Simon Pryce Arboriculture

Report

Client:	**Mrs Caroline Nourani**
Site:	**Land adjacent to 23 Elsworthy Road, London, NW3 3DL**
Subject:	**Trees survey, constraints plan and arboricultural implication assessment**
Inspection date:	**20 August 2015**
Report date:	**20 October 2015**
Reference:	**15/045**
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Arboricultural Association
REGISTERED CONSULTANT

1 Introduction

1.1 This report has been prepared for Mrs Caroline Nourani.

1.2 I have been asked to inspect trees growing on and near the site and to prepare a preliminary report, tree constraints plan (TCP) and arboricultural implication assessment (AIA) as set out in British Standard 5837: 2012, Trees in relation to design, demolition and construction.

1.3 The initial site visit was made on 20 August 2015, when the trees were inspected visually from ground level and relevant dimensions measured. On this occasion a trial pit was dug next to the southern boundary wall to investigate its foundation depth and whether or not roots from the holly in the adjacent garden had grown under it.

1.4 A subsequent visit was made on 30 September 2015 when the birch was climbed to inspect a cavity and ingrown rope that were not clearly visible from ground level.

1.5 The trees were measured, their maturity, health and structural condition assessed and each was 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 and they are shown on the site plans. The existing site tree constraints plan is based on the original topographic survey by Malcolm Hollis, while the proposed layout and tree protection plan are based on that and the layout prepared by Ko Architects.

2 Observations

2.1 The site is level and about 14m deep by 13m across the frontage. There is no record of any on site investigation but the British Geological Survey (BGS) shows the local subsoil as London clay. This was confirmed by the trial pit dug next to the rear boundary wall which encountered this at a depth of about 350mm below the garden topsoil.

2.2 The trial pit next to the rear boundary wall was about 1m long by 350mm wide and dug opposite the holly on the far side. It revealed a footing that steps out about 120mm from the wall and is 180 - 220mm thick with an overall depth of 330 - 370mm. There is topsoil down to the base of the footing which is resting on London clay.

2.3 In addition to the trees recorded individually there is a low hedge and some groups of shrubs, including a large pittosporum near the rear boundary, none of which are significant or protected by the conservation area legislation.

3 Trees

3.1 The significant trees within the site are two limes and a birch and there is a small holly growing just beyond the south boundary wall in the rear garden of 2 Elsworthy Terrace. Some further investigations were carried out as below:

Trial trench near holly

3.2 This was hand dug on 20 August next to the garden wall opposite the holly in the rear garden of 2 Elsworthy Terrace, tree 6 of this report. The trench was about 1.5m long by 400mm wide and revealed a stone footing that steps out from that side of the wall by 100 - 120mm. The top is about 150mm below garden level and it is 180 - 200mm deep, making an overall depth of about 330 - 350mm. The trench exposed numerous shallow roots that could be traced to the dense shrubs with the site. Below the base of the foundation roots became scarcer, with only a few fibrous ones and one about 8mm diameter coming from beneath the wall, the most likely source being the holly. (photo 1)

Inspection of the birch

3.3 This was done on 30 September 2015 to investigate a decay cavity visible from the ground and the area where a rope had been tied round a branch and become ingrown. The cavity opening is about 160mm long by about 60mm wide and there is a broad band of callus round the edge, indicating that the original wound was much larger. The exposed timber is dry and weathered, but is starting to decay. It does not appear to present an imminent failure risk, but will have weakened to the limb and the decay will advance. (photo 2)

3.4 The ingrown rope is potentially more serious and had evidently been installed as a swing several years before. It could be loosened, but had become ingrown so could not be completely removed and one section had to be cut and left to continue becoming ingrown. That is not likely to cause much damage, but the rope had left a deep groove, which will have weakened the branch. That has been exacerbated by the rope interrupting downward sap flow, which occurs in the layers immediately under the bark, so the section above the rope has swollen. (photo 3) This often occurs after this kind of constriction and sometimes when trees or branches are ring barked. This also creates structural weakness. This can be addressed by moderate reduction in the height and spread of the crown in order to reduce its weight and wind resistance, although the tree will respond by sprouting and need to be cut back regularly as long as it is retained.

3.5 The base of the birch is close to the boundary wall and ground level in the garden is about 320mm higher than the drive to no.23 on the far side. There is a more or less vertical crack about 1.5m forward (north) of the tree and the section next to the tree has stepped outwards, which suggests strongly that it has been pushed by the base of the trunk expanding as it grows. That will need to be investigated in more detail but the proximity of the trunk to the back of the wall will make any repair difficult without harming the tree. (photo 4)

4 Proposal

4.1 This is shown on the plans produced by Ko Architects and is to build a new house across the rear of the site. It is to have two main storeys, the first being smaller than the second and a basement with two levels, partly illuminated by a lightwell in front of the right hand side.

