### Arboricultural impact analysis

Trees at and adjacent to

Proposed development site 29-33 Arkwright Road London NW3 6BJ

for

**Square Feet Architects** 

## Skerratt

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### 1. Introduction

- 1.1 This report contains a detailed appraisal of 30 trees growing in or adjacent to a proposed residential development site at the rear of 29 to 33 Arkwright Road, London NW3 6BJ.
- 1.2 The report considers the health and safety of the trees under their current growing conditions and assesses the likely impact of the proposed development measured against the advice and guidance set out in *BS5837* 2012: Trees in relation to design, demolition and construction *Recommendations.*
- 1.4 The scheme considered in this analysis is a revision of an earlier scheme for the same site (see *Skerratt: Arboricultural Impact Analysis, trees at and adjacent to proposed development site, 29-33 Arkwright Road, London NW3 6BJ* dated 25.10.15
- 1.5 The site inspection on which this report is based took place on the afternoon of Friday 22 May 2015 in overcast but dry conditions.
- 1.6 The report was commissioned by Square Feet Architects on behalf of the client by email.
- 1.7 I have been provided with the following drawings and documents in digital format (pdf and dwg):
  - EDI Surveys Drawing No.: 14988/T/01-01 Topographic Survey (dwg)
  - Square Feet Architects Drawing No. 1514-L-041 Rev A Proposed Site Plan (pdf and dwg)
- 1.8 The Tree survey plan in Appendix a is based on EDI Surveys Drawing No. 14988/T/01-01 and additional on-site measurements. The Tree constraints and removals plan in the same appendix is based on Square Feet Architects Drawing No. 1514-L-041 Rev A.



### 2. Background information

#### 2.1 Layout, boundaries and topography

- 2.1.1 The trees referred to in this report stand in the garden of 25A Frognal (Trees 001 and 005), the rear gardens of 29 and 33 Arkwright Road (Trees 002 004 and 006-027 inclusive) and on the side of the access drive to 25B Frognal (Tree 028).
- 2.1.2 The rear gardens of 29 and 33, in which the proposed development site is located, have a significant downwards slope from north to south and fall more gently from east to west. The level difference between the northern and southern boundaries of the proposed development site is between 1550 and 2000mm. From east to west the level change is about 1000mm
- 2.1.3 The **Tree survey plan** in **Appendix a**, which is based upon EDI Surveys' topographic survey of the site (Drawing No. 14988/T/01-01) shows details of the layouts of the different parcels of land with spot levels, giving a clear indication of level changes within the site as a whole.

#### 2.2 Geology and soils

- 2.2.1 According open-source British Geological Survey (BGS) data, the combined site is situated upon deep Palaeogene London Clay bedrock.
- 2.2.2 No soil sampling was carried out on site.

#### 2.3 Planning constraints

- 2.3.1 The site is within the London Borough of Camden Redington and Frognal Conservation Area
- 2.3.2 A mature Pear tree numbered 022 in the **Tree survey schedule** in **Appendix a** is subject to a Tree preservation Order (TPO).

#### **2.4** The trees

2.4.1 The trees referred to in this report are described in detail in the **Tree survey** schedule in Appendix a.

#### 2.5 The proposed development

- 2.5.1 The main components of the proposed development include:
  - The construction of 2 detached, two-storey dwellings
  - Associated infrastructure and external works

## 3. Analysis

#### 3.1 General

- 3.1.1 The **Tree constraints and removals plan** in **Appendix a** shows the recommended Root Protection Area (RPA) for each tree, arranged symmetrically around the main stem and highlights the primary potential area of conflict between proposed development and retention of existing trees, namely conflicting demands for space at and below ground level.
- 3.1.2 There are no significant, quantifiable existing barriers within the site to the lateral spread of roots.

#### **3.2** Trees to be removed

3.2.1 **Table 1** below summarises proposed tree and shrub removals, 11 trees or large shrubs in total.

