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Arboricultural Report

Client: Square Feet Architects

Site: 29-33 Arkwright Road, London NW3 6BJ

Survey undertaken: Trees in relation to design, demolition and construction – Recommendations.

Author: Frank Parsons
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1. Background:

This report is in conjunction to the tree survey attached, which has been undertaken to identify any trees within or affected by the proposed development at the site address that should be removed or retained and therefore protected during the proposed development. This report will outline tree categorization methodology with reference to BS 5837:2012.
The proposed site is within the London Borough of Camden Redington and Frognal conservation area. The local authority is the London Borough of Camden.

2. Clients Brief:

- To undertake a tree survey within the rear gardens of affected properties. Plan supplied by Square Feet Architects.

- To provide an Arboricultural report identifying the trees to be retained, removed or worked on within the proposed development and outline and evaluate the constraints posed by the trees retained on site via:

- Root Protection Area (RPA) – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of a tree, shown in plan form.

- Construction Exclusion Zone – Area based on the RPA, identified by an arboriculturalist, to be protected during development, including demolition and construction work, by the use of barriers and or ground protection, fit for purpose to ensure the successful long term retention of a tree.

- Arboricultural Implications Assessment – Study undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

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3. Scope:

The survey has been conducted in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

4. Site Observations:

The area of trees surveyed is located in the rear gardens of 29-33 Arkwright Road. Access was gained through the side passage of 29 and there is an access lane to the south of the proposed site located off Frognal. The rear gardens of 29 and 33 are connected by a pedestrian gate, which is located at the south boundary, adjacent to the access lane off Frognal. There is a significant downwards slope from north to south from rear elevations of exisiting buildings to rear boundaries of site and a gentler fall from east to west. The level difference between northern and southern boundaries is between 1550 and 2000mm. From east to west the level chance is approximately 1m. 27 trees grow within the 2 gardens varying from native to non-native, juvenile to mature as well as a group of 12 trees forming a lateral partition in the rear of 29 . The gardens are maintained to a good standard with no recent tree work apparent. The soil profile has been documented in the previous tree report as London clay, no soil sampling was carried out on site. One Pear tree within the rear garden of 33 holds a tree preservation order. The weather at the time of survey was clear with full sun and no wind.

5. The Proposed Development:

The construction of 2 detached, two storey dwellings in the south section of rear gardens adjacent to access lane. Combined with associated infrastructure and external landscaping works. Please refer to architects plans (referenced *1514_Prop_PLANS SECTIONS ELEVATIONS 190328_Part2)*

6. (i) Tree Survey
Attached as a separate pdf documents: Reference - ***FP/TS/241***

(ii) Survey Map - *attached as a separate pdf document identifying tree numbers and BS Tree Categories: Reference –* ***1514_Prop_PLANS SECTIONS ELEVATIONS 190328_Part1***

Below: Table 1 – Cascade chart for tree quality assessment

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Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see* ***4.5.7****.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

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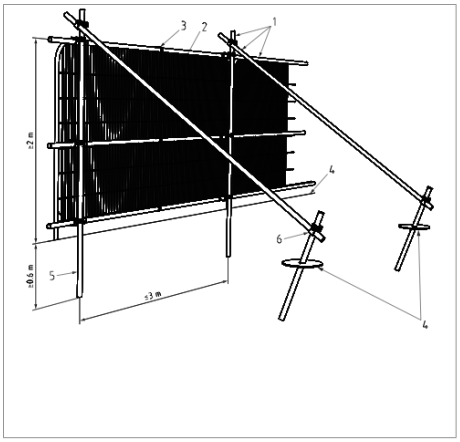
(iii) Tree Constraints Plan:
Attached as a separate pdf drawing illustrating tree numbers, BS categories and root protection areas: Reference ***TCP 1514_Prop_PLANS SECTIONS ELEVATIONS 190328_Part1***

7. (i) ***Construction Exclusion zones (CEZ's):***

Barriers and/or ground protection should protect trees that are being retained on site before any materials or light machinery are brought onto the site, and before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone. Erection and retention of a 2m high sturdy secure temporary fence, typically heras style, on a scaffold framework should be positioned along the CEZ calculated along side the RPA's of retained trees.
Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree. Barriers should be maintained to ensure that they remain rigid and complete. Pins can be driven in to the ground to ensure rigidity, or demarcation of barriers with spray will indicate whether or not the barriers have been moved. The mixing and storage of materials is prohibited within the construction exclusion zones, contractors and machinery are also prohibited within CEZ's to mitigate soil compaction. This should be communicated via the project manger at commencement of each stage of the development.

Fig.1 BS 5837:2012:
Example of typical tree protection fencing used to demarcate the calculated construction exclusion zone.



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(ii) ***Recommendations to mitigate or eliminate damage to tree roots within RPA's***

To mitigate severance of roots for foundation construction specialist methods should be used. Avoiding damage to roots is important for the stability and health of the tree, investigations should be carried out by means of hand tools or compressed air soil displacement, to a minimum depth of 750 mm to ascertain rooting activity within the calculated RPA's.
Beams, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation. Designs for foundations that would minimize adverse impact on trees should include particular attention to existing levels, proposed finished levels and cross-sectional details. In order to arrive at a suitable solution, site-specific and specialist advice regarding foundation design should be sought from the project architect, developer and an engineer.

