TRA Consulting

ARBORICULTURAL IMPACT ASSESSMENT REPORT

BS 5837:2012 *'Trees in relation to design, demolition and construction. Recommendations'*

SITE

15 Chalcot Square,

London,

NW1 8YA

AIA

CLIENT

Bridget Plant

IAN LEE

MICFor MArborA BSC (Hons) Tech Cert (Arbor A)

Chartered Arboricultural Consultant

DATE: 23.05.2025

OUR REF: TRA 0479

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Executive summary

This report is submitted in connection with a planning application for the construction of a small lower ground floor extension, with terrace above, at the rear of 15 Chalcot Square, London, NW1 8YA. I have provided all information in accordance with the British Standard (BS 5837: 2012 ‘*Trees in relation to design, demolition and construction. Recommendations*’ (referred to as BS).

There are 2 individual trees, 1 group of trees and 3 shrubby groups which are the subject of this survey. 2 individual trees have been classified as ‘B’ grade trees of moderate quality and value, while 4 individual trees, 1 group and 3 shrubby groups have been classified as ‘C’ grade trees of low quality and value. No trees have been classified as A grade trees of high quality and value or as U grade trees unsuitable for retention.

No trees will be removed to facilitate the development, with all trees, groups and shrubby groups on or adjacent to the site fully protected throughout the development.

Where foundations are required within the existing patio for the new lower ground floor extension, this is outside the RPAs of any on-site tree. While it is within the theoretical RPA of offsite T6 and T7, it is extremely likely that the foundations of the high brick boundary wall will have prevented tree root encroachment into the site and so a modified RPA has been applied.

Where excavations are required within the lawn area inside the RPA of T5 for the new patio, steps and the base pad for the metal staircase, this encroachment is very minor and in areas of low root density. The impact will be minimised by undertaking the works under arboricultural supervision and using hand tools or a toothless bucket mounted on a mini digger. As such, these works minimise the impact on roots of T5.

Only minor pruning work is required to T6 repeating the pruning work previously carried out. Tip pruning to the crown of T5 to give 2.2m clearance above the new staircase will have minimal impact upon the aesthetic value or long-term retention of the tree.

Given no trees are to be removed to facilitate the development, along with the low level of crown pruning, I would consider the designs to have an overall low impact on the retained trees, provided that the working methodologies recommended within this report are observed and that the currently proposed construction type is not changed.

Contents

Appendices

1. Introduction:

1.1. This report is submitted in connection with a planning application for the construction of a small lower ground floor extension, with terrace above, at the rear of 15 Chalcot Square, London, NW1 8YA. I have provided all of the works in accordance with BS 5837:2012 *'Trees in relation to design, demolition and construction. Recommendations'* (referred to as BS).

1.2. This report details tree condition, the impact of the proposal on, and from, the existing trees and the measures taken to protect the trees to be retained. It also includes tree surgery recommendations.

1.3. The information from this report and the accompanying TreeRadar report has resulted in a layout as shown in the tree protection plan at Appendix 3. Where technical terms are used, explanations are found in the glossary.

2. Statement of instructions and the issues addressed:

2.1. I was instructed by Bridget Plant to: -

2.1.1. Carry out a tree survey of all trees on or adjacent to the site which may be affected by the proposals in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*' (BS);

2.1.2. Interpret the results of the TreeRadar survey and how they impact the design of the scheme;

2.1.3. Analyse the proposals and the impact on trees to be retained using the tree survey data;

2.1.4. Produce a tree protection plan, showing the location of the tree protection fencing in accordance with the BS and a specification for the protection of the existing trees;

2.1.5. Provide a tree surgery schedule which includes work to facilitate construction, based on the layout of, and works to, trees due to their condition or previous management;

2.1.6. Provide Arboricultural Method Statements in as much detail as is practical at this stage.

2.2. The issues addressed are tree condition, and how the proposal impacts on the site and vice versa.

3. The site:

3.1. The site of the survey is the private rear garden of 15 Chalcot Square, London, NW1 8YA, a 5-storey end of terrace residential property, located on the south east side of Chalcot Square and opposite Chalcot Gardens. The property is surrounded on all sides by further residential properties and their gardens, which are separated and screened off by high brick boundary walls. The rear garden can be accessed from the lower ground floor or via an external staircase leading down from the upper ground floor terrace.

