

ARBORICULTURAL IMPACT ASSESSMENT REPORT

& OUTLINE METHOD STATEMENT:

12 Park Village West London NW1 4AE

REPORT PREPARED FOR:

Sir Cameron Mackintosh 1 Bedford Square London WC1 3RB

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Ref: CZL/12PVW/AIM/03a

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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.

1. SUMMARY

- 1.1 This report comprises an arboricultural impact assessment of the proposed development at 12 Park Village West, London NW1 4AE, reviewing any conflicts between the proposals and material tree constraints identified in our survey.
- 1.2 Of the 34 surveyed trees on or near the site 1 is category A *(High Quality), 8 are category B *(Moderate Quality) and 22 are category C *(Low Quality) with the remaining 3 specimens not being assigned a category of retention. 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. In this instance, no such collective impact is proposed.
- 1.3 Trial pits have been undertaken to confirm the low theoretical impacts of the proposals on trees on and off-site. The trial pits confirm the proposals will have a negligible impact on the off-site trees, T's 27 -33: the findings revealed only small 'rootlets' within the proposed footprint, identified mostly as belonging to vines / creepers. Small tree roots from a London plane were found in TP6, but there is no plane within 15m of the proposals: RPA's are limited to 15m radii, though trees may root to 60m+ from their stems. Thus, these small roots are not a material constraint on development. It is also important to note that any encroachment to either T1 or T22 should not strictly speaking be rated as an impact in planning, as LB Camden have raised no objection to the removal of the trees under Conservation Area legislation. Manual excavation to 750mm depth along the line of basement within RPA is recommended as a precautionary measure.
- 1.4 There are no significant secondary (post-development pressure) impacts on a basement. The deepening of the foundations in fact lessens the chance of future conflict developing as a result of indirect damage to the structure from adjacent trees.
- 1.5 The site has potential for development without impacting 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 Tony Cox on behalf of Sir Cameron Mackintosh to provide a survey and an arboricultural impact assessment of proposals for the site: 12 Park Village West, London NW1 4AE. The report is to accompany a planning application.
- 2.1.2 The proposed new works remain primarily focused around a basement extension underneath the garage/coach house. Long-term subsidence has caused cracking to this building as well as the adjoining studio both of which therefore now require piling and underpinning to maintain their structural integrity. The opportunity has therefore been seized to undertake the excavation of these areas and the courtyard to extend the existing vaults and form new laundry, plant room, gym and storage spaces. Included as part of these works are the installation of flush heritage style skylights within the courtyard and the formation of a light well along the rear to get natural light and fresh air into the subterranean level; as well and the reconfiguration of the internal layout of accommodation to the first floor of the coach house.
- 2.1.3 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.
- 2.1.4 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: 19105-100
 Proposals: 255-TH- P01 - g – LGF & 255-TH- P02 - f - GF

2.3 Scope of survey

2.3.1	As Landmark Trees' (LT) arboricultural consultant, Kim Dear surveyed the trees on site											
	on 5th September 2019, 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 3.
2.4.3	This plan also serves as the Tree Constraints Plan with the theoretical Root 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 4 and a Tree Protection Plan in
	Appendix 5. General observations and discussion follow below.

3.0 OBSERVATIONS

3.1 Site description



Photograph 1: 12 Park Village West, London NW1 4AE

- 3.1.1 12 Park Village West is an early Victorian 'villa' style property, situated on the northern corner of the Park Village West Road. The house lies within the generally gentle sloped setting toward Regents Canal. Although the areas to either side of no 12 are relatively flat, the site is divided into two levels: the front house and garage levelled with Park Village West road, and a lower ground level toward the garden facing Regents Canal area, with an approximately 3m difference in level.
- 3.1.2 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.
- 3.1.3 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.

3.1.4 Further soil analysis has been undertaken by Geotechnical Environmental Associates with 7 boreholes, which confirmed the presence of London Clay and made ground (see Extract 1 below). The boreholes were also checked for roots, with the results confirming only fibrous roots were present. Appendix 2 contains the results table and the further analysis of the roots found in 6 of the boreholes. One further trial pit was dug.