Tree	Species	Comments	Retention Category
002	Privet (Ligustrum ovalifolium)	3m high: one-sided shrub: limited future safe life: removal not essential for development purposes	C
003	Elderberry (Sambucus nigra)	6m high: leaning stem: one-sided: limited future safe life: removal not essential for development purposes	C
004	Holly (Ilex aquifolium)	Single leaning stem: depends on 003 for visual context: removal not essential for development purposes	C
007	Lilac (Syringa vulgaris)	4m high: leaning: advanced decay	U
008	Sycamore (Acer pseudoplatanus)	Natural seedling origin: high narrow crown	С
009	Laburnum (Laburnum anagyroides)	6m high: single leaning stem: very one- sided crown	С
010	Sycamore (Acer pseudoplatanus)	Natural seedling origin	С
011	Lilac (Syringa vulgaris)	Leaning and very one sided	U
012	Japanese Spindle (Euonymus japonicus)	Small multi-stemmed shrub	С
018	Pear (Pyrus communis)	Decayed and slowly disintegrating	С
027	Acacia (Acacia dealbata)	A 2m high branchless stem	С

#### Table 1: Summary of trees to be removed

3.2.2 2 of these 11 trees and large shrubs (Lilacs 007 and 011) are listed for removal on the basis of their current condition, whether or not the development goes ahead.

- 3.2.3 The removal of a further 3 large shrubs /small trees (Privet 002, Elderberry 003 and Holly 004) is proposed in order to create clear space for replanting with better long-term prospects.
- 3.2.4 The remaining 6 trees (self-sown Sycamores 008 and 010, Laburnum 009, Japanese Spindle 012, decaying Pear 018 and Acacia 028) make a small and very local contribution to public visual amenity and, in my opinion, their removal will not have a significant adverse impact upon the character of the Conservation Area in which they stand.

#### **3.3** Trees to be retained

- 3.3.1 The remaining 19 trees referred to in this report are to be retained.
- 3.3.2 14 of them Trees 013, 014, 014A, 014B, 015, 016 and 019-026 inclusive together with a roughly 4m high section of mixed Hornbeam and Hawthorn hedge, make up a substantial group, separating the proposed development site from the garden areas immediately to the rear of 29 and 33 Arkwright Road.
- 3.3.3 These trees and shrubs are visually important and make a useful contribution to the Conservation Area and to the privacy of the occupants of 29 and 33 Arkwright Road.
- 3.3.4 The other 5 trees to be retained (001, 005, 006, 017, 028) are individual trees, two of which False Acacia 001 and Flowering Cherry 005- stand within the property boundary of 25A Frognal and are unaffected by the proposals considered here.
- 3.3.5 **Table 2** overleaf summarises the likely impacts upon retained trees (001 and 005 excluded for the reason discussed above).
- 3.3.6 The footprints of the 2 proposed dwellings overlap the RPAs of Trees 017 (Holly) and 022 (Pear).
- 3.3.7 In both cases the overlaps do not exceed 10% of total RPA and there is open undeveloped ground contiguous with both Root Protection Areas on their off-site sides.
- 3.3.8 It is proposed to construct both dwellings on small-diameter piles with a shallow floor slab positioned wholly above existing ground level, thus avoiding the need for excavation to reduced levels for strip foundations and other sub-structure components.
- 3.3.9 Sycamore 028 is already separated from the proposed construction site by an existing brick boundary wall.

Tree No.	Species	Comments	Retention Category
006	Norway Maple (Acer platanoides)	See 005	С
013	Hornbeam (Carpinus betulus)	See 005	С
014	Apple (Malus domestica var.)	See 005	В
014A	Flowering Cherry (Prunus serrulata var.)	See 005	С
014B	Purple Leaved Plum (Prunus cerasifera 'Atropupurea')	See 005	С
015	Pear (Pyrus communis)	See 005	С
016	Flowering Cherry (Prunus serrulata var.)	See 005	С
017	Holly (Ilex aquifolium)	Proposed footprint of Unit B overlaps RPA by 1.5m <sup>2</sup> (9% of total): proposed Unit B piled foundation/raised floor slab will minimise disruption	С
019	Purple Leaved Plum (Prunus cerasifera 'Atropupurea')	See 005	С
020	Wild Cherry (Prunus avium)	See 005	В
021	Plum (Prunus domestica var.)	See 005	C+
022	Pear (Pyrus communis)	Proposed footprint overlaps RPA by 10.5m <sup>2</sup> (10% of total): possible minor disruption during making good: proposed Unit A piled foundation/raised floor slab will minimise disruption	В
023	Apple (Malus domestica var.)	See 005	В
024	Flowering Cherry (Prunus serrulata var.)	See 005	С
025	Purple Leaved Plum (Prunus cerasifera 'Atropupurea')	See 005	В
026	Plum (Prunus domestica var.)	See 005	В
028	Sycamore (Acer pseudoplatanus)	See 005	С

