

Simon Pryce Arboriculture

Arboricultural Impact Assessment, Method Statement and Tree Protection Plan

Client: BSD Partnership

Site: 1 - 2 Agar Grove, London, NW1 9SL

Inspection date: 21 March 2019

Document date: 29 January 2019

Reference: 18/108/2

Author: Simon Pryce, BSc, FArborA, RCarborA, CBiol, MICFor

I Introduction

- 1.1 This report has been prepared for BSD Partnership in connection with building work at 1 - 5 Agar Grove, London, NW1 9SL.
- 1.2 I have been asked to prepare a report, impact assessment, method statement and tree protection plan, as set out in British Standard 5837: 2012, Trees in relation to design, demolition and construction to accompany the application for the work.

Survey method

- 1.3 This report is based on a site visit and inspection of the trees on 21 March 2019. That was in connection with a subsidence investigation, but the same information was collected as for this report. The inspections were visual and made from ground level within the site or the road in front. Some trees are in adjacent gardens, but could be inspected in sufficient detail for the purposes of this report.
- 1.4 The maturity, health and structural condition of each tree was assessed and they have been assigned to one of the four retention categories [A,B,C,U] specified by BS5837. The individual descriptions and other relevant information are contained in the attached schedule, with removed ones noted and identified but not described. The attached plans, based on the original supplied by Neil Hawes Associates Limited, show the existing and proposed layouts. The proposed plan shows tree protection measures and is the tree protection plan (TPP) specified by BS5837.

2 Background

Previous survey and report

- 2.1 The original report ref 18/108 of 31 March 2019 was prepared in connection with a subsidence investigation and recommended various works to alleviate that and reduce future risks, including the removal and pruning of some of the trees and shrubs. Camden Council's decision ref 2019/1791/T and 2019/1842/T, both dated 3 June 2019 confirm that they did not object to any of the work, so this has been carried out.
- 2.2 The decisions refer to the arboricultural report rather than repeating the specification and refer to 6 removals at no.1 and 7 and no.3 - 5. This does not tally exactly, as some of the plants in the report were shrubs and some trees were dead or dying, so would not have needed consent to remove.

Proposal

- 2.3 This is shown on the plans produced by Neil Hawes Associates. The building fronts are not altered significantly and the existing refuse store between the entrances to nos.3 and 5 is retained, together with the raised planting bed at the rear in which tree 6 is growing. Three small bike stores are built in the raised shrubs beds in front no.1 & 3 and no.5.
- 2.4 The main changes are at the rear, where the back rooms are enlarged, which involves extending the back of the building approximately 3m. The existing rear garden is higher than ground floor level, so the retaining wall about 1.2m from the back of the building is also relocated towards the rear. The garden is relandscaped including tree planting to compensate for removals.

3 Trees

- 3.1 The consented removals included a mature eucalyptus, (tree 19) and Leyland cypress (24) in the rear garden, along with assorted smaller trees and shrubs, several in the raised beds in front of the buildings. Most were implicated in the damage or were imminent threats and some were poor suppressed specimens or were dying, such as no.30, a Lawson cypress near the back of no.5. A blue cedar to the rear was retained, as it was not implicated in the damage at the time, although it was noted as capable of growing larger and would not tolerate more than very light pruning, so it was not suited for longer term retention.
- 3.2 At the front tree 6, the magnolia in the planting bed in front of 3 and 5 and tree 17, the lime in the street to the left are retained. These two are the best and most prominent specimens, and are the only ones in B category, although the lime belongs to Camden Council. Some shrubs and smaller trees in the raised planting beds in front of the buildings have been retained.
- 3.3 There are also a mature ash and a tree of heaven in two rear gardens in Stratford Villas. These could not be inspected closely but appear healthy.

4 Discussion

General comments

- 4.1 The two main functions of tree roots are 1) physical support and 2) the supply of water and nutrients from the soil. Roots will grow wherever conditions are favourable i.e. there is a suitable supply of air and water, so most tend to be in about the upper 600mm of the soil and even shallow excavation or minor level changes can be harmful. Construction near trees can also be harmful in less direct ways, such as soil compaction caused by heavy machinery and spillage of toxic materials such as diesel oil and cement.