Figure 1: Extract from the BGS Geology of Britain Viewer

5.1 Made Ground

The made ground generally comprised brown silty sandy clay with brick, coal, slate, and gravel which extended to depths of between 0.3 m and 1.7 m below ground level. Along the northern boundary wall, made ground was overlain by a layer of topsoil comprised of dark brown slightly clayey, slightly sandy silt with gravel and abundant vine roots.

Apart from the presence of fragments of extraneous material noted above, no visual or olfactory evidence of contamination was observed during the fieldwork. Four samples of the made ground have been sent for contamination testing as a precautionary measure and the results are presented in Section 5.4.

5.2 London Clay

The London Clay initially comprised firm becoming stiff brown or grey silty fissured clay with occasional selenite crystals, which extended to depths of 5.00 m, the maximum depth investigated.

Extract 1: Soil Analysis from Geotechnical Environmental Associates

3.2 Subject trees

- 3.2.1 Of the 26 surveyed trees 1 is category A *(High Quality), 9 are category B *(Moderate Quality), 15 are category C *(Low Quality) and 1 is category U *(Unsuitable for Retention).
- 3.2.2 The tree species found on site comprise common lime, sweet and laurel bay, elm, birch, field and Japanese maple, flowering cherry, horse chestnut, leyland and lawson cypress, London plane, purple plum, sycamore, common yew and Chinese privet.
 3.2.3 In terms of age demographics there is a preponderance of semi-mature and mature trees on the site, with young and early mature trees in the population.

3.2.4 Full details of the surveyed trees can be found in Appendix 1 of this report.

3.3 Planning Status

3.3.1	We are not aware of the existence of any Tree Preservation Orders, but understand the
	site stands within the Regents Park 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.
3.3.2	We understand that LB Camden raised no objection to separate Section 211 notices
	(ref: 2019/0605/T and 2019/1695/T respectively) regarding the removal of T1 and T22
	and therefore no assessment is made of any impact to these trees of the development
	considered within this document. We also understand that a number of trees on the site
	have been pruned in accordance with Section 211 notice 2019/0605/T.
3.3.3	Relevant local planning policies comprise Policy 7.21 of the London Plan 2016 and
	Policies A3, A5, D1 and D2 of the Camden Local Plan (adopted 3rd July 2017).

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, although 8 trial pits
	have been undertaken to confirm there are no significant roots from the
	neighbouring trees within the site (see below).



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 Seven trial pits were dug for the original proposals in April 2015, with the additional trial pit dug on 5th August 2015 (the original trial pits 1, 4 & 6 were also re-opened on the 5th August 2015 for the Camden Tree Officer Nick Bell). The results are summarized in Table 2 below, with the information provided by Richardson's Botanical Identifications on the identity of the roots found:

Table 2: Summary of all Trial Pit Results and Root Identification

Trial Pit	Results							
1	Top: 0.85m deep Base: 1.1m base and 100mm lateral projection							
Southern Wall of Coach House	Rootlets (fibrous roots) noted 1 root – hornbeam?							
2	Top: 0.68m deep Base: 1.15m base and 0mm lateral projection							
Internal western wall of Coach House	Rootlets (fibrous roots) noted 1 root – grape vine/Virginia creeper 1 root – grape vine/Virginia creeper 1 root – dead (birch) 1 root – shrub (aucuba) - dead							
3	Brick wall to base; Base: 1.15m and 0mm lateral projection							
Chimney Stack on western wall of Coach House	No roots							
4	Brick wall; Base: 0.5m and 0mm lateral projection							
Northern wall of Coach House	Abundant rootlets (fibrous roots) noted 1 root – ivy 1 root – lime							
5	One tier brick corbel							
Eastern Wall of	Top: 0.75m; Base: 1.2m and lateral projection 60mm							
Coach House	Roots noted							
6	One tier brick corbel							
Northern wall of	Top: 0.15m; Base: 0.7m and lateral projection 400mm							
gym	Abundant rootlets (fibrous roots) noted 1 root – plane – dead 1 root – plane 1 root – plane 1 root – plane - dead							
7	Two tier with additional step up							
Southern wall of	Top: 0.22m; Base: 0.5m and lateral projection 400mm							
main house	Rootlets (fibrous roots) noted							
8	Trench under concrete of approximately 0.6m depth – excavated below this							
Eastern wall of main house	No significant roots							

4.1.5 The most recent photographic trial pit evidence for trial pit 8 (see Appendix 2) has been viewed by the Tree Officer Nick Bell on the 12th August 2015. At the site meeting on the 5th of August 2015 and in a subsequent email, there is agreement between the parties that the excavations appear to be free of significant roots; the Tree Officer also noted that some of the excavations (TP8) would be best described as a holes as opposed to pits i.e. trenches. This was due to the existence of a 600mm concrete apron.



