Arboricultural impact analysis

Trees at and adjacent to

Proposed development site adjacent to
25B Frognal
London
NW3 6BJ

for

Square Feet Architects

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1. Introduction

1.1 This report contains a detailed appraisal of 13 trees growing adjacent to a proposed residential development site adjacent to 25B Frognal, London NW3 6AR.

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.*

1.3 The site inspection on which this report is based took place on the afternoon of Friday 22 May 2015 in overcast but dry conditions.

1.4 The report was commissioned by Square Feet Architects on behalf of the client in an email dated 20 May 2015.

1.5 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-001 – 1:1250 Site Plan (pdf)
- Square Feet Architects Drawing No. 1514-L-002 – Site Photos (pdf)
- Square Feet Architects Drawing No. 1514-L-003 – Existing Site Plan (pdf)
- Square Feet Architects Drawing No. 1514-L-005 – Proposed Site Plan (pdf)
- Square Feet Architects Drawing Nos. 1514-L-011 & 012 – Existing Plans, Elevations and Sections
- Square Feet Architects Drawing Nos. 1514-L-021-028 – Proposed Plans, Elevations and Sections

1.6 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 plan** in the same appendix is also based on EDI Surveys Drawing No. 14988/T/01-01 with the footprint of the proposed development overlaid.

2. Background information

2.1 Layout, boundaries and topography

2.1.1 The proposed development site is currently occupied by 2 single storey garages, part of a block of 6.

2.1.2 The garages are currently accessible from Frognal, along an unsurfaced drive.

2.1.3 Immediately to the west of the drive and the garage block the ground drops steeply by about 5m to a hard surfaced car park at the rear of commercial premises on Finchley Road. A retaining wall contains the change in levels.

2.2 Geology and soils

2.2.1 According to 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 proposed development site is within and on the edge the London Borough of Camden Redington and Frognal Conservation Area

2.3.2 At time of writing, it is not known whether any of the trees referred to in this survey are covered by 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 proposed development comprises the demolition of 2 existing garages and the construction of a 3 storey (lower ground, upper ground and first floors) dwelling on their footprint.

3. Analysis

3.1 General

3.1.1 The **Tree constraints 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 It is probable that, in view of the abrupt change in levels to the west of T029, the RPA of this London Plane is not distributed as drawn but there is insufficient information available to me to generate a more realistic configuration.

3.2 Trees to be removed

3.2.1 No trees are to be removed for the purposes of carrying out the proposed development.

3.3 Trees to be retained

3.3.1 London Plane T029 grows at the top of and not far distant from a roughly 5m high retaining wall running along the eastern edge of a hard surfaced car park at the rear of commercial premises in Finchley Road.

3.3.2 This large mature tree has been severely reduced in height and spread in the past, probably on more than one occasion, and has developed an attractive almost spherical crown as a result.

3.3.3 I have assumed that the reduction was carried out as a safety precaution to minimise the risk of partial or complete collapse given the tree's exposed position, and of its root system causing structural damage to the retaining wall. Taking these considerations into account, it is likely in my view that periodic reduction in height and spread will be necessary in the future.

3.3.4 There is no overlap between the proposed development and the RPA of this trees as drawn on the **Tree constraints plan** in **Appendix a,** but it is entirely possible that the symmetrical distribution illustrated is not an accurate representation. It would, however, be difficult if not impossible to generate a more realistic configuration without prohibitive expense and physical disruption.

3.3.5 Taking into account the factors referred to immediately above, it is my opinion that the proposed development will not have an adverse impact upon the stability or future safe life of London Plane T029 as long as *unnecessary* disruption is avoided.

3.3.6 In making this judgement I have taken into account that previous reductions in height and spread will have tended to suppress root activity and that, as a result, the formula set out in *BS5837:2012* for RPA calculation may overstate the true extent of this Plane's root system.

3.3.7 With regards to the remaining trees considered in this analysis – Trees 030 to 041 inclusive, a large group with woodland characteristics immediately to the south of the site considered here - there is no overlap between any RPA and the footprint of the proposed development.

