolding frame (shown in Fig 2 of BS5837:2012). 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 3998:2010 Tree work [BS3998].

8.2.5 Where sections of hard surfacing are proposed in close proximity to trees, it is recommended that either the existing sub-surfaces are retained or "No-Dig" surfacing is employed in accordance with BS5837:2012 and 'The Principles of Arboricultural Practice: Note 1, Driveways Close to Trees, AAIS 1996 [APN1]'.

8.2.6 If the RPA of a tree is encroached by underground service routes then BS5837:2012 and NJUG VOLUME 4 provisions should be employed. If it is deemed necessary, further arboricultural advice must be sought.

8.2.7 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.

8.2.8 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.

8.2.9 These points can be resolved and approved through consultation with the planning authority via their Arboricultural Officer.

8.2.10 The sequence of works should be as follows:

i) initial tree works: felling, stump grinding and pruning for working clearances;
ii) installation of TPB for demolition & construction;
iii) installation of underground services;
iv) installation of ground protection;
v) main construction;
vi) removal of TPB;
vii) soft landscaping.

9.0 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: 101 Camley St, NW1

Date: 6th August 2013

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd
Tel: 020 7851 4544

Surveyor(s): James Bell

Ref: KSR/101CS/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Clear Stem Height	Stem Diameter	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
1	Plane, London	16	8588	5.0	5.0	510.0	Mature	6.1	Normal	Fair	B	2	>40	Crown overhangs building; LA works on 14th August therefore crowns over-represented on TCP/AIA plans.
2	Plane, London	18	6496	5.0	7.0	480.0	Early Mature	5.8	Normal	Fair	B	2	20-40	Bark wound & decay at base Root girdling Crown overhangs building; LA works on 14th August therefore crowns over-represented on TCP/AIA plans.
3	Plane, London	18	6/4/10/6	6.0	7.0	420.0	Early Mature	5.0	Normal	Fair	B	2	>40	Crown overhangs building; LA works on 14th August therefore crowns over-represented on TCP/AIA plans.
4	Plane, London	18	7784	8.0	7.0	460.0	Early Mature	5.5	Normal	Fair	B	2	>40	Weak fork at 4m LA works on 14th August therefore crowns over-represented on TCP/AIA plans.
5	Plane, London	20	8	5.0	5.0	750.0	Mature	9.0	Normal	Fair	B	2	>40	No view of base
6	Plane, London	20	8	5.0	5.0	750.0	Mature	9.0	Normal	Fair	B	2	>40	No view of base
7	Plane, London	20	8	2.5	5.0	750.0	Mature	9.0	Normal	Fair	B	2	>40	No view of base

Landmark Trees

Site: 101 Camley St, NW1

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Ref: KSR/101CS/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Clear Stem Height	Stem Diameter	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
8	Plane, London	18	5846	6.0	6.5	390.0	Early Mature	4.7	Normal	Fair	B	2	>40	Divides to 4 stems at 4m LA works on 14th August therefore crowns over-represented on TCP/AIA plans.
9	False Acacia	16	5544	1.5	2.5	430.0	Early Mature	5.2	Normal	Fair	B	2	20-40	Previously reduced; minor twiggy deadwood
10	Ash spp	13	4665	4.5	6.5	380.0	Early Mature	4.6	Normal	Fair	B	2	20-40	Bark wounds narrow leaved ash; bark damaged over road by passing traffic
G11	Cypress, Leyland	13	3.5	2.0	2.0	250.0	Early Mature	3.0	Poor	Fair	C/u	2	10-20	Probable coryneum canker present Leaf browning in places Light suppressed crowns; 18 trees in boundary screen
12	Sycamore	8	2232	2.5	2.0	160.0	Semi-mature	1.9	Poor	Poor	U		<10	Dying back (uniform) Poor specimen, low vitality Self set; growing through fence
13	Tree of Heaven	8	5	1.5	2.0	388.8	Early Mature	4.7	Normal	Fair	C	2	20-40	Damaging pavement Suckering from base
14	Sycamore	8	3	1.5	0.5	250.0	Semi-mature	3.0	Normal	Fair	C	2	20-40	Ivy smothered Remote survey

Landmark Trees

Site: 101 Camley St, NW1

Date: 6th August 2013

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd
Tel: 020 7851 4544

Surveyor(s): James Bell

Ref: KSR/101CS/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Clear Stem Height	Stem Diameter	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
15	Sycamore	5	1.5	1.5	0.5	70.0	Young	0.8	Normal	Fair	C	2	20-40	Ivy clad Remote survey
16	Sycamore	7	3	1.5	1.5	250.0	Semi-mature	3.0	Normal	Fair	C	2	20-40	Ivy smothered Remote survey
17	Willow, Sallow	4.5	3	1.5	1.5	141.4	Early Mature	1.7	Normal	Fair	C	2	10-20	Remote survey
18	Sycamore	8	2.5	2.0	2.0	300.0	Semi-mature	3.6	Normal	Fair	C	2	20-40	Remote survey
19	Sycamore	12	3.5	4.0	4.0	476.2	Early Mature	5.7	Normal	Fair	C	2	20-40	Remote survey
20	Willow, Sallow	8	4	2.5	2.5	252.0	Mature	3.0	Normal	Fair	C	2	10-20	Remote survey
21	Sycamore	11	5	2.0	2.0	605.7	Early Mature	7.3	Normal	Fair	C	2	20-40	Remote survey