- 4.1.6 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.
- 4.1.7 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."

4.1.8 In theory, only moderate quality trees and above are significant material constraints on development. However, the findings reveal only small 'rootlets' within the proposed footprint, identified mostly as belonging to vines / creepers. Small tree roots from a London plane were found in TP6, but there is no plane within 15m of the proposals: RPA's are limited to 15m radii, though trees may root to 60m+ from their stems. Thus, these small roots are not a material constraint on development

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.
- 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.



- 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 and off-site trees 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 significance of these constraints will vary depending on the location and proximity to the proposed re-development.

Table 1: Arboricultural Impact Assessment

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

Hide irrelevant Show All Trees

Ref: CZL_12PVW_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
С	27	Pittosporum	Basement Construction within RPA	9.9 m ² 37.99 %	Early Mature	Normal	Moderate	Very Low	Very Low	Hand dig top 750mm of basement line thro' RPA
			All beneath existing structure / hardstanding with supporting trial pit evidence							
	29	Magnolia, Southern	Basement Construction within RPA	0.2 m ² ? %			Moderate	Very Low	Very Low	Hand dig top 750mm of basement line thro' RPA
			All beneath existing structure / hardstanding with supporting trial pit evidence							
	30	Ironwood, Persian	Basement Construction within RPA	1.0 m ² ? %			Moderate	Very Low	Very Low	Hand dig top 750mm of basement line thro' RPA
			All beneath existing structure / hardstanding with supporting trial pit evidence							
	31	Liquid Amber	Basement Construction within RPA	2.6 m ² ? %			Moderate	Very Low	Very Low	Hand dig top 750mm of basement line thro' RPA
			All beneath existing structure / hardstanding with supporting trial pit evidence							
С	32	Birch, Silver	Basement Construction within RPA	8.0 m ² 29.46 %	Early Mature	Normal	Moderate	Very Low	Very Low	Hand dig top 750mm of basement line thro' RPA
			All beneath existing structure / hardstanding with supporting trial pit evidence							
В	33	Birch, Silver	Basement Construction within RPA	0.2 m ² .22 %	Mature	Normal	Moderate	Very Low	Very Low	Hand dig top 750mm of basement line thro' RPA
			All beneath existing structure / hardstanding with supporting trial pit evidence							

6.0 DISCUSSION

6.1 Rating of Primary Impacts

- 6.1.1 Trial pits have been undertaken to confirm the low theoretical impacts of the proposals on trees on and off-site. The trial pits confirm the proposals will have a negligible impact on the off-site trees, T's 27 -33: the findings revealed only small 'rootlets' within the proposed footprint, identified mostly as belonging to vines / creepers. Small tree roots from a London plane were found in TP6, but there is no plane within 15m of the proposals: RPA's are limited to 15m radii, though trees may root to 60m+ from their stems. Thus, these small roots are not a material constraint on development.. Manual excavation to 750mm depth along the line of basement within RPA is recommended as a precautionary measure.
- 6.1.2 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.
- 6.1.3 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.</p>
- 6.1.4 **"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	There are no significant secondary (post-development pressure) impacts on a basement;										
	any nuisance deposition on the lightwells can be mitigated by simple cleaning										
	maintenance.										
6.2.2	The deepening of the foundations indeed lessens the chance of future conflict developing										
	as a result of further indirect damage to the building.										

6.3 Mitigation of Impacts

6.3.1	The path of foundations through RPAs 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. In the unlikely event of encountering roots larger than 25mm diameter, they may
	only be cut in consultation with an arboriculturalist.
6.3.2	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.