3.3.8 With regard to risks during construction, assuming that access will be from the hard surfaced car park at the rear of the commercial premises on Finchley Road and that there will be no construction works outside the plot boundary, there need not be any adverse impacts from site traffic and construction operations.

4. Conclusions

4.1 The development considered in this report can be achieved without significant adverse impact upon the stability or future prospects of adjacent trees as long as unnecessary risks are avoided.

4.2 To ensure that this is the case, the site and the proposed construction access route should be separated from adjacent trees.

4.3 In the case of the plot itself, hoarding or fencing meeting the standards for tree protection fencing set out in *BS5837:2012* along the complete plot boundary would provide adequate protection. The **Tree protection plan** in **Appendix a** shows a proposed alignment for such a fence.

4.4 With regard to the construction access route, this should be specified in the conditions attached to any consent. If it is from the car park referred to above, the significant difference in levels the site access point and the bases of the trees referred to in this report will provide sufficient protection for retained trees.

Appendix a

Tree survey schedule
Tree survey plan
Tree constraints plan
Tree protection 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

Explanatory notes

Age

Y	Young	SM	Semi-mature
EM	Early mature	M	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.

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

Tree survey schedule

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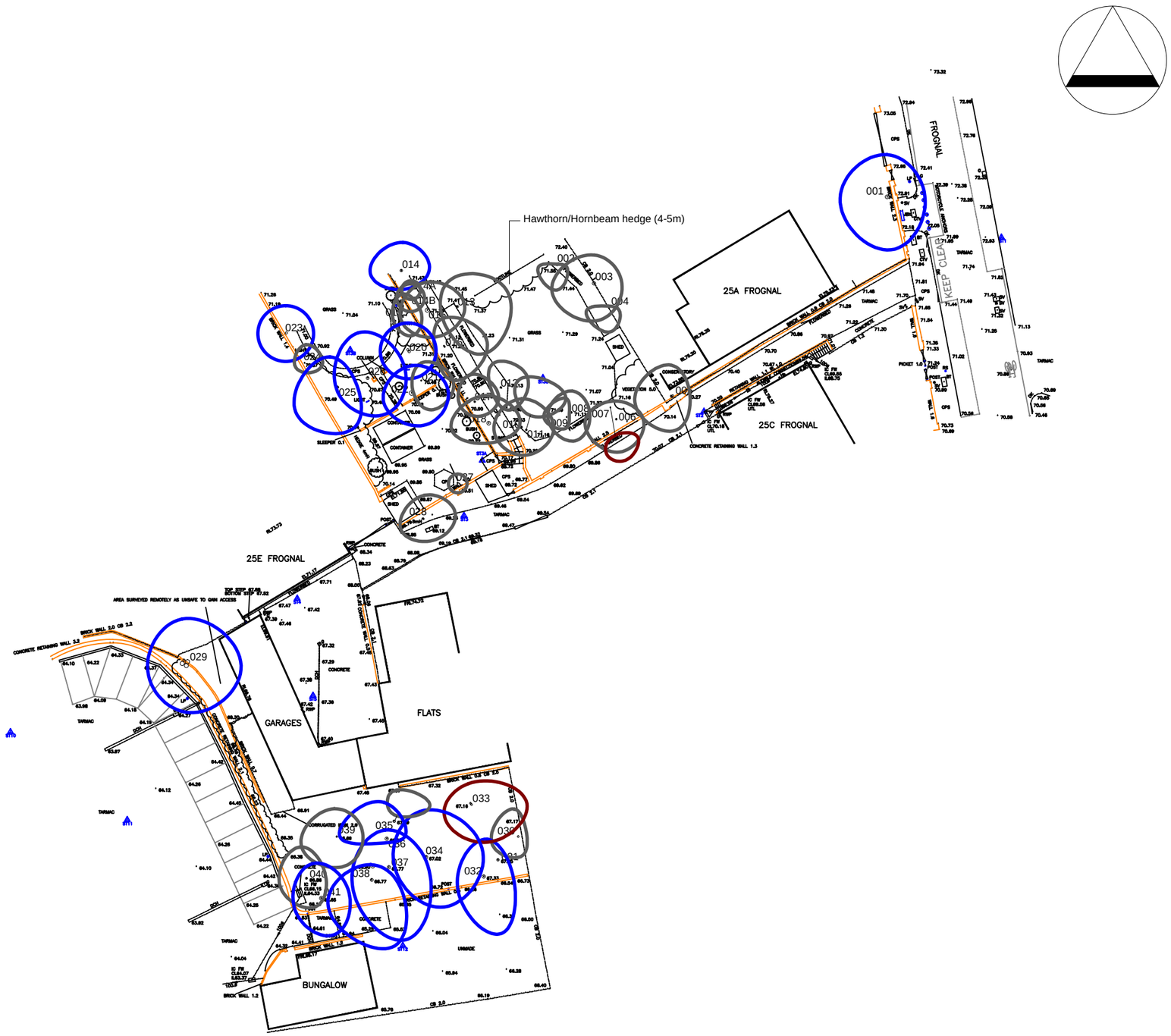