Root protection areas

- 4.2 British Standard 5837: 2012, Tree in relation to design, demolition and construction – Recommendations, specifies measures to avoid or minimise construction damage to trees. One of these is that root protection areas (RPAs) are established round retained trees and fenced to exclude construction access. No ground work should take place within RPAs without suitable safeguards, such as protecting soft ground against compaction or contamination.
- 4.3 The starting point is that a single trunked tree's RPA has an area equivalent to a circle with a radius 12 times the trunk diameter measured at 1.5m above ground. The 12x figure is not based on any research, but is intended to safeguard enough rooting space for the tree's current and future needs, in fact most root systems spread much farther, so the RPA is smaller than the root system as a whole. Where existing site conditions or other factors indicate that root spread is asymmetrical the RPA shape can be adjusted to a polygon of the same area, provided this reflects a sound assessment of likely root distribution.

Implications for this proposal

Front

- 4.4 All the trees to the front of the building are in raised planting beds surrounded by hard surfaces. Trial pits dug during the subsidence investigation found that some roots from these had spread under the paving, but that is being retained and will safeguard any underlying roots, so for practical purposes the only protection needed is to exclude access onto the soft ground in the planting beds. That can be achieved by fencing round the edges of the planting beds, as shown on the tree protection plan. This can be incorporated into the site safety fence that will be needed along the road. Levels in the planting beds will need to be lowered in three places in order to install the bike stores but none of those are close to significant trees.
- 4.5 The lime in the street is also surrounded by hard surfaces, including a busy road and pavement. It is a possible source of lime roots found next to no.1 during the investigation, but is well away from the buildings and set back from the carriageway some way to the side of the site, so is not unduly vulnerable to incidental damage from site delivery vehicles.

Rear

- 4.6 At the rear tree 25 is growing in an area that will need to be lowered and would be less than 1m from the back of the extended building, so could not be retained, while tree 31 would be under the new rear wall. No.25 is quite large, but not suited for retention whether or not the building is extended and tree 31 is a relatively small conifer that makes little contribution to the site and even less to the wider area. Tree 22 is a Portugal laurel that is one sided due to being suppressed and would be damaged severely by moving the retaining wall, so is to be removed and a replacement planted.
- 4.7 The trees and shrubs in the rear right of the garden, no.28 and 32 -34, are well away from the work area and the relocated retaining wall and can be safeguarded with a straightforward runs of fencing as shown on the tree protection plan. That also gives some protection to roots from the ash and tree of heaven in the adjacent gardens to the rear. Some roots from them will be in the rear garden, although they have good rooting conditions in the other surrounding gardens, which will give an additional safety margin.

Tree protection measures

- 4.8 The plan showing the proposed layout illustrates suitable layouts for fencing and other measures and serves as the tree protection plan (TPP) recommended by BS5837:2012. These are specified in more detail in the method statement on the following pages.

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Part 2 - Arboricultural method statement

This document is to be read in conjunction with the impact assessment and tree protection plan [TPP]. Any queries are to be referred to the arboriculturist.

Preliminaries

1. Before any demolition or building starts the contractor and arboriculturist are to agree all work affecting trees, particularly protective fencing and other measures, access routes and storage areas.

Tree work

2. Trees 22, 25 and 31 are to be felled and the stumps removed.

Fencing

3. Protective fencing is to be erected so as to provide continuous barriers round the trees to be retained, as shown on the TPP. If it is more practical or convenient distances from the trees may be increased, but they must not be reduced without the agreement of the arboriculturist.
4. Fencing is to be at least 2m high and sectional welded mesh fencing [e.g. Heras], or plywood, on a scaffolding framework as in figure 1. Diagonal braces are to be anchored to scaffold poles driven into the ground or the proprietary concrete weighted base plates.
5. Each run of fence is to have at least one warning sign, as shown in figure 2, or a suitable alternative giving the same information.