7.0 CONCLUSION

- 7.1 The trial pits have confirmed that there will be no significant impact from the basement proposals.
- 7.2 The wider potential impacts of construction can be mitigated through design and precautionary measures. These measures are provided in the Outline Method Statement in Section 8.0 of this report, to assist the discharge of planning conditions.
- 7.3 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 & OUTLINE METHOD STATEMENT

8.1 Specific Recommendations

8.1.1 The excavation and construction impacts within the RPA identified in Table 1 above, will need to be controlled by the outline method statement below.

8.2 Outline Method Statement (to be read in conjunction with Appendix 5: Tree Protection Plan, and developed further with a contractor in consultation with the retained arborist, post-planning)

8.2.1	The sequenc	e of works should be as follows:
	i) install	ation of underground services;
	ii) install	ation of ground protection;
	iii) main d	construction;
	iv) remov	al of TPB;
	v) soft la	ndscaping;
8.2.2	Site supervis	ion: the Site Agent must be nominated to be responsible for all arboricultural
	matters on si	te. This person must:
	■ be pres	ent on site for the majority of the time;
	be awar	e of the arboricultural responsibilities;
	have the	e 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 conseque	nces of a failure to observe these responsibilities;
	 make in 	mediate contact with the local authority and/or a retained arboriculturalist in
	the event of a	any tree related problems occurring.
8.2.3	The arboricu	Itural 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 zor	nes; i.e. demolition of hard standing and pre-emptive excavation of piling
	line and an	y service trenches. 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.	

- 8.2.4 Where the basement line/wall underpinning line lies within the RPA of T's 27 33, the foundations should be hand excavated to 750mm with pre-emptive root pruning under arboricultural supervision if required.
- 8.2.5 Where levels of dust build-up on trees are likely, it may be necessary to seek the advice of Landmark Trees on remedial measures, e.g. hose down the tree(s) immediately following any significant accumulation of dust.



Fig. 1 Tree Protection Barrier Specification

(Source: Figure 2 from BS5837 - Default specification for protective barrier)

8.2.6	It is understood that the existing services will be used. If additional service routes are
	required, they should 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.
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	These points should be resolved and approved through consultation with the planning
	authority via their Arboricultural Officer.

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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.
- 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.
- 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.
- Growth Vitality Normal growth, Moderate (below normal), Poor (sparse/weak), Dead (dead or dying tree).
- Structural Condition Good (no or only minor defects), Fair (remediable defects), Poor Major defects present.
- Landscape Contribution High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
- 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	Site: 1. Date: 0 Trees	2 West Park 5/09/2019	Village		BS583	37 Tree	Ap Cons	pendix traints	1 Survey	, Sch	edul	e	Landmark Trees Ltd 020 7851 4544 Surveyor(s): Kim Dear Ref: CZL_12PVW	_AIM
Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	n Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments	
1	Lime, Common	18	4334	2.0	550	Mature	6.6	Normal	Good	В	2	>40	Ivy clad	
G2	Sycamore	18	3456	2.0	450	Early Mature	5.4	Normal	Good	В	2	>40	lvy clad Remote survey only (RS)	
3	Elm	6	3222	1.0	200	Semi- mature	2.4	Normal	Fair	С		10+	lvy clad Suppressed by nearby tree	
4	Cypress, Lawson	11	3533	2.5	490	Mature	5.9	Moderate	Fair	С	2	20+	Chlorotic foliage (yellowed) Ivy clad remote survey	
5	Elm	11	6043	2.0	260	Early Mature	3.1	Normal	Fair	С	2	10+	Leaning (significantly)	
G6	Sycamore	21	8989	6.0	700	Mature	8.4	Normal	Good	в	2	>40	Remote survey only (RS)	

Site:	12 West Park Village
01101	12 Woot Fait Mago

Date: 05/09/2019

Landmark Trees

Appendix 1

Landmark Trees Ltd 020 7851 4544 Surveyor(s): Kim Dear

CZL_12PVW_AIM

Ref:

BS5837 Tree Constraints Survey Schedule

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
7	Yew, Common	8	4334	3.5	380	Semi- mature	4.6	Moderate	Fair	С	2	20+	bifurcated at 0.5 m
8	Cypress, Lawson	7	3222	3.0	236	Semi- mature	2.8	Moderate	Fair	С	2	20+	Suppressed by nearby tree
9	Birch, Silver	13	2232	7.0	200	Semi- mature	2.4	Normal	Fair	С	2	20+	Suppressed by nearby tree growing through canopy of t8
10	Cypress, Lawson	6	1221	2.0	80	Young	1.0	Moderate	Fair	С	2	20+	Suppressed by nearby tree
11	Privet	7	3223	4.5	185	Semi- mature	2.2	Moderate	Fair	С	2	20+	
12	Sycamore	22	9766	6.0	890	Mature	10.7	Normal	Good	В	2	>40	Ivy clad Remote survey only (RS) bifurcated

W/	Site: [/] Date: ⁽	12 West Park Village 05/09/2019	Appendix 1	
L] rk Trees			BS5837 Tree Constraints Survey Schedule	

Age

Landmark Trees

Tree

English Name

Height Crown

Ground

Stem

Landmark Trees Ltd 020 7851 4544 Kim Dear Surveyor(s): Ref: CZL_12PVW_AIM

Comments

Class No. Spread Clearance Diamete Radius Vitality Condition Cat Cat Life 13 Early A sparser than normal canopy Sycamore 19 4133 7.5 470 5.6 Moderate Fair С 2 20+ Mature Ivv clad electric light on stem at 5 m 14 Sycamore Mature В 2 >40 bifurcated at 7 m 19 2345 7.0 550 6.6 Normal Fair 15 Elm 11 7566 Early С 2 still Good! 4.5 315 3.8 Normal Good 10+ Mature 16 Lime, Common Mature 15 3354 1.0 580 7.0 Good В 2 >40 need to clear epicormic growth Normal 17 Bay, Laurel 7 3222 2.5 240 Early 2.9 Fair С 2 20+ Suppressed by nearby tree Normal Mature 18 Maple, Field 6 4333 3.5 230 Early 2.8 Normal Fair С 2 20+ Mature

Protection Growth

Structural

B.S.

Sub

Useful

Sito	12 West Park Village	2
Sile.	12 West Fark Village	,

Date: 05/09/2019

Landmark Trees

Appendix 1

Landmark Trees Ltd 020 7851 4544 Surveyor(s): Kim Dear

CZL_12PVW_AIM

Ref:

BS5837 Tree Constraints Survey Schedule

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	n Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
19	Lime, Common	13	4434	4.5	600	Mature	7.2	Normal	Good	В	2	20+	
20	Bay, Laurel	7	3333	2.5	277	Early Mature	3.3	Moderate	Fair	С	2	20+	Unprofessionally topped/lopped
21	Bay, Laurel	7	2233	2.0	341	Early Mature	4.1	Moderate	Fair	С	2	20+	Unprofessionally topped/lopped
22	Plum, Myrobalan	6	4433	2.0	275	Early Mature	3.3	Moderate	Fair	С	2	10+	A sparser than normal canopy
23	Judas Tree	?					0.0						removed
24	Maple, Japanese	7	4224	3.0	297	Early Mature	3.6	Moderate	Fair	С	2	20+	A sparser than normal canopy

Site:	12 West Park	Village
one.		vinugo

Date: 05/09/2019

Landmark Trees

Appendix 1

Landmark Trees Ltd 020 7851 4544 Surveyor(s): Kim Dear

CZL_12PVW_AIM

Ref:

BS5837 Tree Constraints Survey Schedule

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
25	Plane, London	21	10,9,11, 11	, 7.5	1250	Mature	15.0	Normal	Good	A	2	>40	
26	shrub	2	1111	0.5	75	Semi- mature	0.9	Moderate	Fair	С		10+	
27	Pittosporum	8	2222	1.5	240	Early Mature	2.9	Normal	Fair	С	2	20+	Remote survey only (RS) as per original version, no access
28	Cherry, Ornamental	7	2323	1.5	0	Early Mature	0.0	Moderate	Fair	С		10+	Remote survey only (RS) as original version, no access
29	Magnolia, Southern						0.0						as original version, no access
30	Ironwood, Persian						0.0						as original version, no access

Site:	12 West Park Village	Appe
		Арр

Date: 05/09/2019

Landmark Trees

Appendix 1

Landmark Trees Ltd 020 7851 4544 Surveyor(s): Kim Dear

Ref:

BS5837 Tree Constraints Survey Schedule

CZL_12PVW_AIM

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
31	Liquid Amber						0.0						as original version, no access
32	Birch, Silver	13	3432	4.0	245	Early Mature	2.9	Normal	Good	С	2	>40	Remote survey only (RS)
33	Birch, Silver	13	5667	4.0	450	Mature	5.4	Normal	Good	В	2	20+	Stubs and snags Remote survey only (RS)
G34	Yew, Common	5	1111	0.5	145	Semi- mature	1.7	Normal	Fair	С	2	20+	pair ornamental yew either side of steps
35	Privet	4	1223	1.5	100	Semi- mature	1.2	Moderate	Fair	С	2	20+	

TRIAL PIT RESULTS

A4.1 Seven trial pits were dug for the original proposals in April 2015 by Geotechnical Environmental Associates, with the additional trial pit number 8 dug on 5th August 2015 (the original trial pits 1, 4 & 6 were also re-opened on the 5th August 2015 for the Camden Tree Officer Nick Bell). The results for Trial Pits 1 – 7 are summarized below, with photographs and a full table summary also noted:

Trial Pit No	Structure	Foundation detail	Bearing Stratum
1	Southern Wall of Coach House	One tier concrete corbel Top 0.85 m Base 1.10m. Lateral projection 100mm	MADE GROUND (brown silty clay with red brick, concrete, coal, gravel and rootlets)
2	Internal western wall of Coach House	One tier concrete corbel with sloped edge Top 0.68 m Base 1.15 m Lateral projection 220 mm	MADE GROUND (brown sandy slightly silty clay with brick, concrete, coal fragments, gravel and rootlets)
3	Chimney stack on western wall of Coach House	Brick wall to base Base 1.15 m Lateral projection 0 mm	MADE GROUND (red brick fill with silty slightly clayey matrix)
4	Northern wall of Coach House	Brick Wall Base 0.50 m Lateral projection 0 mm	MADE GROUND (brown sandy silt with brick, concrete and abundant rootlets)
5	Eastern wall of Coach House	One tier brick corbel Top 0.75 m Base 1.2 m Lateral projection 60 mm	MADE GROUND (brown slightly sandy clayey silt with brick, concrete, gravel and roots)
6	Northern wall of gym	One tier brick corbel Top 0.15 m Base 0.7 m Lateral projection 400 mm	MADE GROUND (brown sandy silt with brick, concrete and abundant rootlets)
7	Southern wall of main house	Two tier with additional step up Top 0.22 m Base 0.5 m Lateral projection 400 mm	MADE GROUND (slightly sandy silty clay with rootlets, brick and concrete fragments)

Extract A4.1: Results from Trial Pits 1 – 7 (Source: Geotechnical Environmental Associates)

Table A4.1: Summary of all Trial Pit Results and Root Identification

Trial Pit	Results							
1	Top: 0.85m deep Base: 1.1m base and 100mm lateral projection							
Southern Wall of Coach House	Rootlets (fibrous roots) noted 1 root – hornbeam?							
2	Top: 0.68m deep Base: 1.15m base and 0mm lateral projection							
Internal western wall of Coach House	Rootlets (fibrous roots) noted 1 root – grape vine/Virginia creeper 1 root – grape vine/Virginia creeper 1 root – dead (birch) 1 root – shrub (aucuba) - dead							
3	Brick wall to base; Base: 1.15m and 0mm lateral projection							
Chimney Stack on western wall of Coach House	No roots							
4	Brick wall; Base: 0.5m and 0mm lateral projection							
Northern wall of Coach House	Abundant rootlets (fibrous roots) noted 1 root – ivy 1 root – lime							
5	One tier brick corbel							
Eastern Wall of	Top: 0.75m; Base: 1.2m and lateral projection 60mm							
Coach House	Roots noted							
6	One tier brick corbel							
Northern wall of	Top: 0.15m; Base: 0.7m and lateral projection 400mm							
gym	Abundant rootlets (fibrous roots) noted 1 root – plane – dead 1 root – plane 1 root – plane 1 root – plane 1 root – plane - dead							
7	Two tier with additional step up							
Southern wall of	Top: 0.22m; Base: 0.5m and lateral projection 400mm							
main house	Rootlets (fibrous roots) noted							
8 Fastern wall of main	Trench under concrete of approximately 0.6m depth – excavated below this to 0.82m							
house	No significant roots							