Table 2: Summary of impacts on trees to be retained

### 4. Conclusions

- 4.1 The development considered in this report can be achieved without significant adverse impact upon existing public visual amenity or upon the health and future safe life of retained trees, as long as *unnecessary* disruption is avoided.
- 4.2 The proposal to construct the dwellings on piled foundations with internal ground floor level raised above existing external levels, will minimise or eliminate the need for excavation to reduced levels. Details of the proposed construction method can be covered by an appropriately worded condition.
- 4.3 Disruption in the course of proposed external works must be minimised but, in comparison with the earlier proposal referred to in 1.3 above, the extent of proposed hard landscaping has been significantly reduced.
- 4.4 Underground service connection routes have not yet been specified. Care will be needed to ensure that service connections do not necessitate disruption within the RPAs of retained trees.
- 4.5. Proposed mitigation planting (see Square Feet Architects Drawing No. 1514-L-041 Rev A) will significantly reinforce and extend the current tree resource

# Appendix a

Tree survey schedule Tree survey plan Tree constraints and removals plan

# Explanatory notes

For general information on any entry in the detailed survey text, refer to the notes below which are organised on a column by column basis.

#### **Tree number**

All trees have been numbered in the survey text to correspond to the location numbers shown on the accompanying Tree survey plan. No trees have been marked on site.

#### Species

Common English names have been used wherever possible and Latin names are listed (in brackets in *italics*) in all cases.

#### Dimensions

**Height** - are recorded in m.

**Stem diameter** – recorded in mm at breast height (1.5m) wherever possible. Where measurement at 1.5m is not possible, one of the alternative methods set out in *Annex C of BS5837:2012* has been used.

If the diameter has been measured at a different height, this has been recorded, e.g. 60 @ 1m = 60mm diameter at 1m height. Other abbreviations used:

av - average	est/e - estimated	
ms - multi-stemmed	max – maximum	gl - ground level

**Crown spread** - radial crown spreads in metres have been recorded at four points on the circumference of the crown (north, east, south and west). The accompanying Tree survey plan shows approximate crown shapes based on these measurements

Crown height - the height of the first major branch and the height of the lowest point of the crown are recorded in metres eg 3/3

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# Explanatory notes

Age

Y	Young	SM	Semi-mature
EM	Early mature	Μ	Mature
OM	Over-mature		

Where the precise age of a tree is known, it has been recorded in brackets adjacent to the general classification i.e. M(7).

#### Condition

#### **Physiological condition**

Gives a measure of biological vigour and of the presence or absence of disease, insect attack or other debilitating factors.

- G Good
- F Fair
- P Poor

#### **Structural condition**

Gives a measure of each tree's physical form and mechanical stability.

- G Good
- F Fair
- P Poor

#### Comments

Additional descriptive notes on the tree's shape, local environment and condition.