Tree No.	Species	Height (m)	Diam (mm)	Crown Spread (m)				Crown Height (m)	Age	Physiological Condition	Structural Condition	Comments	Recommendations	Life Expectancy	Retention Category	Retention Sub-category
				N	E	S	W									
001	Golden False Acacia (*Robinia pseudoacacia 'Frisia'*)	15	400 est	5	4	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)	?	B	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	C	2
003	Elderberry (*Sambucus nigra*)	6	380 @ gl	3	3	4	5	0/2	OM	F	P	Single very leaning stem forks near ground level into 4: very open rather one sided crown	No action required	10-20	C	2
004	Holly (*Ilex aquifolium*)	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	C	2
005	Flowering Cherry (*Prunus serrulata var.*)	8	180/ 200/ 200	3.5	2	3.5	4	0/2	M	F	F	Three stemmed: rather one sided (to S and W)	No action required	10-20	C	1/2
006	Norway Maple (*Acer platanoides*)	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	C	1/2
007	Lilac (*Syringa vulgaris var .)*	4	120	-3	3	5.5	1	2/2	OM	F	P	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+	C	1/2
009	Laburnum (*Laburnum anagyroides)*	6	90	2	0	1	2.5	1/2	SM	F	P	Single leaning stem: very one sided crown (to N and W)	No action required	10-20	C	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	C	2
011	Lilac (*Syringa vulgaris var .)*	6	170	6	4	-2.5	0	1/1	M	F	P	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	M	G	G	Multi-stemmed shrub originating from a single point: one sided (away from N)	No action required	10-20	C	2
013	Hornbeam (*Carpinus betulus*)	12	120/ 180	3	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	C	1/2

Client: Square Feet Architects
Location: 29-33 Arkwright Road, London NW3 6BJ
Date: 22.05.15
Job No.: 370