Ground protection

6. If it becomes necessary to move or work within tree protection areas the options for ground protection are:
 - for pedestrian movements only, a single thickness of scaffold boards or 18mm min plywood placed either on top of a driven scaffold frame to form a suspended walkway, or on a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a Terram ® or similar geotextile membrane (fig 3);
 - for pedestrian-operated plant up to 2t gross, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane.
 - for any plant over 2t gross, either a proprietary system rated for that load or a one-off such as pre-cast reinforced concrete slabs engineered in conjunction with arboricultural advice, to accommodate the likely loads. Figure 4 shows a typical proprietary system.

Trunk box

7. If the lime in the street is considered at risk from delivery vehicles, over and above normal traffic for this road, the trunk can be enclosed up to the first branches to protect against impacts. Options are 18mm minimum thickness plywood, details as shown on the inset in the TPP or an alternative such as a scaffold frame and plywood, provided this cannot move and the bark is protected. Figure 5 shows detail.
8. The trunk protection is to have at least one warning sign, as shown in figure 2, or a suitable alternative giving the same information.

9. No fencing or other tree protection is to be moved or dismantled without the agreement of the arboriculturist.

Work methods

10. No work is to take place within fenced areas without the prior agreement of the arboriculturist and without suitable alternative protective measures.
11. No equipment, machinery or structure shall be attached to or supported by any retained tree.
12. Outside fenced and protected areas there are no arboricultural constraints on working methods.
13. Any roots found outside protected areas are unlikely to be significant, but any over 25mm diameter found within them and not obviously from recently felled trees should be covered to prevent them drying out and the arboriculturist notified. Smaller roots can be cut cleanly.
14. Cement and concrete mixing must take place as far as possible from protected areas, over a suitable hard surface to prevent soil contamination from spillage or washing out into rooting zones.

Storage

15. No materials are to be stored within protected areas except on existing impermeable hard surfaces.
16. Potential contaminants such as diesel oil and cement must be stored as far from protected areas as practical, with provision made for any spillage or run off to be contained away from rooting areas.

Landscaping

17. Protective fencing is to remain in place until all demolition, construction and hard landscaping are complete.
18. Outside the protected areas there are no arboricultural restrictions on hard landscaping.
19. Within the protected areas only soft landscaping is to take place. No levels are to be changed beyond what is required for planting and any irrigation pipes are to be above ground or dug in by hand.
20. No persistent soil acting herbicides are to be used.

Completion

21. Once site work is complete the trees are to be reinspected and any necessary final pruning or other work is to be carried out.

Supervision schedule

22. The arboriculturist is to check the installed tree protection measures before any demolition or construction starts. Further inspections are to be made at monthly intervals, with one off visits if the need arises, for instance if large or significant roots are encountered in work areas.

Contact details

Position	Name	Phone	Mobile	e mail
Arboriculturist	Simon Pryce	01923 467600	07710 224906	info@simonpryce.co.uk
Architect	Neil Hawes Associates	01707 644434		artihawes@nhald.co.uk
Owner	BSD Partnership			Bsd42g@gmail.com
Main contractor	TPA			
Site manager	TBA			