3.2. *Site soils:* An assessment of soils on-site was carried out by a desktop analysis using the National Soil Resources Institute website which identified the soils as likely to be '*Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils*. Detailed on-site soil analysis including boreholes and trial pits have been undertaken in order to provide a full breakdown of the soils and to inform the foundation design.

4. The trees:

4.1. *Generally:* There are 2 individual trees, 1 group of trees and 3 shrubby groups which are the subject of this survey. 2 individual trees have been classified as 'B' grade trees of moderate quality and value, while 4 individual trees, 1 group and 3 shrubby group have been classified as 'C' grade trees of low quality and value. No trees have been classified as A grade trees of high quality and value or as U grade trees unsuitable for retention. Full details are found in the survey sheets at Appendix 1 and their location on the Tree Survey Plan TRA 0479TSP at Appendix 2. No other trees will be impacted upon by the redevelopment of the site.

4.2. *Comments on specific trees:* The highest quality tree within the survey is T2, a mature lime tree growing in a raised brick edged shrub bed in the rear corner of the garden. The tree is prominent in the surrounding area and offers good screening and amenity value. The tree is currently managed with cyclical crown reduction works, likely to reduce shading to the property and surrounding gardens.

Photo 1. Tree T2 growing in the rear corner of the garden.

4.3. Along the south west boundary T5 is a triple stemmed magnolia growing within the shrub bed adjacent to the boundary wall. The tree is in good condition with good visual amenity value, however step cracking shows that the roots of the tree are causing direct damage to the boundary wall.

Photo 2. Previous repairs to the boundary wall adjacent to T5, with further cracking indicating tree root encroachment.

4.4. Adjacent to the rear corner of the property, T6 and T7 are an elder and a viburnum growing in the neighbouring property. The crowns of both trees are in contact with the existing property and boundary wall, with T6 partially obstructing the steps. Both of these trees are shallow rooting species and unlikely to extend their roots beneath the footings of the substantial boundary wall. No evidence or tree root encroachment is seen on the wall structure.

4.5. *Legislation:* From information available on the Camden Council website, it is understood that the site is located within a Conservation Area, however at the time of writing this report it is not known if any of the trees are the subject of a Tree Preservation Order.

5. TreeRadar Report Summary

5.1. A TreeRadar survey was carried out within the rooting areas of T2 and T5 where it was proposed to construct a rear extension and make changes to the layout of the garden. The purpose of this survey was to inform the design and working methodology for the extension and give rooting information in areas where level changes may be required. A draft layout was available, but this has subsequently been tailored to take into account the findings of the TreeRadar survey.

5.2. The TreeRadar is able to accurately identify locations of roots with a diameter greater than 20mm along scan lines. The TreeRadar unit is a scanning cart with a 400MHz antenna which sends a beam every 1cm down to a depth prescribed by the operator (usually between 2 - 3m, which is the maximum depth). The reflection is recorded in a field computer and then analysed by the latest software, TBA. Water and metal reflect, therefore the machine records live roots which contain moisture, and cannot detect dead dried out roots. For each scan line a 'virtual trench' is produced which shows all roots with a diameter greater than 20mm. The machine cannot determine root diameter, other than it being greater than 20mm, due to the lack of correlation between the amounts of live root tissue in a root compared to the thickness of a root. For example, a large root may have a partially desiccated or dysfunctional central core with low moisture content and so give a relatively weak radar return, while a smaller root may be filled with water molecules and give a much stronger return.

5.3. The scan lines do not cover the full theoretical root protection areas (RPAs) of the subject trees due to the boundary walls, dense vegetation and raised shrub beds, but instead focuses on the areas initially identified for the potential extension or soil level changes.

