

Simon Pryce Arboriculture

Report and arboricultural impact assessment

Client: Highgate Tennis Club

Site: Highgate Tennis Club courts at Shepherds Cot, Park Road, London, N8 8JJ

Subject: Trees in connection with proposed court resurfacing and associated works

Inspection dates: March 2021, September 2022 and March 2023

Report date: 2 May 2023, updated 8 August 2023

Reference: 20/130/4

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I Introduction

- 1.1 This report has been prepared for Highgate Tennis Club in connection with the proposed resurfacing of the courts and other work at Shepherd's Cot, Park Road, London, N8 8JJ.
- 1.2 I have been asked to inspect trees growing on and near the site and to prepare a report, constraints plan and impact assessment AIA, as set out in British Standard 5837: 2012, Trees in relation to design, demolition and construction.

Survey method

- 1.3 The initial survey took place on 9 March 2021, accompanied for some of the time by Robert Hartel from the tennis club. Further inspections were carried out in September 2022, when they were included in a safety survey of the entire Shepherds Cot site and in March 2023 to update this report.
- 1.4 All these inspections were visual and made from ground level within the club grounds, the garden of 169a and public areas.
- 1.5 Their maturity, health and structural condition were 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 attached plans, based on an Ordnance Survey base plan. For simplicity the Greenways end of the courts has been treated as due north, except where precise directions are needed.

2 Background

The site

- 2.1 The courts are on the south side of Greenways, a public right of way connecting Park Road and Wood Vale and there is open public access past the south side to other courts and playing fields. There is a small pavilion to the south of the courts and the club grounds are bounded to the east by the garden of no.169a Park Road and to the west by other courts, which are slightly higher.

Proposal

- 2.2 The existing courts have a traditional surface of about 30mm of clay over about 60mm of clinker resting on the London clay subsoil beneath. The proposal is to remove the playing surface down to the subsoil and to replace it with 300 - 500mm of aggregate with a membrane between that and a playing surface about 50mm thick of clay or porous tarmac. That raises the surface by approximately 300mm, but the entire layer is permeable in order to maintain drainage.
- 2.3 The new courts are enlarged by extending to the south and east.
- 2.4 New lighting is to be installed round the edges of the courts. There is some leeway in the precise locations of the masts, which can be installed in hand dug holes near the trees while the power supply cables will be in conduit attached to the fence, as shown on the proposed layout plan.
- 2.5 The existing pavilion is to be demolished and a new one built in the south corner of the site on the other side of the mature oak, tree 14. It is to be a light weight structure in order to minimise any adverse effects on the oak.

3 Observations - trees

- 3.1 The most significant trees are eight mature oaks. Six are growing in a line along the Greenways boundary and, from their sizes, they are probably on an old boundary that predates the current development of the area. There is also an old oak next to the path south of no.169a and another next to the pavilion to the south of the court. These have both been crown reduced in the past and regrown natural looking crowns. The six along Greenways have had some lower branches removed and cut back over the courts, but there are no signs of any major works.
- 3.2 Other mature trees include an ash (tree 3) that has seeded itself between two of the oaks next to Greenways and grown up between them. It has not been unduly suppressed by this, but has a deep decay cavity at about 3m on the side facing Greenways where a branch was removed in the past (photo on p.6). There is also a badly storm damaged Norway maple in the S corner of the site, tree 11.

Restrictions

- 3.3 I have checked Haringey Council's online interactive map several times since 2021 and it shows that the site is not in a conservation area and that none of the trees are subject to tree preservation orders (TPOs).
- 3.4 However the clients have provided a .pdf copy of parts of the Haringey (Woods Path, Crouch End playing fields, London, N8) Tree Preservation Order 1978, which is not on the web site. The main part of the document and the first schedule are complete and there is a decision letter from the Department of the Environment dated 31 August 1978 confirming the order with 12 trees excluded. However the only plan available from Haringey is on five A4 sized pages where a larger plan was scanned or photocopied. This has gaps, so some of the trees listed in the first schedule are not shown. Some of these have clearly gone over the years, while others have grown on since the order was made, but it is just possible to work out which of the existing trees are still protected. This includes some of the trees in this report and the TPO numbers are indicated in the schedule.

4 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 are opportunist and grow wherever conditions are favourable i.e. there is a suitable supply of air and water. Many are in about the top metre of the soil, but they can and do grow much deeper if conditions are favourable. The small water absorbing roots die each winter, then new ones develop in spring and grow according to the tree's needs. This allows trees to recover from damage to the fine network of small roots, possibly with some short term reduction in vitality. However damage to larger roots close to the trunk can lead to instability, either immediately or in the longer term, if the wounds are colonised by decay fungi.