Photographs A4.1 - A4.4: Results from Trial Pit 8 showing one root in the paving slabs only



- A4.2 The roots/rootlets noted in Extract A4.1 above and Table A4 were identified by Richardson's Botanical Identifications (see letter below).
- A4.3 It has been agreed between the Tree Officer Nick Bell and Landmark Trees during the site meeting on the 5th August 2015 and subsequent emails that none of the trial pits contained significant roots. Whilst it was noted TP8 was a 'hole' rather than a trench, it was noted that the 600mm of concrete excavated to provide the trial pit evidence had clearly restricted root colonisation in this area.

INSERT ROOT IDENTIFICATION LETTER



Conisbee & Associates 4 Offord Street LONDON **N1 1DH**

Dr Ian B K Richardson BSc, PhD, CBiol, MiBiol, MiHort, FLS James Richardson BSc (Hons. Biology)

Enterprise House 49-51 Whiteknights Road Reading RG6 7BB

Tel: (0118) 986 9552 (Direct line) E-mail: richardsons@botanical.net Web: www.botanical.net

Your ref:	140627 - N. Nicholls
Our ref:	73/8701

10/04/2015

Dear Sirs

Park Village West

The samples you sent in relation to the above on 01/04/2015 have been examined. The structure was referable as follows (please note that no roots were found in TP3 (Internal coach house and PW with No 13 Park Village West)):

TP1 (External front elevation of coach house and PW with No 13 Park Village West), 0.25m

1 root: could well be CARPINUS (Hornbeam). Tentative - this sample was in POOR condition. Alive, recently*.

TP1 (External front elevation of coach house and PW with No 13 Park Village West), 0.70m

1 root: the family VITACEAE (Vitis (Grape-Vine), Parthenocissus (Virginia Creeper etc.)). Alive, recently*.

1 root: BETULA (Birch). A further sample, not examined in detail appeared similar under low magnification. Dead*.

TP2 (Internal coach house and PW with No 13 Park Village West), 0.60m

1 root: the family VITACEAE (Vitis (Grape-Vine), Parthenocissus (Virginia Creeper etc.)). Alive, recently*.

TP2 (Internal coach house and PW with No 13 Park Village West), 0.70m

1 root: the family VITACEAE (Vitis (Grape-Vine), Parthenocissus (Virginia Creeper etc.)). A further sample, not examined in detail appeared similar under low magnification. Alive, recently*. TP2 (Internal coach house and PW with No 13 Park Village West), 1.40m

1 root: a SHRUB, similar in some ways to AUCUBA (evergreen shrubs, often with large, variegated leaves). Tentative. Dead*.

TP4 (External rear elevation of coach adjacent to boundary with Pennethorne House and PW with No 13 Park Village West), 0.10m

1 root: HEDERA (Ivy); also the related FATSIA (a robust shrub with fig-like leaves). 7 further

TREE CONSTRAINTS PLAN



5N		
0N	 NOTE: This survey is of a preliminary nature. The trees were inspected from the on the basis of the Visual Tree Assessment method. No samples were ta analysis. No decay detection equipment was employed. The survey does arrangements that may be required in connection with the laying or remounderground services. Branch spread in metres is taken at the four cardinal points to derive an a representation of the crown. Root Protection Areas (RPA) are derived from stem diameter measured a above adjacent ground level (taken on sloping ground on the upslope sid base). 	ground only ken for a not cover the val of accurate at 1.5 m e of the tree
51	Landmark Trees Landmark Trees Landmark Trees Landmark Trees Landmark Trees	ees.co.uk
N	Site: 12 Park Village	1:100@ A1
	Drawing Title: Tree Constraints Plan	September 2019
	Key: Category A Category Cro High Quality Category B Root 13 Tree Category B Protection Spec Category C Category C Category C Area Category U Category U Tree Positio Category U Trees Unsuitable for Retention Spec Spec	wn Spread e Number ecies egory n Approximate on original

APPENDIX 4

ARBORICULTURAL IMPACT ASSESSMENT PLAN





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).







10n

5m



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).







10n