Figure 1 - Tree protection fence details - after BS5837 2012

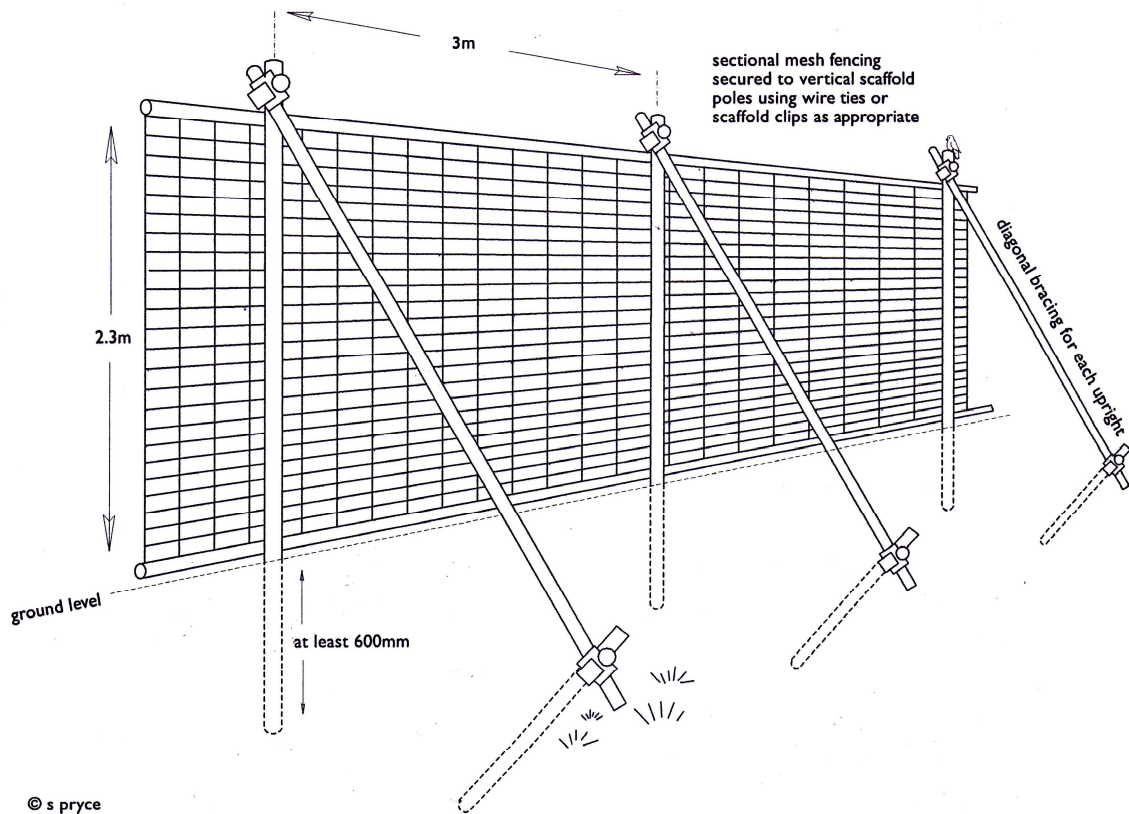
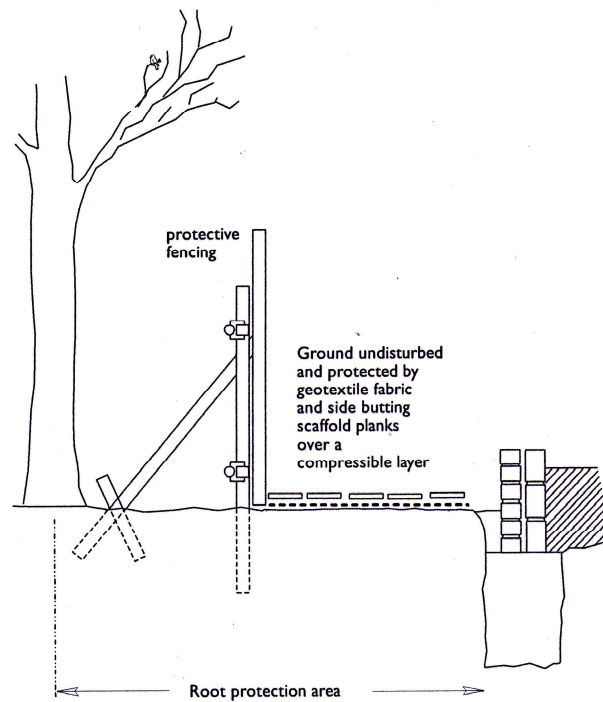