Root protection

- 4.2 Construction near trees can damage roots directly, by excavation, and indirectly by soil compaction due to heavy machinery and contamination from things like diesel oil and cement. BS5837 recommends measures to avoid or minimise this, the main one being that root protection areas (RPAs) are established round retained trees and fenced to exclude access. No ground work should take place within these 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 research, but it has proven effective in most cases. In fact most root systems spread well beyond that and significantly deeper than 1m.
- 4.4 Under open ground roots spread more or less uniformly from the tree, but they are affected by obstructions and variations in growing conditions, so depth and spread are far less predictable near roads and buildings. RPA shapes should be adjusted from the original circle where there is evidence that root spread and/or depth are uneven. That can also compensate for work within the original circle. However this must be based on a sound arboricultural assessment of the extent and shape of the root system and equivalent rooting space should be allowed in other directions.

5 Discussion

Court

- 5.1 There is a mixture of soft and hard surfaces round the trees, but no major obstructions to root spread, such as deep foundations, so the circular RPAs shown on the plan will be a reasonably accurate reflection of where roots are likely to be. The only real constraints here are oaks nos. 2 and 4 - 7, which have nearly half their RPAs under the existing court, while trees 1 and 10 have much smaller amounts under them. Apart from the oaks the other trees near the court are poor declining specimens that should be removed in any event, particularly no.3 the ash on the NW side and tree 11, the Norway maple to the SE.
- 5.2 The dry clay and clinker surface of the courts will be hostile to root growth, but is permeable, so it will not inhibit air and rainwater absorption into the natural London clay beneath. As a result most roots will be in the deeper London clay, particularly those of the oaks which are naturally deep rooting and well adapted for clay soils. This could be confirmed by trial excavation, either by hand or with a compressed air spade.
- 5.3 The new surface will be deeper than the existing one, but also needs to be freely permeable, so it will make little difference to rooting conditions in the London clay. There are well developed methods for laying new surfaces in rooting zones without excavation that might harm roots. Most of these use permeable materials, primarily to allow air and water to reach roots beneath, but that also allows good drainage through the court surface. There are a number of proprietary systems, one of the more widely used being Cellweb produced by Geosynthetics Ltd <http://www.geosyn.co.uk/product/cellweb-tree-root-protection>. The cellular confinement prevents the material moving or spreading in use and reduces the need for potentially damaging edge restraints such as concrete kerbs.

Lighting

- 5.4 A lighting specialist has advised that the masts can be installed near the trees, as the only ground disturbance needed is relatively small holes that can be hand dug or augered in rooting zones. There is also some leeway for adjusting locations to avoid roots. The electrical cables can be in conduit attached to the fence, which avoids any trenching. Some pruning of lower branches might be required, but the lowest branches are well above the court and the trees have large, high crowns, so the modest amount of cutting required will not adversely affect their health or appearance.

Pavilion

- 5.5 The existing pavilion under tree 10 is nearing the end of its useful life and is a small building that can be demolished without difficulty or harm to the tree provided it is done with due care. The proposed new one will be on the other side of the tree in the corner of the site and will be a lightweight structure. Potential short and longer term harm to the tree can be avoided or minimised with methods such as piled foundations, permeable no-dig hard surfaces and diverting rain water from the roof under the footprint. The floor slab of the existing pavilion can be retained during the work as a storage and ancillary work area, then taken up and the area returned to soft ground, which will improve rooting conditions in the long term.

Tree protection

- 5.6 These measures are illustrated in the plan showing the proposed layout, which is the tree protection plan (TPP) recommended by BS5827:2012. If required these can be specified in more detail in an arboricultural method statement.

Mitigation

- 5.7 Most of the trees to be removed are poor specimens, but some new planting is being planned, which will mitigate this. Details are yet to be finalised but the attached plan shows an indicative layout. The aim is to fill gaps in the line of trees along Greenways, which is clearly a very long established feature with some oaks that pre date most of the surroundings. The aim is to plant locally native species in order to perpetuate the line of trees. Current quarantine restrictions to control oak processionary moth (OPM) are making it hard to obtain oaks, but other large growing trees common in local woodland include hornbeam, wild cherry and field maple. These will be planted as heavy standard (HS) trees 12/14cm girth which are typically 3 - 3.5m tall, which will provide an immediate effect.
- 5.8 This will also be an opportunity to supplement the existing rather thin hedgerow next to the railings along Greenways. Again locally native species such as holly, hawthorn and blackthorn are preferred. This kind of hedge is typically planted as 90 - 120cm bare rooted plants 4 per metre in two staggered rows ½m apart.