4.2 Access is to be for pedestrians only and the current proposal is to have a front path from a new entrance in the front boundary between the two lime trees.

5 Discussion

Root protection areas

5.1 The size of the RPA is based on the size of the tree concerned. The starting point is that for a single trunked tree it has an area equivalent to a circle with a radius 12 times the trunk diameter measured at 1.5m above ground. The shape of the RPA can be modified where there is evidence that root spread is uneven or where there is sufficient rooting space in other directions to compensate for working closer to the tree on one side.

Implications for this site and proposal

5.2 The site is a garden with reasonably uniform growing conditions. The cracks in the front and side boundary walls indicate that roots have also spread under them and the pavement, although they are unlikely to have spread far under the carriageway. The RPAs have been drawn as circles in order to illustrate the areas concerned, although small parts of the RPAs of the two limes are under the carriageway. The amounts are small, amounting to 12 and 13% of the RPAs respectively, but that reduces slightly the scope for adjusting RPA shapes within the site.

5.3 The most significant trees are the two limes and the footprint of the new building makes incursions of just under 1m^2 for tree 3 and 0.34m^2 for tree 4 into their RPAs if drawn as circles. This is 0.8% and 0.3% respectively, which is insignificant, even allowing for some restriction of root growth by the carriageway.

5.4 With the birch the incursion is 4.3m^2 or 7% of the RPA. The birch's RPA does not extend under the road, but it is a less resilient species than the limes and the percentage is greater. Nevertheless that is well within what a tree in reasonable physiological health like this will tolerate. However the structural weakness caused by the cavity and ingrown rope create a need to reduce the tree and prune it regularly as long as it is retained and it would also be difficult to carry out the necessary remedial work to the side wall without harming it. Its useful life is limited at best and, while the proposal is feasible with it in situ, the long term problems could be avoided by removing it and planting a suitable replacement.

5.5 The RPA of the holly at no.2 extends about 1.3m into the site if drawn as a circle, but it is a small specimen and holly roots are not as invasive as those of most other species. The trial excavation next to the wall found only one root about 8mm diameter and a few small fibrous ones, which will not represent a significant part of the tree's root system. The crown overhangs slightly, but is trimmed regularly and the tree is not a significant constraint above or below ground.

5.6 Access from the street will be by a footpath, which will run through the lime RPAs and the house will also need services, which can be installed under the same route. That could be done by hand digging and working round any roots that are encountered or by thrust boring beneath them, although at would involve excavation at each end of the tunnel. The National Joint Utilities Group (NJUG) publications advise on this. The footpath can be laid with a permeable surface and minimal excavation, precise details will depend on the method used to install the services.

Indirect effects

Construction work

5.7 This proposal will involve some excavation, but is a small scale project and there are well developed techniques for excavating in sites like this with minimal disturbance. The most practical access will be from the front, so it will be necessary to pass through the RPAs and working space round the building will also be within them. The trees can be safeguarded by a combination of fencing to prevent access close to them and ground protection in work areas to safeguard underlying roots during the work.

5.8 The site plan showing the proposed layout shows suitable layouts for fencing and other measures and serves as the tree protection plan (TPP) recommended by BS5837:2012. Once the layout is finalised, this can be specified in more detail in an arboricultural method statement, which can be made a condition of consent.

Shade

5.9 The limes have naturally dense crowns, which will create some shade, but they are to the north of the new building, which reduces the amount of direct sunlight they will block. The building is on the same line as other houses in the street, many of which have similar trees in the front gardens. Limes tolerate pruning better than most other species, particularly when they have been pruned in the past like these. Repollarding back to the original points would create large wounds and disfigure them, but more moderate reduction and trimming the small shoots at the bases and on the trunks would make them less dominating and admit more light. They would need to be recut periodically but that is a very common management method with urban trees and would not harm them if done properly. As the site is in a conservation area Camden Council have control over that and can prevent any work they consider excessive or inappropriate.

Tree work

5.10 Any treework should be carried out in accordance with BS 3998: 2010, Recommendations for Treework, and any other relevant standards. It is essential that the contractor doing the work has appropriate third party and public liability insurance. The Arboricultural Association has a list of approved contractors, published on their web site at www.trees.org.uk.

5.11 The site is in a Conservation Area, so Camden Council must be given six weeks notice of any proposed felling or pruning of trees over 75mm diameter at 1.5m. They can allow that either by confirming in writing that they do not object or by letting the six weeks elapse without making a tree preservation order [TPO], which is the only way they can prevent work of which they do not approve. In that event or if trees are already protected it is necessary to make a formal application for the work.