5.4. "*Scan lines 0001_0001-0013 are a series of parallel lines running approximately south west to north east at the far end of the rear garden. The lines start at the southern wall and run across the garden parallel to the eastern wall to end at the northern wall unless obstructed by vegetation or the raised garden beds. Where lines 0001_0002 is obstructed by part of the shrub bed wall the line stops and is then continued on the far side of the obstruction by 0001_0003. Scan line 0001_0001 is located 0.5m from the lower tier of the raised brick shrub bed containing tree T2, with each subsequent line or pair of lines located an additional 0.5m from the wall in turn.*"

5.5. "Roots in this area are initially found in high densities, with the density slowly falling with increased distance from the T2, reaching moderate density along 0001_0005 and low along 0001_0010 and beyond. Slightly raised densities are found at either end of the scan lines where the lines are close to the shrub beds and containing woody shrubs and small trees." "The distribution shows that the tree is rooting beneath the shrub bed walls and extending into the garden area. The density on the outer RPAs is slightly higher than typically expected for an open grown tree, likely as a result of restricted rooting to the north and east from the boundary walls."

5.6. "Scan lines 0002_0001-0009 are a series of parallel lines running approximately south west to north east within the lawn between the existing patio and tree T5. The lines start at the southern shrub bed and end at the northern shrub bed, running parallel to the brick wall edging around the patio. Scan line 0002_0001 is located 0.2m from the edge of the wall, with each subsequent line located an additional 0.5m to the north in turn."

5.7. Roots are initially found in extremely low density along lines 0002_0001-0003, rising to low along 0002_0004 and then moderate along lines 0002_0007-0009. However, the measure of density along the length of the scan lines does not give the full picture of rooting, with areas of higher density seen closer to the tree and shrub beds at either end of the lines and much lower density in the middle of the lawn.

5.8. "No increase in density was seen as the scan lines approached the off-site trees T6 and T7 and no visible evidence was found on site of these trees extending their roots beneath the boundary wall."

6. The Proposal

6.1. For the construction of a small 2.5m rear extension to the lower ground floor with external staircase and the creation of a new patio area.

7. Arboricultural impact assessment:

7.1. *Summary of the impact on trees*: Development can adversely impact trees by causing them to be removed to facilitate the development, or in the future, by adversely affecting their potential for retention through disturbance in Root Protection Areas (RPAs) or through post development pressure to prune or remove.

7.2. Tree roots can be asphyxiated and die if the rooting zone becomes compacted and soil structure damaged which can easily occur, particularly on clay soils, even with the passage of light vehicles. At the design stage, disturbance within the RPA should be avoided. If unavoidable (which may need demonstrating), consideration must be given to any construction activity such as demolition, including removal of existing hard surfaces, changing soil levels and the provision of services where within RPAs, as well as new surfaces and structures.

7.3. At the planning stage, any works proposed within RPAs must be shown to be achievable with minimal impact on retained trees. Areas should be identified where a detailed Arboricultural Method Statement will be required post planning consent.

7.4. Roots of retained, removed and newly planted trees have the potential to cause damage to structures, foundations and services. This should be taken into consideration by the project engineer when designing these elements.

7.5. *Arboricultural Impact Assessment:* No trees will be removed to develop the scheme, with all trees retained and fully protected within the development.

7.6. *Pruning works to retained trees:* The crown of T6 will be pruned back to the boundary line, as has previously been undertaken. This will allow suitable clearance around the new structure and allow safe use of the stairwell. The extent of these works will not affect the aesthetic value of the tree or impact the long-term retention. Tip pruning is required to the crown of T5 to give 2.2m clearance above the new stair case. Again, this will have minimal impact upon the aesthetic value or long-term retention of the tree.

7.7. *Incursions into the root protection area:* Where excavations for the new foundations are required within the theoretical RPAs of T6 and T7, it is considered highly likely from experience and the results of the TreeRadar survey that the footings of the high boundary wall have presented a barrier to tree root incursion from these shallow rooting species. As such it is unlikely that the development will have an impact upon the trees. The boundary wall will remain in situ during the construction, without disturbing the soils or roots within the neighbouring garden. To further reduce any impact upon these trees the excavations will be carried out under arboricultural supervision, with root pruning carried out only where necessary and appropriate. The edges of the new foundations will be lined with impermeable plastic sheeting to prevent alkali burn to roots within the surrounding soils resulting from the use of concrete.