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6 Summary and conclusions

- 6.1 The most significant trees are the eight mature oaks, six of which are growing along the Greenways boundary, one just off the site and one near the existing pavilion. Most of the others are in poor condition and many have limited life expectancies, particularly the mature ashes.
- 6.2 Circular RPAs will be realistic reflections of actual root spread. Some roots will be present under the court, but will be in the London clay beneath rather than the playing surface, which is too dry and compacted.
- 6.3 The new surface will be deeper than the existing one, but will also be permeable, so there will be little difference to rooting conditions beneath it and there are well developed methods for installing no-dig permeable surfaces.
- 6.4 New light masts will be installed near the trees in hand dug holes and there is scope for adjusting locations to avoid any roots. Electrical cable conduits can be run along the fence in order to avoid trenching. Minor pruning of lower growth might be needed but will not harm the trees.
- 6.5 The new pavilion will be a lightweight structure in order to minimise any harm to the nearby oak. With suitable design and work methods the removal of the existing building and construction of the new one will improve rooting conditions in the longer term.
- 6.6 Measures to protect the trees are shown on the attached site plan and can be specified in more detail in an arboricultural method statement if required.

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Photograph



Cavity opening in the trunk of tree 3. The orange cord is on the end of a 450mm long probe, showing that the decay extends most of the way through the trunk.

Site: Highgate Tennis Club, Brookside, London, N8

Inspection date: 9 March 2021, 7th - 14th September 2022 and 9 March 2023 by Simon Pryce

Tree no.	TPO no.	Species	Age / vitality	Ht. m	Spread. m				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 sequence starting near the far left hand corner, as seen from the club house (NW) and going round clockwise. TPO numbers are based on the schedule and the incomplete map which does not show trees T24 - T26 clearly. T23 of the order is listed as a sycamore which has evidently gone since 1978.														
1	T26?	Oak <i>Quercus robur</i>	M/N	20	8	6	7	11	1070	12.8	514	6	Has a narrow junction between the two main stems at about 3m but this looks reasonably sound. Railings at the base are becoming in grown but this is not causing the tree any problems.	B
2	T25?	Oak <i>Quercus robur</i>	M/N	14	8	7	6	6	570	6.9	149	4	Slightly one sided due to growing near the larger trees, but sound and healthy otherwise.	B
3	T24?	Ash <i>Fraxinus excelsior</i>	M/L	18	6	7	5	5	540	6.5	132	6	Has seeded itself next to tree 2 and grown up through it's crown, so is drawn up and misshapen. At about 3m on the NE side of the trunk is a small hole leading to an extensive decay cavity at least 450mm deep that is being used by squirrels. This has weakened the trunk significantly, although the tree is sheltered to some degree by the oaks. Has some dead wood in the crown but the twig growth is healthy looking at present with no signs of die back.	U
4	T22?	Oak <i>Quercus robur</i>	M/N	19	6	9	4.5	7	570	6.9	149	5	Slightly one sided due to growing near the others but sound and healthy otherwise.	B
5	T21	Oak <i>Quercus robur</i>	M/N	18	9	8	6	6	650	7.8	193	6	Also slightly misshapen due to growing near the others, but healthy and is not being suppressed.	B
6	T20	Oak <i>Quercus robur</i>	M/N	18	7	9	6	3.5	700	8.4	222	5	Has quite heavy ivy growing up the trunk into the lower crown but sound and healthy.	B
7	T19	Oak <i>Quercus robur</i>	M/N	19	8	9	7	6	800	9.6	290	5	Has some ivy on the trunk and is slightly one sided, but healthy and one of the larger, better specimens.	A
8	T14	Oak <i>Quercus robur</i>	M/N	14	4	5	4	5	960	11.5	417	3	Old pollard that has also been crown reduced several years and has some features of a veteran tree that give high ecological value, such as decay pockets.	A
9	-	Ash <i>Fraxinus excelsior</i>	MA/L	15	4	3	7	5	250 + 290	4.6	66	5	Self seeded next to the back wall of the pavilion, twin trunked from ground level, possibly originated as two seedlings. Would damage the building if left and the twig growth is showing signs of die-back.	U
10	T73	Oak <i>Quercus robur</i>	M/N	18	7	8	7	7	830	9.9	310	4	Old semi veteran tree, similar to 8. Some dead wood but sound and healthy.	A
11	-	Norway maple <i>Acer platanoides</i>	MA/L	13	5	4	5	3	510	6.1	117	4	Has very severe storm damage, major dead wood and mistletoe in the crown. Safe life is severely limited.	U

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					N	S	E	W						
12	T71	Horse chestnut <i>Aesculus hippocastanum</i>	M/L	18	3	5	5	4	620	7.4	170	4	A major side branch has been topped to clear a court light. Has a cavity at about 3.5m on the road side and annual twig extension growth is short indicating low vitality.	C

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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 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.
Ancient	[A]	Exceptionally old tree, typically has short, wide hollow trunk and low squat shape due to the crown retrenching over many years.
Dying/Dead	[D]	Dead/dying or so badly decayed that it should be removed without delay if a potential threat.

Vitality is assessed on the basis of what is normal for 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				Identification on plan
Category U				Dark 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			Identification on plan
	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