5.12 Any pruning or felling immediately required to implement a proposal with full planning permission has deemed consent from the permission for the building work. However that only applies to the minimum necessary to carry out the work.

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6 Conclusions

6.1 It is reasonable to treat the RPAs as circles, but root spread of the limes, which are the biggest and most significant trees, will be reduced by the carriageway to the front, which slightly reduces the scope for adjusting their RPAs.

6.2 The proposed building makes insignificant incursions into the lime RPAs, even allowing for some restriction of root spread by the road.

6.3 The incursion into the birch's RPA is also within tolerable limits, but it has structural defects which limit its useful life and is damaging the side wall, which would be hard to repair with it in situ. There is a strong case for removing it and planting a replacement.

6.4 The trees create some shade, but that can be reduced by suitable pruning without adverse effects on their condition or amenity value.

6.5 Site investigation showed that no significant roots from the holly at the rear had grown under the wall into the site so it is not a constraint.

6.6 This proposal involves excavation but is a small scale project and there are well developed techniques for that and the trees can be safeguarded with suitable protective measures, which can be detailed in a method statement.

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References

1) British Standard 5837:2012, Trees in relation to design, demolition and construction

2) British Standard 3998:2010, Recommendations for Treework

3) National Joint Utilities Group (NJUG) (2007) Volume 4, Installation and maintenance of utility apparatus in proximity to trees. Guide and operatives' handout

Photographs

1) Trial trench showing a few small roots growing under the wall foundation.

2) (L) Cavity in the limb on the W side.

3) (R) ingrown rope after being loosened. note the deep groove left and the section above being larger.

4) crack in the side wall seen from in front of no.23. Arrow shows the birch trunk.

Site: **Land adj 23 Elsworthy Road, London, NW3 3DL**

Inspection date: **20 August 2015 and 30 September 2015 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 are described in order, starting to the north west of the plot in the garden of no.23 and going round clockwise. Asterisks in the first column denote those in other ownership.													
1 * (1)	Hawthorn *Crataegus monogyna*	M/N	10	6	5	2.5	5	270 320	5.0	79	4	Growing in the garden of 1 Elsworthy Terrace. Has been topped in the past at about 3m and has grown on. The trunk leans to the east, but the rest of the crown is upright, suggesting that it leaned in the past then stabilised, possibly due to being topped. Shaded by the crab apple, but not unduly suppressed.	C2
2 * (1)	Crab apple *Malus x purpurea*	M/N	11	5	5	2.5	4	320	3.8	46	5	One sided due to growing near the lime, otherwise sound and healthy looking and not unduly suppressed.	C2
3	Lime *Tilia x europaea*	M/N	18	6	5	2.5	4.5	510	6.1	117	5	Has been pollarded at about 5m when younger then left to grow on, with no signs of any recent major pruning. Slightly one sided due to the proximity of tree 4. Has dense shoots round the base, but appears sound and healthy. • *Cut back shoots at the base and on the trunk up to the first main branches. Reduce crown height and spread by 3 - 4m and reshape.*	B2
4	Lime *Tilia x europaea*	M/N	18	6	5	5	2.5	520	6.3	125	5	Similar to the previous one, has also been reduced and grown on. It also has dense basal growth and a compost bin prevented a clear view of the base, but it appears sound and healthy. • *Cut back shoots at the base and on the trunk up to the first main branches. Reduce crown height and spread by 3 - 4m and reshape.*	B2
5	Birch *Betula pendula*	M/N	12	5	5.5	7	6	370	4.4	61	4	Has wide spreading branches from about 3m, possibly as a result of being topped or broken in the past. It has had several branches cut in the past and the climbing inspection revealed a decay cavity in a main branch on the west side over the site and ingrown rope which had weakened another large branch growing to the south west. Close to the side boundary wall, which has a large crack, probably due to the tree pushing the wall laterally. That will need to be investigated further and appears difficult to repair without harming the tree, which is immediately behind it. • *Risk of limb failure could be lessened by reducing the crown by 2.5 - 3m and reshaping, but its safe life is limited. This would also admit more light.*	C2

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				N	S	E	W						
6 * (2)	Holly *Ilex aquifolium*	Y/N	8	1.5	1.5	1.5	1.5	160	1.9	12	3	Growing in the rear garden of 2 Elsworthy Terrace, so could not be inspected very closely. Healthy young tree rooted close to the wall with its top trimmed regularly to keep it bushy. An exploratory trench next to the wall found only one small root and a few fibrous ones that had grown under. Could not be examined from the other side, but the base of the trunk is close to the wall and in the long term expansion of the trunk as the tree grows could damage the wall.	C2

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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 it's estimated life span.
Over mature	[OM]	Declining and/or approaching the end of it's natural lifespan.
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.

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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	• 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. *NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve.*			
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**