7.8. Where excavations are required within the outer RPA of T5 for the new patio, metal stairway base and garden steps, this is a very small incursion into the RPA and again in areas identified as having low root density by the TreeRadar survey. Excavations in this area will be carried out under arboricultural supervision, using either hand tools or by making shallow scrapes using a toothless bucket mounted on a mini digger operating from outside the RPA of the tree. Root pruning will be carried out by the supervising arboricultural consultant only where appropriate and necessary. Where possible roots will be retained and redirected along the edges of the excavation. The ends of any cut roots and any roots which have been redirected will be wrapped in clean, dry hessian until they can be covered with clean topsoil. During very hot dry weather the hessian should be watered with potable water to prevent desiccation of the roots. The edges of the excavation will be lined with impermeable plastic sheeting to prevent alkali burn to any tree roots in the surrounding soils.

7.9. Full specification tree protection fencing is not suitable in this situation as the site is a residential property, which will remain occupied by the family during the construction works. Instead, the fencing will consist of orange mesh barrier, mounted on stakes. During the site set up it will be set out and written into the induction information that no access for site personnel is permitted within the fenced off garden and that no material is permitted to be stored within the shrub beds or lawn.

8. Conclusions:

8.1. No trees will be removed to facilitate the development, with all trees, groups and shrubby groups on or adjacent to the site fully protected throughout the development. The garden is already stocked with a large number of trees and woody shrubs for a small domestic garden and so no additional tree planting is thought necessary or appropriate.

8.2. Where foundations are required within the existing patio for the new lower ground floor extension, this is outside the RPAs of any on-site tree. While it is within the theoretical RPA of T6 and T7, it is extremely likely that the foundations of the high brick boundary wall will have prevented tree root encroachment into the site and so a modified RPA has been applied.

8.3. Where excavations are required within the lawn area inside the RPA of T5 for the new patio, steps and the base pad for the metal staircase, this encroachment is very minor and in areas of low root density. The impact will be minimised by undertaking the works under arboricultural supervision and using hand tools or a toothless bucket mounted on a mini digger. As such, these works minimise the impact on roots of T5.

8.4. Only minor pruning work is required to T6 repeating the pruning work previously carried out. Tip pruning to the crown of T5 to give 2.2m clearance above the new staircase will have minimal impact upon the aesthetic value or long-term retention of the tree.

8.5. Given no trees are to be removed to facilitate the development, along with the low level of crown pruning, I would consider the designs to have an overall low impact on the retained trees, provided that the working methodologies recommendations within this report are observed and that the currently proposed construction type is not changed.

9. Recommendations:

9.1. That a copy of this report and subsequent more detailed arboricultural method statement is kept on site, including an A3 colour copy of the Tree Protection Plan. The arboricultural documents will be part of site induction by the main contractor to all sub-contractors.

9.2. That the Arboricultural Method Statements are developed further and are observed by all site personnel and supervised at key stages by the project arboricultural consultant. Short supervision reports are to be written after each inspection as a record of compliance and audit trail to the Local Authority. These reports will be submitted within 10 working days of the site visit.

9.3. That the foundation designs take into account trees to be retained.

9.4. That there are no ground level changes within the RPAs of any retained trees other than those described within this report, unless assessed by the project arboricultural consultant and approved by the LPA Tree Officer.

9.5. Services to the new structure will be routed from the existing property. Should any new underground services be required, these should be routed outside the RPAs of the retained trees.

9.6. That no tree works take place until consent is granted by Camden Council.

9.7. That the tree protection fencing is installed before any materials or machinery enters the site and remains in place until all site construction works are completed.

9.8. That the locations of any further exploratory intrusive investigations are assessed by the arboricultural consultant and that the ground remediation methodology near trees is discussed with the arboricultural consultant.