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# Explanatory notes

#### Recommendations

Preliminary management recommendations under existing conditions

#### Life expectancy

An approximate estimate for each tree's anticipated future safe life in the following ranges:

<10 years 10-20 years 20-40 years 40+ years

#### **Retention category**

This grading is based on the recommendations set out in BS 5837:2012 *Trees in relation todesign, demolition and construction* - *Recommendations.* The categories are summarised in the standard as follows:

- A Trees of high quality with an estimated remaining safe life of at least 40 years
- B Trees of moderate quality with an estimated remaining safe life of at least 20 years
- C Trees of low quality with an estimated remaining safe life of at least 10 years, or young trees with a stem diameter below 150mm
- U Trees 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

In addition the British Standard requires one or more subcategories to be applied to the main Retention Category. In summary these are as follows:

- 1 Mainly arboricultural qulaities (that is individual aesthetic characteristics)
- 2. Mainly landscape qualities
- 3. Mainly cultural values, including conservation

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### Tree survey schedule

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Tree No.	Species	Height (m)	Diam (mm)	Cro	own S	pread	d (m)	Crown Height (m)	Age	Physiological Condition	Structural Condition	Comments	Recommendations	Life Expectancy	Retention Category	Retention Sub- category
				Ν	Е	S	W									
001	Golden False Acacia ( <i>Robinia pseudoacacia</i> 'Frisia')	15	400 est	5	4	6	5	3/2	EM	G	G	Single upright stem: well balanced crown: significant minor dead wood: still not fully in leaf at time of inspection	Review (general condition)	?	В	1
002	Privet (Ligustrum ovalifolium)	3	50/ 50/ 75	0	1	3	2	0/0	SM	G	F	Single stem forks near ground level into 3: one sided crown	No action required	10-20	С	2
003	Elderberry (Sambucus nigra)	6	380 @ gl	3	3	4	5	0/2	ОМ	F	Р	Single very leaning stem forks near ground level into 4: very open rather one sided crown	No action required	10-20	с	2
004	Holly ( <i>llex aquifolium</i> )	7	180	0	1	2.5	; 2.5	2/1	SM	G	F	Single leaning stem: one sided crown (to S and W): depends on 003 for visual context: a female plant wirh developing berries	No action required	20-40	с	2
005	Flowering Cherry (Prunus serrulata var.)	8	180/ 200/ 200	3.5	2	3.5	5 4	0/2	М	F	F	Three stemmed: rather one sided (to S and W)	No action required	10-20	С	1/2
006	Norway Maple ( <i>Acer platanoid</i> es)	9	210	2	3	3.5	; 3.5	3/2	SM	G	F	Single upright stem: quite well balanced overall: dead branch stubs at 1.8m: rope around main stem	Remove rope round main stem	20-40	С	1/2
007	Lilac (Syringa vulgaris var.)	4	120	-3	3	5.5	; 1	2/2	ОМ	F	Р	Very leaning stem: very one sided crown (to S): advanced decay	Remove	<10	U	2
008	Sycamore (Acer pseudoplatanus)	12	170	2.5	2	3	2.5	2/2	SM	G	G	Single upright stem with slight sweep (localised curvature) at base: stem forks at 4m into 2: quite well balanced rather narrow crown: of natural seedling origin	No action required	40+	С	1/2
009	Laburnum (Laburnum anagyroides)	6	90	2	0	1	2.5	1/2	SM	F	Р	Single leaning stem: very one sided crown (to N and W)	No action required	10-20	с	2
010	Sycamore (Acer pseudoplatanus)	12	220	3	3.5	3.5	; 3	3/2	SM	G	G	Single upright stem: kink at 2m: narrow quite well balanced crown: of natural seedling origin	No action required	20-40	С	2
011	Lilac (Syringa vulgaris var.)	6	170	6	4	-2.5	5 0	1/1	М	F	Р	Single very leaning stem forks at 1m into 2: very one sided (to N)	Remove	<10	U	2
012	Japanese Spindle (Euonymus japonicus)	3	120/ 120/ 120	2.5	3	2.5	; 1	0/1	м	G	G	Multi-stemmed shrub originating from a single point: one sided (away from N)	No action required	10-20	С	2
013	Hornbeam (Carpinus betulus)	12	120/ 180	3	5.5	5.5	5 2	2/2	SM	G	F	2 stems: the larger has a deep vertical cleft in the main stem (but not decayed): very one sided crown (needs 014 and 015 for visual context)	No action required	20-40	С	1/2