(iii) ***Appropriate measures to eliminate or mitigate severance of roots for construction of a utility service***:

Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the routing and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA.
Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routing should be drawn up in conjunction with the project arboriculturalist. Trenchless insertion methods should be used with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected, excavation using hand-held tools might be acceptable for shallow service runs where applicable.

8. Arboricultural Implications Assessment:

The proposed development impacts the vegetation to the south of site. The table below summarises proposed tree and shrub removals to allocate for the proposed 2 new dwellings:

(i) Trees to be removed (Table 1)

Tree no.	Species	Comments	BS category
003	Elder	Mature tree with medium landscape contribution	C
004	Holly	Juvenile tree with low landscape contribution	C
006	Norway Maple	Semi mature tree with high landscape contribution – Replace with heavy standard same species at landscaping stage.	B
007	Lilac	Shrub with advanced decay at base	U
008	Sycamore	Mature self seeded tree with medium	C

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		landscape contribution	
009	Laburnum	Semi mature leaning tree with poor structural condition	U
010	Sycamore	Semi mature self seeded tree with medium landscape contribution	C
011	Lilac	Low level shrub, previously reduced	C
012	Euonymus	Multi stemmed shrub	C
017	Holly	Semi mature tree with medium landscape contribution	C
018	Pear	Mature tree in poor structural condition and high landscape contribution	C
027	Mimosa	Juvenile tree suppressed by vines with no arboricultural merit.	C

9 Trees and 3 shrubs on site have been recommended for removal in line with current design proposals. None of the neighbouring trees on adjacent land would be impacted by the proposed development. **T3, 7, 9, 11 and 12** are classified as either woody shrubs or in poor health and structural condition. **T6** would be the greatest loss to the landscape contribution and consent for removal should carry a replanting stipulation post completion of project to the south-east corner of site. **T4, 8, 10 and 17** hold a BS retention category of C and whilst vigorous their loss would make a small impact on the local landscape and would not have a significant adverse impact upon the character of the conservation area in which they grow. **T18** has a low safe useful life expectancy and has declined in physiological health since the last tree survey carried out in 2015. **T27** is suppressed by vines and has no arboricultural merit in the location it grows.

(ii) Trees to be retained (Table 2)

Tree no.	**Species**	**Comments**	**BS category**
001	Golden False Acacia	Grows in 25a Frognal and are unaffected by proposed development.	B
002	Privet	Grows within G1 / low landscape contribution.	C
005	Flowering Cherry	This tree has been felled since last tree survey.	
013	Hornbeam	A valuable group of trees within 29-33 rear garden and provide high landscape contribution, privacy for existing residents, significant contribution to visual amenity and wildlife.	C
014	Apple	See T13	B
014A	Flowering Cherry	See T13	C
014B	Purple Leaved Plum	See T13	C

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015	Pear	See T13	C
016	Flowering Cherry	See T13	C
019	Purple Leaved Plum	See T13	C
020	Wild Cherry	See T13	B
021	Plum	See T13	C
022	Pear	TPO tree – Proposed footprint overlaps RPA by 10.5m2 (10% of total RPA) Proposed Unit A on piled foundation / raised floor slab which will minimise disruption to roots.	C
023	Apple	See T13	B
024	Flowering Cherry	See T13	C
025	Purple Leaved Plum	See T13	B
026	Plum	See T13	B
028	Goat Willow	Grows outside the property boundary lines and is unaffected by the proposed development	C
G1	Hawthorn / Hornbeam	Group of 12 trees forming a hedge and lateral partition in rear garden of 29	B

T1 and T28 do not grow within the proposed site of 29-33 Arkwright Road and should be unaffected by the proposed development of 2 new dwellings. The remainder of trees in table 2 will not be impacted by demolition and construction provided the construction exclusion zone is in place and communicated throughout all stages of the project. Proposed foundations of unit A do impact approximately 10% of the RPA of T22. To minimize root desiccation in this instance see recommendations in section 7.(ii) of this report and specialist foundation methodology drawn up by the project engineer.

9. Conclusion

The proposed development considered in this report can be achieved without significant adverse impact upon existing visual public amenity or upon the health and future safe life of the retained trees surveyed in this report, so long as the tree report is communicated to contractors throughout all stages of the development and unnecessary disruption is avoided. The absence of subterranean proposals and plans to construct the 2 dwellings on piled foundations will minimize the need to excavate soil around tree roots therefore reducing the risk of root desiccation and future ill health in trees. The access to site is a well established concrete lane that can be used for extraction and delivery of materials. A construction exclusion zone would fence off any other retained trees throughout the course of the development. The downwards slope from north to south will ensure contaminants and water run off will be towards the access lane where drainage channels are present.

The replanting of 3 heavy standard trees in the front of completed dwellings would replace some

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loss of landscape in the very local vicinity, which should be a condition of the removal of T6 and T18.

13. References:

- BS 5837:2012 – Trees in relation to design, demolition and construction – Recommendations
- Original scale site survey supplied by Square Feet Architects.