9.9. That any drainage strategy detailing on and/or offsite drainage works, including SUDS, is reviewed by the arboricultural consultant to ensure minimum impact on trees to be retained.

IAN LEE
Chartered Arboricultural Consultant
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Appendix 1

Tree survey sheets

Explanation of the tree survey sheets

The tree survey has been carried out in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. Below is an annotation of the abbreviations in the sheet and their meanings.

1	2	3	4	5	6	7	8				9	10	11	12	13	14	15
Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	Ult ht (m)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m^2)	Comments	Recommendations

1 Tree

T - Tree, **G** - Group of trees, **H** - Hedge and **S** -shrub mass

2 Species - Botanical name and (Common name)

3 Age

NP – Newly planted, **Y** – Young - an establishing tree that could be easily transplanted
SM - Semi-mature - an established tree still to reach its ultimate height and spread with considerable growth potential.
EM – Early mature – a tree reaching its ultimate height and whose growth is slowing, however it will still increase considerably in stem diameter and crown spread.
M – Mature – a tree with limited potential for further significant increase in size, although likely to have a considerable safe useful life expectancy
OM – Over-mature – a senescent or moribund tree with a limited safe useful life expectancy
V – Veteran – a tree older than typical for the species and of great ecological, cultural or aesthetic value.

4 Dia (mm)

Diameter of the stem in millimetres at 1.5m above ground level for single stemmed tree or in accordance with Annex C of BS 5837 for multi-stemmed trees or trees with low forks or irregular stems.

5 Stems

Number or stems. Multi-stemmed is m/s

6 Height (Crown height)

Height in metres from the ground to the top of the crown
(Crown height) – height of canopy above ground level

7 Ult ht (m)

Height in metres that could be reasonably expected for the species given its condition, past management and location.

8 NSEW

The crown spread from the trunk to the tips of the crown at the four cardinal points

9 Cond

Physiological condition. Good, fair, poor or dead

10 Life Exp

Estimated remaining contribution in years; <10, 10+, 20+ and 40+.

11 BS Cat

Category in accordance with Table 1 and section 4.5 of BS

U – unsuitable for retention. Existing condition is such that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years. Note, category U trees can have existing or potential conservation value which might be desirable to preserve.

A – high quality and value (non-fiscal) with at least 40 years remaining life expectancy

B – moderate quality and value with at least 40 years remaining life expectancy

C – low quality and value with at least 10 years remaining life expectancy, or young trees with a stem diameter below 150mm

A, B and C category trees are additionally graded into: 1 – mainly arboricultural values, 2 – mainly landscape values and 3 – mainly cultural values including conservation

12 RPR (m)

RPR – Root protection area radius (m)