### Tree survey schedule

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Tree No.	Species	Height (m)	Diam (mm)	Cro	own S	sprea	d (m)	Crown Height (m)	Age	Physiological Condition	Structural Condition	Comments	Recommendations	Life Expectancy	Retention Category	Retention Sub- category
				Ν	Е	S	W									
014	Apple ( <i>Malus domestica</i> variety)	7	290	3	3	2	3.5	1/2	М	G	G	Single slightly leaning stem: main branch fork at 1m: well balanced crown	No action required	20-40	В	1/2
014A	Flowering Cherry (Prunus serrulata var.)	7	50	1	1	1	1	2/2	Y	G	G	Single upright stem: still staked	Young tree maintenance	40+	с	2
014B	Myrobalan Plum (Prunus cerasifera)	5	50	1.5	1.5	1.5	5 1.5	1/1	Y	G	G	Single upright stem: well balanced narrow crown	Young tree maintenance	20-40	с	2
015	Pear (Pyrus communis)	12	430	3	4	3	3	1/3	м	G	F	Single leaning stem: main branch fork at 1.5m with 5 main crown limbs above, 4 of which are significantly decayed	Review (future safe life)	40+	с	2
016	Flowering Cherry (Prunus serrulata var.)	10	120/ 150	3	4.5	3.5	5 1	0/2	EM	F	Р	Single leaning stem forks at 0.5m into 2: very one sided crown (to E): cavity at base (adjacent decayed stem): surface rooting habit	No action required	10-20	с	2
017	Holly ( <i>llex aquifolium</i> )	9	190	3	2.5	1.5	5 1.5	3/2	SM	G	F	Single leaning stem (sweep at 1m): quite well balanced narrow crown: a female plant	No action required	20-40	С	1/2
018	Pear (Pyrus communis)	12	400	3	3.5	2	4	1/2	ом	G	Ρ	Single upright stem forks at 1m into 3: large pocket of decay and one split limb above main branch fork: further collapse likely: height and spread reduced in the past	Reduce to 3m and allow to regrow	10-20	С	1/2
019	Purple Leaved Plum (Prunus cerasifera 'Atropurpurea'	5	85	2.5	2	2	1	2/2	SM	G	G	Single slightly leaning stem: quite well balanced crown: first lateral limb at 1.5m: epicormic growths (growths from dormant buds on branch surface)	Remove epicormic growths	20-40	с	2
020	Wild Cherry (Prunus avium)	12	230/ 280	3	3	3	3	0/4	м	G	G	Two stemmed: high rather narrow crown, recently lifted	No action required	20-40	В	1/2
021	Plum (Prunus domestica variety)	6	100 @ 1m	2	3.5	3	1	1/1	SM	G	G	Single leaning stem: main branch fork at 1m: quite well balanced crown	No action required	20-40	C+	1/2
022	Pear (Pyrus communis)	13	470 @ 1m	3	4	3.5	5 3	2/3	м	G	F	Single upright stem: main branch fork at 2m: rather open but well balanced crown: branch stubs (from previous incomplete pruning) and dead wood	Remove dead wood	20-40	В	1/2
023	Apple ( <i>Malus domestica</i> <i>variety</i> )	6	230	3	3	3	3	2/1	м	G	G	Single slightly leaning stem: main branch fork at 1.5m but 2 lateral limbs originate below this point: well balanced crown: ivy	Remove ivy and 2 lowest lateral limbs	20-40	В	1/2
024	Flowering Cherry (Prunus serrulata var.)	4	80	2	2	1	1	0/1	SM	G	F	Single upright stem forks at 0.3m into 2: rather one sided crown	No action required	20-40	с	2
025	Purple Leaved Plum (Prunus cerasifera 'Atropurpurea'	8	140/ 130	3.5	2	4.5	5 5	0/2	EM	G	G	Single leaning stem forks at 0.5m into 2: rather one sided crown: makes a group with 026	No action required	20-40	В	1/2
026	Plum (Prunus domestica variety)	9	320	5	4	4	3.5	2/2	м	G	G	Single leaning stem: ivy to 2m: see 025	Remove ivy	20-40	В	1/2
027	Acacia (Acacia dealbata)	3	130	1	1	1	1	2/2	SM	G	Р	Single upright stem recently pollarded at 2m: regrowths are vigorous	No action required	20-40	с	2