Figure 2 - Warning sign for tree protection fence

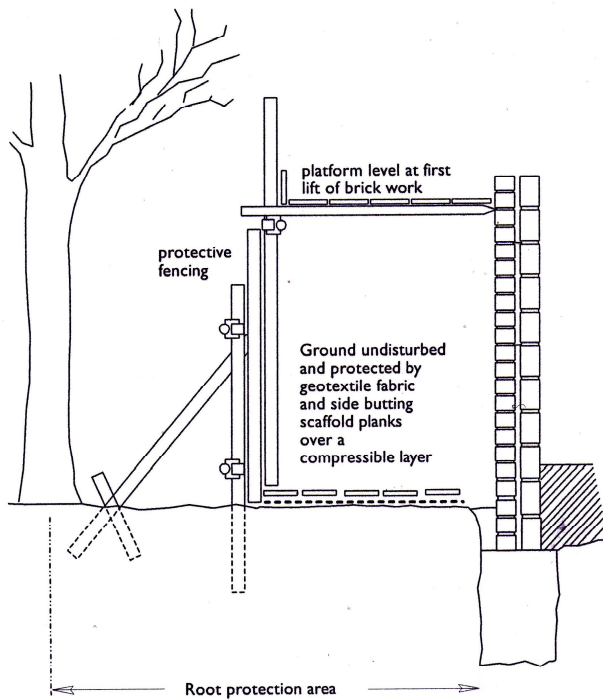


Figure 3 - Ground protection within the RPA [based on BS5837:2005]

1] Initial stage



2] With scaffolding

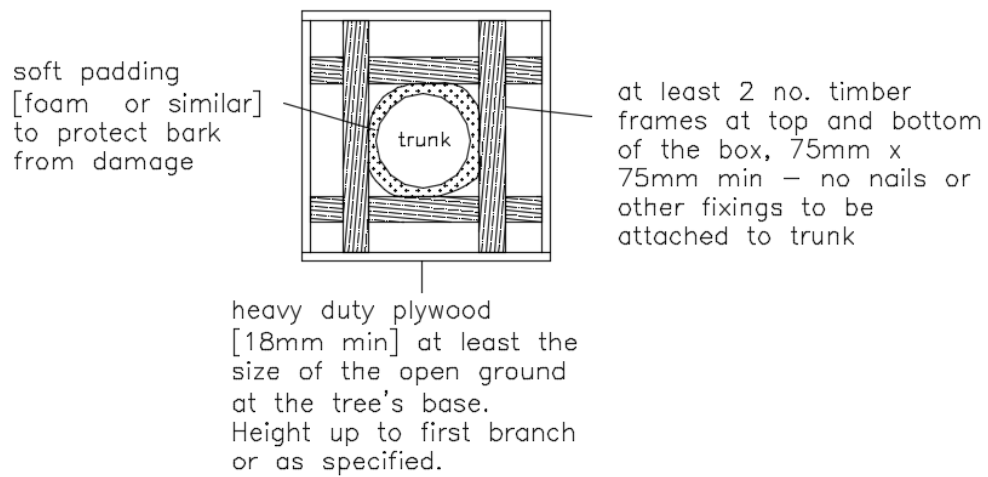


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Figure 4 - Proprietary ground protection system



Figure 5 - Trunk protection detail



Site: **I, 3 & 5 Agar Grove, London, NW1 9SL**
 Inspection date: **21 March 2019 by Simon Pryce**