13 RPA – Root protection area (m^2)

14 Comments

Detailed comments about the tree

15 Preliminary recommendations

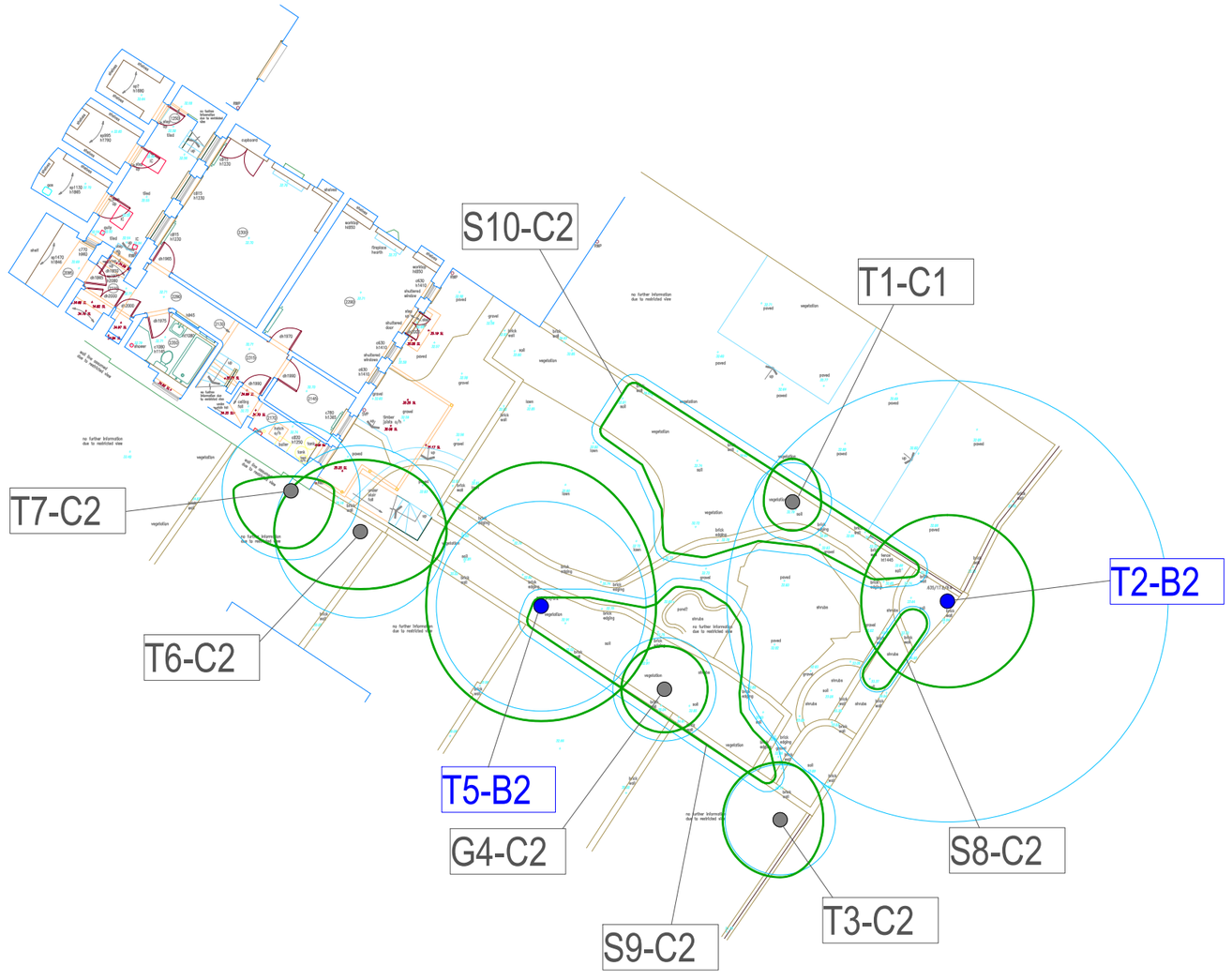
Recommendations based on the tree's conditions and its current surroundings.

Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	Ult ht (m)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m^2)	Comments	Recommendations
T1	Laburnum anagyroides (Laburnum)	Y	113	8	3(1)	8	1.5	1	1.0	1.0	Good	20+	C1	1.36	5.81	Small Multi-stemmed tree growing in shrub bed on edge of garden. Good amenity value.	None.
T2	Tilia X europaea (Common Lime)	M	640	1	16(2)	20	3.0	3.0	3.0	3.0	Good	20+	B2	7.68	185.32	Tree growing in raised, brick edged shrub bed at rear of garden. Soil raised by approx 75cm above garden level. High screening and amenity value. Tree is managed on cyclical crown reduction.	None.
T3	Laurus nobilis (Bay)	SM	160	4	6(1)	10	2.0	1.5	2.0	2.0	Fair	10+	C2	1.92	11.58	Off-site tree in neighbouring garden behind 2m high brick wall. Some screening and amenity value to surrounding gardens.	None.
G4	Syringa vulgaris (Lilac)	SM	150	1	3.5(2)	5	1.5	2	2	2	Fair	10+	C2	1.8	10.18	Two multi-stemmed lilac bushes growing within 0.2m in shrub bed to side of pond and next to boundary wall. Limited screening due to size and location.	None.
T5	Magnolia grandiflora (Southern magnolia)	EM	240, 150, 110	3	8(2)	10	5	4	4	4	Fair	20+	B2	3.65	41.86	Tree growing in shrub bed between path and brick boundary wall. Triple stemmed from 0.2m. Wall showing signs of cracking from root encroachment. Good amenity value.	None.
T6	Sambucus nigra (Elder)	M	250	2	6(2)	7	2.5	3	2	3	Fair	10+	C2	3	28.28	Off-site tree growing in neighbouring garden behind 2m brick wall. Foliage partially obstructing garden steps.	Prune back to boundary line.
T7	Viburnum tinus	EM	200	1	4(0)	6	0.5	2	2	2	Fair	10+	C2	2.4	18.1	Off-site tree behind wall. Unable to view base. In contact with side of building.	None.
S8	Ilex aquifolium (Holly), Camellia japonica (Camellia)	Y	50	1	1.3(0)	4	0.5	1	1	1	Fair	20+	C2	0.6	1.13	Small bushes in raised bed at rear of garden. Limited screening or amenity due to size and location.	None.

Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	Ult ht (m)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m^2)	Comments	Recommendations
S9	Choisya (Choisya), Forsythia Sp. (Forsythia), Rhododendron Sp. (Rhododendron), Camellia japonica (Camellia), Acer japonicum (Japanese maple)	Y	50	1	1.5(0)	2	0.3	0	0	0	Fair	10+	C2	0.6	1.13	Shrub bed trees and bushes between wall and path.	None.
S10	Heimia salicifolia (Shrubby yellow crest), Rosa Sp. (Shrub rose)	Y	50	1	1.5(0)	2	0.3	0	0	0	Fair	10+	C2	0.6	1.13	Shrub bed plants between wall and path.	None.

Appendix 2

Tree Survey Plan TRA 0479 TSP



0 10 20m

T1-B Category B tree - Moderate quality and value

T1-C Category C tree - Low quality and value

Crown spread

Group of trees

RPA - root protection area
as defined by Table 2
BS 5837:2012

Notes

1. Contractors to check all dimensions on site
2. Discrepancies must be reported to the Arboricultural Consultant before proceeding
3. The original of this drawing was produced in colour, a monochrome copy should not be relied upon.
4. It is the responsibility of the contractor to ensure necessary consents for tree works are in place
5. This drawing is copyright

Description :	Authorized :