Tree No.	Species	Height (m)	Diam (mm)	Crown Spread (m)				Crown Height (m)	Age	Physiological Condition	Structural Condition	Comments	Recommendations	Life Expectancy	Retention Category	Retention Sub-category
				N	E	S	W									
014	Apple (*Malus domestica variety*)	7	290	3	3	2	3.5	1/2	M	G	G	Single slightly leaning stem: main branch fork at 1m: well balanced crown	No action required	20-40	B	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+	C	2
014B	Myrobalan Plum *(Prunus cerasifera)*	5	50	1.5	1.5	1.5	1.5	1/1	Y	G	G	Single upright stem: well balanced narrow crown	Young tree maintenance	20-40	C	2
015	Pear *(Pyrus communis)*	12	430	3	4	3	3	1/3	M	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+	C	2
016	Flowering Cherry (*Prunus serrulata var.*)	10	120/ 150	3	4.5	3.5	1	0/2	EM	F	P	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	C	2
017	Holly (*Ilex aquifolium*)	9	190	3	2.5	1.5	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	C	1/2
018	Pear *(Pyrus communis)*	12	400	3	3.5	2	4	1/2	OM	G	P	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	C	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	C	2
020	Wild Cherry (*Prunus avium*)	12	230/ 280	3	3	3	3	0/4	M	G	G	Two stemmed: high rather narrow crown, recently lifted	No action required	20-40	B	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	3	2/3	M	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	B	1/2
023	Apple (*Malus domestica variety*)	6	230	3	3	3	3	2/1	M	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	B	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	C	2
025	Purple Leaved Plum (*Prunus cerasifera 'Atropurpurea'*	8	140/ 130	3.5	2	4.5	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	B	1/2
026	Plum (*Prunus domestica variety*)	9	320	5	4	4	3.5	2/2	M	G	G	Single leaning stem: ivy to 2m: see 025	Remove ivy	20-40	B	1/2
027	Acacia (*Acacia dealbata*)	3	130	1	1	1	1	2/2	SM	G	P	Single upright stem recently pollarded at 2m: regrowths are vigorous	No action required	20-40	C	2

Client: Square Feet Architects
Location: 29-33 Arkwright Road, London NW3 6BJ
Date: 22.05.15
Job No.: 370

Tree No.	Species	Height (m)	Diam (mm)	Crown Spread (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	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	C	1/2
029	London Plane (*Platanus x hispanica*)	17	250/ 450/ 450/ 450	5	6	5	4	1/2	OM	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+	B	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	C	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	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	C	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+	C	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+	C	2
041	London Plane (*Platanus x hispanica*)	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+	B	1/2



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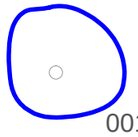

EXISTING TREE

Trees are coloured on plan to correspond to the Retention Categories specified in: *BS5837:20 12 T rees in relation to design, demolition and construction - Recommendations* as follows:

Category A - GREEN
Category B - BLUE
Category C - GREY
Category U - RED

REVISION		CHCK'D	APP'D	DATE

Client:

SQUARE FEET ARCHITECTS

Job Title:

29-33 ARKWRIGHT ROAD
LONDON
NW3 6BJ

Drawing Title:

TREE SURVEY PLAN

Drawing Number:	Scale:
370.01.00	1:500 (A3)
Date: 12.06.15	Drawn by: RS

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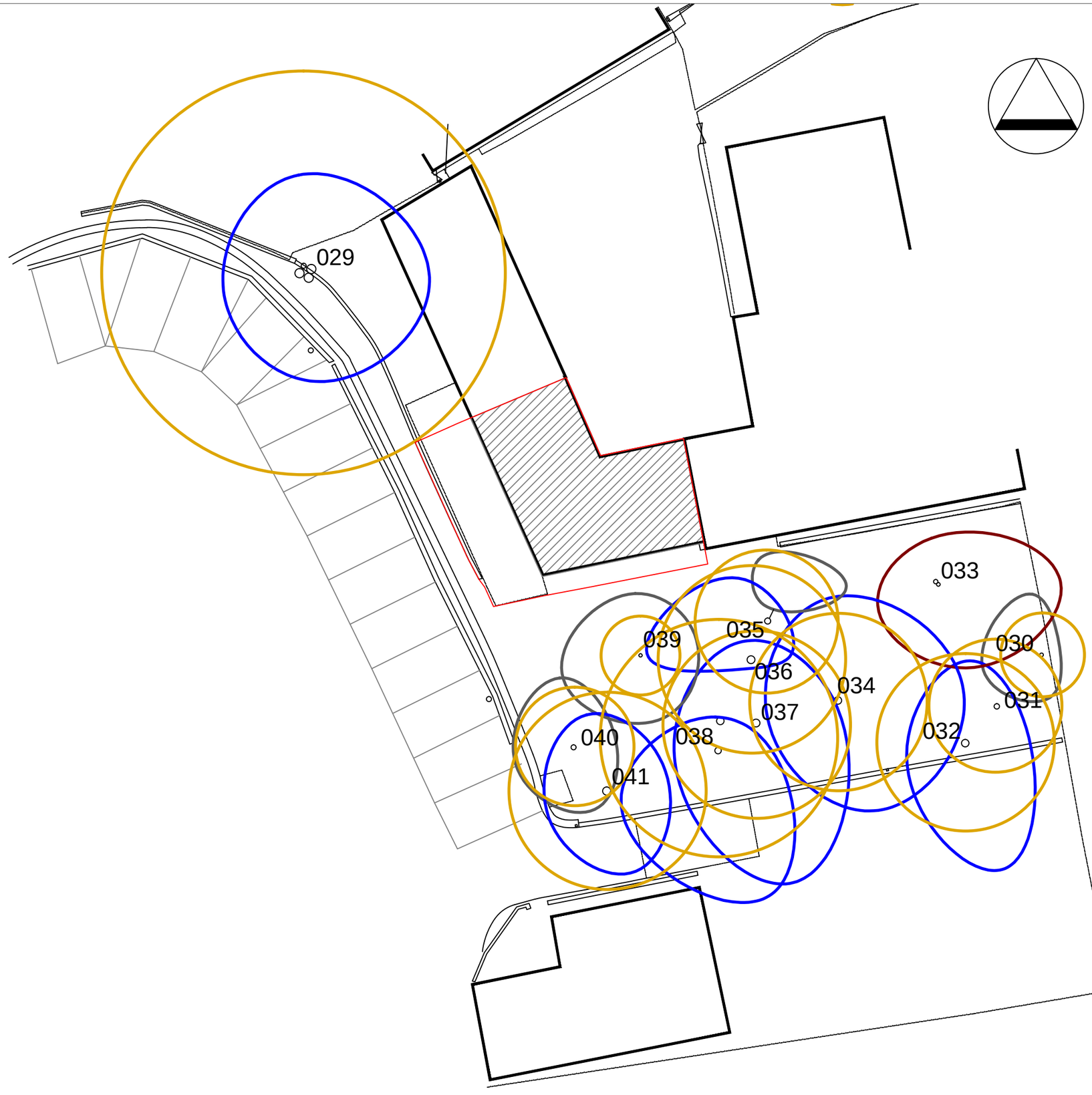
158 MALDEN ROAD, LONDON NW5 4BT
01274 566539



KEY

029

EXISTING TREE

Trees are coloured on plan to correspond to the Retention Categories specified in: *BS5837:20 12 T rees in relation to design, demolition and construction - Recommendations* as follows:

Category A - GREEN
Category B - BLUE
Category C - GREY
Category U - RED

029

ROOT PROTECTION AREA as defined in *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations*

FOOTPRINT OF PROPOSED DWELLINGS

DEVELOPMENT SITE BOUNDARY

REVISION		CHCK'D	APP'D	DATE

Client:

SQUARE FEET ARCHITECTS

Job Title:

SITE ADJACENT TO 25B FROGNAL
LONDON
NW3 6BJ

Drawing Title:

TREE CONSTRAINTS PLAN

Drawing Number:	Scale:
419.05.00	1:200 (A3)
Date:	Drawn by:
25.10.15	RS

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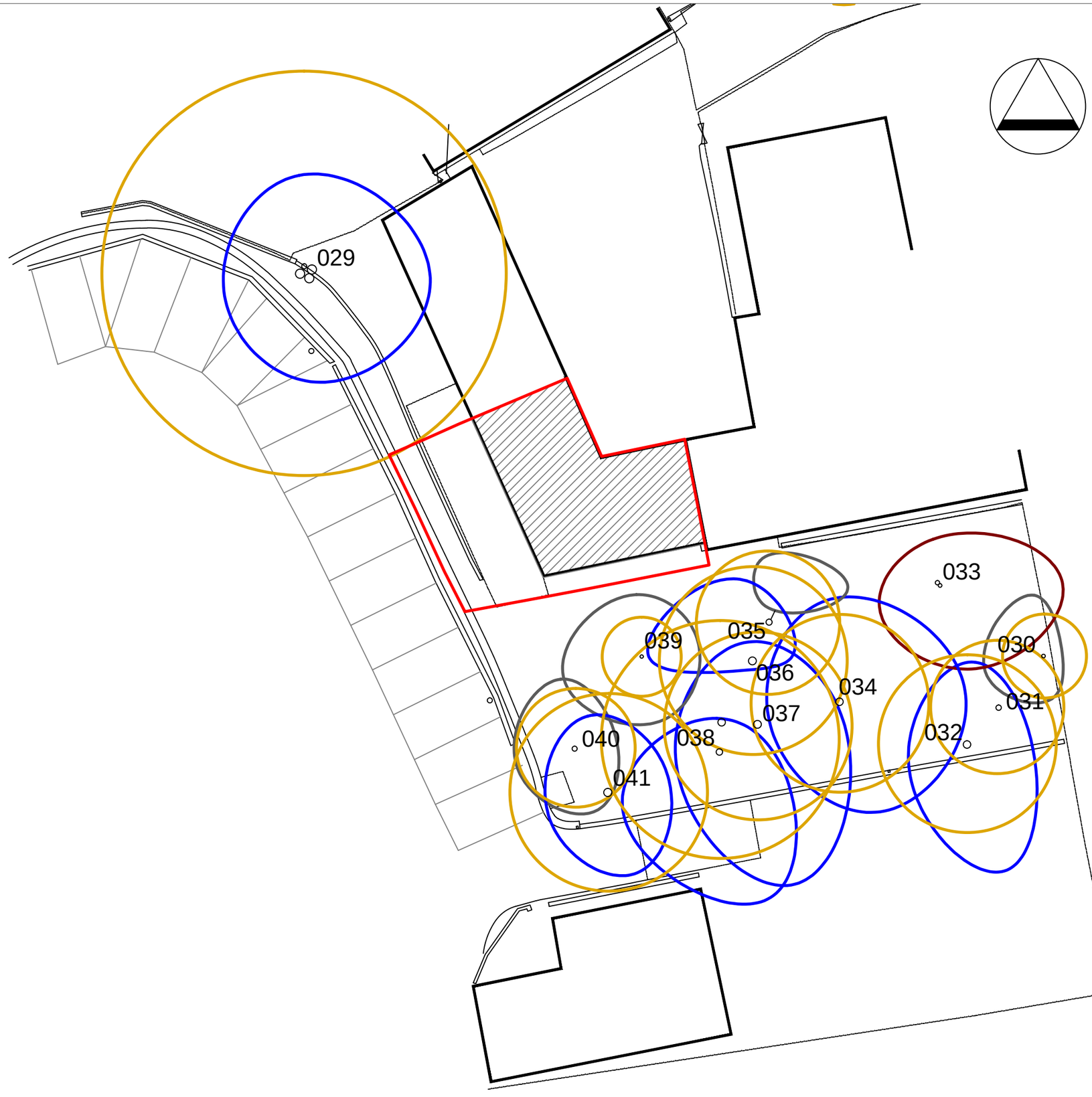

KEY

029

EXISTING TREE

Trees are coloured on plan to correspond to the Retention Categories specified in: *BS5837:20 12 T rees in relation to design, demolition and construction - Recommendations* as follows:

Category A - GREEN
Category B - BLUE
Category C - GREY
Category U - RED

029

ROOT PROTECTION AREA as defined in *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations*

FOOTPRINT OF PROPOSED DWELLINGS

SITE COMPOUND/TREE PROTECTION FENCE

REVISION		CHCK'D	APP'D	DATE

Client:

SQUARE FEET ARCHITECTS

Job Title:

SITE ADJACENT TO 25B FROGNAL
LONDON
NW3 6BJ

Drawing Title:

TREE PROTECTION PLAN

Drawing Number:	Scale:
419.06.00	1:200 (A3)
Date: 25.10.15	Drawn by: RS

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arboricultural advice

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