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### Tree survey schedule

Tree No.	Species	Height (m)	Diam (mm)	Cro	own S	Sprea	.d (m)	Crown Height (m)	Age	Physiological Condition	Structural Condition	Comments	Recommendations	Life Expectancy	Retention Category	Retention Sub- category
				N	E	S	w									
028	Sycamore/ Goat Willow (Acer pseudoplatanus/ Salix caprea)	7	80/ 120/ 180	2.5	3	2.5	5 3	0/2	Y	G	G	Two stemmed Sycamore ( one sided to E) and a single Goat Willow with a single leaning stem forks at 0.5m into 2: one sided (to N)	No action required	20-40	с	1/2
029	London Plane ( <i>Platanus x hispanica</i> )	17	250/ 450/ 450/ 450	5	6	5	4	1/2	ОМ	G	G	Massive single upright stem forks at 1m into 4: well balanced crown - height and spread reduced in the past: stands close to the top of a 3m retaining wall	No action required	40+	В	1
030	Norway Maple (Acer platanoides)	16	170	3	1	2	3	6/8	SM	G	F	Single upright stem with kink at 1m: high narrow one sided crown: 030-041 inclusive make up a loose group with woodland characteristics	No action required	20-40	с	2
031	Norway Maple (Acer platanoides)	18	270 est	3	2	7	4	5/7	SM	G	F	0310 and 032 make up an interdependent group: 031 has a leaning stem and ivy to 10m+: minor dead wood: crown spread values are for the group as a whole	Remove ivy	20-40	B (Group)	2
032	Norway Maple (Acer platanoides)	18	360 est	3	2	7	4	3/4	SM	G	F	Single leaning stem: ivy to 10m+: see 031	Remove ivy	20-40	B (Group)	2
033	Norway Maple (Acer platanoides)	17	170/ 210	2	6	4	3	0/6	SM	G	F	Single leaning stem forks at 0.5m into 2: one sided (to E): decaying	Remove	<10	U	2
034	Pedunculate Oak (Quercus robur)	19	360	5	6	5.5	5 3.5	5/6	EM	G	G	Single leaning stem: quite well balanced high narrow crown: ivy to 6m+: relies on 037 for visual impact and stability	Remove ivy	20-40	B (Group)	2
035	Norway Maple (Acer platanoides)	19	290	3	4	-1	0	3/10	SM	G	F	Single upright stem forks into 2 at 2m leaning above that point: high narrow crown (one sided to E): light ivy to 4m	Remove ivy	20-40	с	2
036	Sycamore (Acer pseudoplatanus)	19	380	4	2	0	5	6/6	SM	G	F	Single slightly leaning stem: high narrow crown one sided (to NW): ivy to 10m+	Remove ivy	20-40	B (Group)	2
037	Norway Maple (Acer platanoides)	19	380	4	4	8	4	3/6	SM	G	F	Single very slightly leaning stem forks at 3m into 2: decaying pruning wound at 3m: high narrow one sided crown (to S)	No action required	20-40	B (Group)	2
038	Norway Maple (Acer platanoides)	19	320/ 360	1	2	8	5	4/4	EM	G	F	Two leaning stems: ivy to 10m+: one sided crown (to S and W)	Remove ivy	20-40	B (Group)	2
039	Norway Maple (Acer platanoides)	9	160	3	3	3	4	2/2	SM	G	G	Single upright stem (sweep at base): quite well balanced crown	No action required	40+	С	1/2
040	Norway Maple (Acer platanoides)	7	240	3.5	2	3	3	2/2	SM	G	F	Single very slightly leaning stem: ivy to 4m+: crown very one sided (to N)	Remove ivy	40+	С	2
041	London Plane ( <i>Platanus x hispanica</i> )	12	400	4	3	4	3	4/2	SM	G	F	Single upright stem: one side crown (to W): ivy to 10m+: basal growths	Remove ivy and basal growths	40+	В	1/2