Landmark Trees

Site: 101 Camley St, NW1

Date: 6th August 2013

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd
Tel: 020 7851 4544

Surveyor(s): James Bell

Ref: KSR/101CS/AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Clear Stem Height	Stem Diameter	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
22	Willow, Crack	13	6	2.0	2.0	540.0	Mature	6.5	Normal	Fair	C	2	20-40	Remote survey; C/b

APPENDIX 2

RECOMMENDED TREE WORKS

Notes for Guidance:

Husbandry 1 - Urgent (ASAP), 2 - Standard (within 6 months), 3 - 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: 101 Camley St, London NW1

Date: 06 08 2013

Surveyor(s): James Bell

Ref: KSR/101CSAIA

Recommended Tree Works

Show All Trees
Hide irrelevant

Tree No.	English Name	Height	Stem Diameter	Crown Spread	Recommended Works	Comments/ Reasons
12	Sycamore	8	160.0	2232	Fell	Dying back (uniform) Poor specimen, low vitality Self set; growing through fence Recommended Husbandry 1

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: 101 Camley St, London NW1

Surveyor(s): James Bell

Date: 19 June 2014

Ref: KSR/101CS/AIA

Recommended Tree Works To Facilitate Development

Show All Trees
Hide irrelevant

Tree No.	English Name	Height	Stem Diameter	Crown Spread	Recommended Works	Comments/ Reasons
1	Plane, London	16	510.0	8588	CB Existing cyclical management not affected	Crown overhangs building; LA works on 14th August therefore crowns over-represented on Recommended Husbandry 3
2	Plane, London	18	480.0	6496	CB Existing cyclical management not affected	Bark wound & decay at base Root girdling Crown overhangs building; LA works on 14th August therefore crowns over-represented on Recommended Husbandry 3
3	Plane, London	18	420.0	6/4/10 /6	CB Existing cyclical management not affected	Crown overhangs building; LA works on 14th August therefore crowns over-represented on Recommended Husbandry 3
4	Plane, London	18	460.0	7784	CB Existing cyclical management not affected	Weak fork at 4m LA works on 14th August therefore crowns over-represented on TCP/AIA plans. Recommended Husbandry 3
G11	Cypress, Leyland	13	250.0	3.5	Fell	Probable coryneum canker present Leaf browning in places Light suppressed crowns; 18 trees in boundary To Facilitate Development
12	Sycamore	8	160.0	2232	Fell	Dying back (uniform) Poor specimen, low vitality Self set; growing through fence Recommended Husbandry 1
13	Tree of Heaven	8	388.8	5	Fell	Damaging pavement Suckering from base To Facilitate Development

Landmark Trees

Site: 101 Camley St, London NW1

Surveyor(s): James Bell

Date: 19 June 2014

Ref: KSR/101CS/AIA

Recommended Tree Works To Facilitate Development

Show All Trees
Hide irrelevant

Tree No.	English Name	Height	Stem Diameter	Crown Spread	Recommended Works	Comments/ Reasons
17	Willow, Sallow	4.5	141.4	3	CB Trim overhanging branches	Remote survey 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

TREE CONSTRAINTS PLAN

Grand Union Canal
Regent's Canal

El
Sub Sta

102

23.6m

GRANARY STREET

22
Willow
C2

20
Willow
C2

21
Sycamore
C2

19
Sycamore
C2

18
Sycamore
C2

Small
un-surveyed
Sycamore

17
Willow
C2

15
Sycamore
C2

16
Sycamore
C2

14
Sycamore
C2

Buddleia

Oblique Bridge

101

23.0m

Chy

13
Tree of Heaven
C2

1
Plane
B2

2
Plane
B2

3
Plane
B2

4
Plane
B2

5
Plane
B2

6
Plane
B2

7
Plane
B2

8
Plane
B2

9
False Acacia
B2

10
Ash spp
B2

G11
Cypress
C/u2

12
Sycamore
U

Hospital for
Tropical Diseases

Dennis Geffen
Environmental
Health Annexe

21.5m

Mortuary

St Pancras
Coroner's
Court

N

5m 10m

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).

Landmark Trees

Landmark Trees
20 Broadwick Street, London, W1F 8HT
Tel: 0207 851 4544 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 101 Camley Street	1-250@A1
Drawing Title: Tree Constraints Plan	August 2013

Key:

- Category A
  High Quality
- Category B
  Moderate Quality
- Category C
  Low Quality
- Category U
  Trees Unsuitable for Retention

Category
Crown Spread
13
Birch
B2
Tree Number
Species
Root
Protection
Area
Category

NOTE: All tree positions are approximate.

APPENDIX 6

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).

Landmark Trees

20 Broadwick Street, London, W1F 8HT
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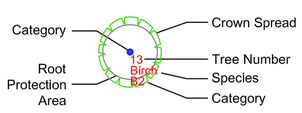
Site: 101 Camley Street	1-250@A1
Drawing Title: Arboricultural Impact Assessment	June 2014

Key:

- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category U Trees Unsuitable for Retention



NOTE: All tree positions are approximate.