Tree no.	Species	Age / vigour	Ht. m	Spread				Dia. mm	RPA rad m	RPA area m ²	Crwn ht. m	Comments and recommendations	Cat
				N	S	E	W						
The trees and shrubs are numbered as in the previous arboricultural report and their locations are shown on the site plans. Since then some have been removed in accordance with Camden's consents 2019/1791/T and 2019/1842/T. Other work listed here was also in the tree work applications and Camden did not object.													
1	Lawson cypress	Removed											C
2	Variegated holly	MA/N	3	4 x 1				50	0.6	1.1	1	Small healthy specimen. • No work needed.	-
3	Shrubs	MA/N	1.5	0.5 - 1				m/s			0	Mixture of Ionicera and other shrubs planted along the front boundary and trimmed informally to form a screen. • Trim regularly to keep them to 2 - 2.5m high.	-
4	Lawson cypress	MA/N	9	4 x 1.5				160	1.9	12	1.5	Healthy, has a large rose growing through it • Reduce to about 5m, maintain at that height.	C
5	Buddleia	MA/N	4	4 x 1				m/s			0.5	Trimmed regularly. • Trim to former reduction points each winter if retained.	-
6	Magnolia	MA/N	9	3.5	3	3.5	3.5	270	3.2	33	2.5	Southern evergreen magnolia, healthy, well established specimen rooted close to the fronts of nos. 3 and 5 and capable of some more growth. • Reduce height and spread by up 1m, trim regrowth every 1 - 2 years.	B
7	Aucuba	MA/N	1.5	4 x 1				m/s	-	-	-	Small growing shrub, trimmed regularly. • Trim annually to keep it to this size or smaller.	-
8	Lawson cypress	MA/N	6	1.5	2	1.5	2	100 + 130	2.0	12.2	1.5	Gold foliated form, similar to the trees in front of 5 but has been reduced in the past and is trimmed regularly. • Reduce to about 5m, trim annually.	C
9	Holly	MA/N	4	4 x 1				80	1.0	2.9	0.5	Small specimen being suppressed by the others. Slow growing, low risk species, but not likely to improve appreciably. • Remove.	C
10 - 12	Viburnum gp	MA/N	4	1	1	2.5	2.5	av.80	1.0	12	0.5	Three plants of one the larger growing viburnum species. All healthy and have merged to form a screen across the frontage, side growth is trimmed regularly to clear the pavement. • Reduce to about 3m and keep top and side growth trimmed.	C
13	Lonicera hedge	MA/N	1m	0.25				m/s	-	-	-	Small hedge, trimmed regularly • To be removed	-
14	Lawson cypress	MA/N	6	1.5	1.5	1.5	2	110	1.3	5.5	1.5	Smaller than the others and not particularly vigorous. • Reduce and keep to about 5m.	C
15	Broom	Removed											-

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Tree no.	Species	Age / vigour	Ht. m	Spread				Dia. mm	RPA rad m	RPA area m ²	Crwn ht. m	Comments and recommendations	Cat
				N	S	E	W						
16	Viburnum	Removed											-
17	Lime	MA/N	16	5	4	4	4	480	5.8	104	4	Street tree growing in front of garages to the left of the site. The only lime in the vicinity, implicated in the precious damage but is a street tree, some distance from the building and not affected by the proposed building work. <ul style="list-style-type: none"> Reduce back to former pruning points every 2 years. 	B
18	Ash	Removed											-
19	Eucalyptus	Removed											-
20	Lawson cypress	Removed											-
21	Box	Removed											-
22	Portugal laurel	MA/N	7	3	3	1.5	3	250	3.0	28	2	Suppressed and one sided due to growing under the large Leyland cypress. Too close to the new garden retaining wall to be retained. <ul style="list-style-type: none"> Remove, replacement to be planted. 	C
23	Leyland cypress	Removed											-
24	Lawson cypress	Removed											-
25	Deodar cedar	MA/N	19	5	5	4	5	350	4.2	55	4	Healthy specimen, slightly drawn up due to growing between the buildings and other trees. Not implicated in the recent problems but would get much larger and would not tolerate significant pruning. Too close to the back of the new building to be retained, but there would be sufficient space for a new tree to establish after the work is complete <ul style="list-style-type: none"> Remove, plant replacement 	C
26	Laurel	Removed											-
27	Laurel	Removed											-
28	Loquat	MA/N	7	3	2.5	3	3	90	1.1	3.7	1.5	Healthy but well away from the houses, develops into a small to medium sized tree. <ul style="list-style-type: none"> No work needed at present. 	C
29	Ash	Removed											-
30	Lawson cypress	Removed (dying)											-
31	Lawson cypress	MA/N	8	4 x 2				3 x 100	2.1	14	1.5	Healthy but not significant, would need to be removed. <ul style="list-style-type: none"> Remove 	C
32	Variegated holly	MA/N	7	1.5	2	2	2	110	1.3	5.5	1.5	Small growing low risk tree, well away from the houses. <ul style="list-style-type: none"> No work needed at present. 	C
33	Lawson cypress	MA/N	8	4 x 1.5				90	1.1	3.7	1.5	Healthy, capable of more growth, but well away from the houses.	C

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Tree no.	Species	Age / vigour	Ht. m	Spread				Dia. mm	RPA rad m	RPA area m ²	Crwn ht. m	Comments and recommendations	Cat
				N	S	E	W						
34	Shrubs	MA/N	5 - 6	1 - 2				m/s	-	-	0	Mixture of shrubs, most in fair condition and not very large growing, although a long dead, small ivy covered tree has snapped off. <ul style="list-style-type: none"> Remove snapped off dead tree. 	-

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Site: I, 3 & 5 Agar Grove, London, NW1 9SL
Inspection date: 21 March 2019 by Simon Pryce

Notes

Observations are made from ground level unless stated otherwise.

Trunk diameters are measured in millimetres at 1.5m above ground or at the narrowest point between the root buttresses and branch flare in multiple trunked trees; in such cases this is indicated by [c].

Crown spreads are taken from the trunk centre to the end of the longest live branches in the directions indicated [usually the four cardinal compass points]

Crown height is the clearance under the lowest significant branches.

Tree ages are estimated as below, based on the normal life expectancy of a tree of the species concerned on the site:

Immature.	[IM]	Newly planted or self-set tree.
Young	[Y]	Young tree that is established but has not yet attained the size or form of a fully developed example of its type.
Middle aged	[MA]	Between one third and two thirds of its estimated lifespan.
Mature	[M]	Over two thirds of its estimated life span.
Veteran	[V]	Old tree with characteristic features including hollow trunk, old wounds etc. that give high landscape, ecological and cultural value.
Dying/Dead	[D]	Dead/dying or so badly decayed that it should be removed without delay if a potential threat.

Vigour is assessed on the basis of what is normal for that the species concerned as:

High	[H]
Normal	[N]
Low	[L]
Dead / dying	[D]

Root protection areas [RPAs] - BS5837:2012

For single trunked trees these are calculated as an area equivalent to a circle with a radius 12 times the trunk diameter at 1.5m. For multiple trunked trees it is based on the diameter of a single trunk that would have the same cross sectional area at 1.5m.

Any deviation from a circular plot should take into account the following factors whilst still providing adequate protection for the roots.

- The shape and disposition of the root system when known to be influenced by past or existing site conditions, such as the presence of roads, structures and underground services.
- Topography and drainage.
- The soil type and structure.
- The likely tolerance of the tree to root disturbance based on factors such as species, age and past management.

Site: **I, 3 & 5 Agar Grove, London, NW1 9SL**
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Tree categories – based on BS5837: 2012, Trees in relation to design, demolition and construction - Recommendations

Trees for removal				
Category and definition				Colour code
Category U				Red
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	<ul style="list-style-type: none">Trees that have a serious, irremediable structural defect, such that their early loss is expected due to collapse in the foreseeable future, including any that will become unviable after the removal of other U category trees. (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning.)Trees that are dead or showing signs of significant immediate and irreversible decline.Trees infected with pathogens significant to the health and/or safety of other trees nearby, or very low quality trees suppressing better ones nearby. <p>NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve.</p>			
Trees for retention				
Category and definition	Criteria – sub categories			Colour code
	1 – mainly arboricultural values	2 – mainly landscape values	3 – mainly cultural / conservation values	
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 historical, commemorative or conservation value. (e.g. veteran trees or wood -pasture)	Green
Category B				
Trees of moderate quality with an estimated remaining life expectancy 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 benefits.	Blue
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 benefit.	Grey