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Bridget Plant

Site Address

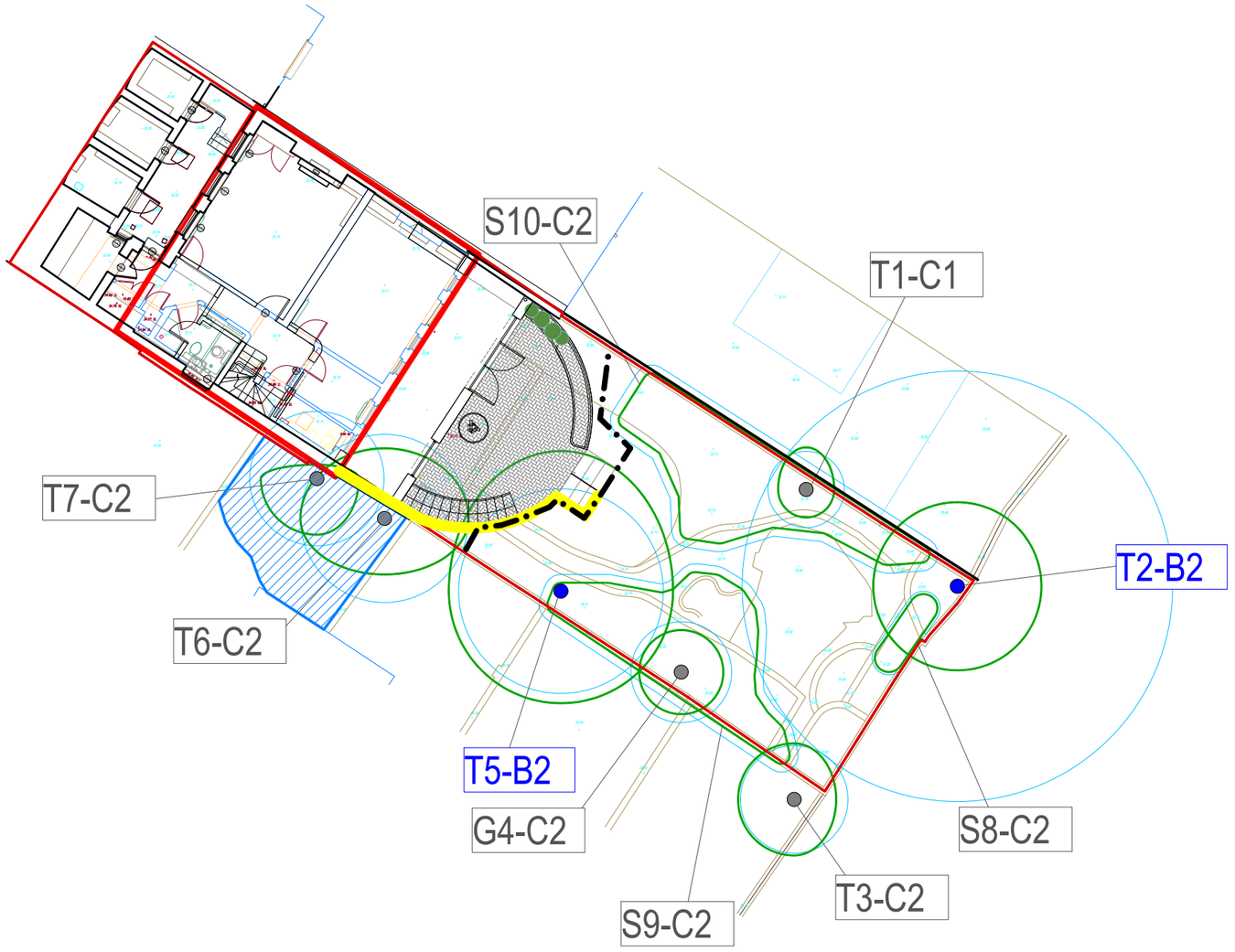
15 Chalcot Square, London, NW1 8YA

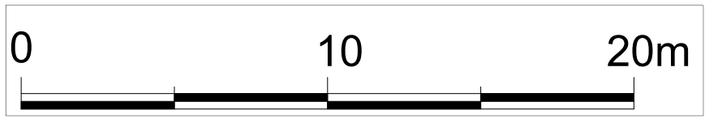
Drawing Title	Orientation	Drawn	Authorized
Tree Survey Plan		IL	KL

Date	Drawing Number	Scale	Drawing Status
19.05.2025	TRA 0479 TSP	1:200@A3	For Issue

Appendix 3

Tree Protection Plan TRA 0479 TPP





T1-B Category B tree - Moderate quality and value

T1-C Category C tree - Low quality and value

Crown spread

Group of trees

RPA - root protection area
as defined by Table 2
BS 5837:2012

Modified RPA

Existing property outline

Area requiring supervised excavaion

Tree Protection Fencing

Notes

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Description : Authorized :

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Bridget Plant

Site Address

15 Chalcot Square, London, NW1 8YA

Drawing Title	Orientation	Drawn	Authorized
Tree Protection Plan		IL	KL

Date	Drawing Number	Scale	Drawing Status
22.05.2025	TRA 0479 TPP	1:200@A3	For Issue

Appendix 4

Tree surgery schedule

Tree surgery schedule

All works to be carried out in accordance with BS 3998:2010 *'Tree works – Recommendations'*. All pruning cuts to be made at suitable growing points in the line with the principles of 'Natural target pruning'. An ecological check is required by a competent person prior to tree works being carried. Works should not take place until planning permission is granted, and all pre-commencement conditions are discharged.

Tree no.	Species	Proposed works	Reason
T5	Magnolia	Prune to give 2.2m clearance over stairwell.	To allow safe use of the stairway
T6	Elder	Prune back to boundary line.	To facilitate development.

Appendix 5

Tree protection specification

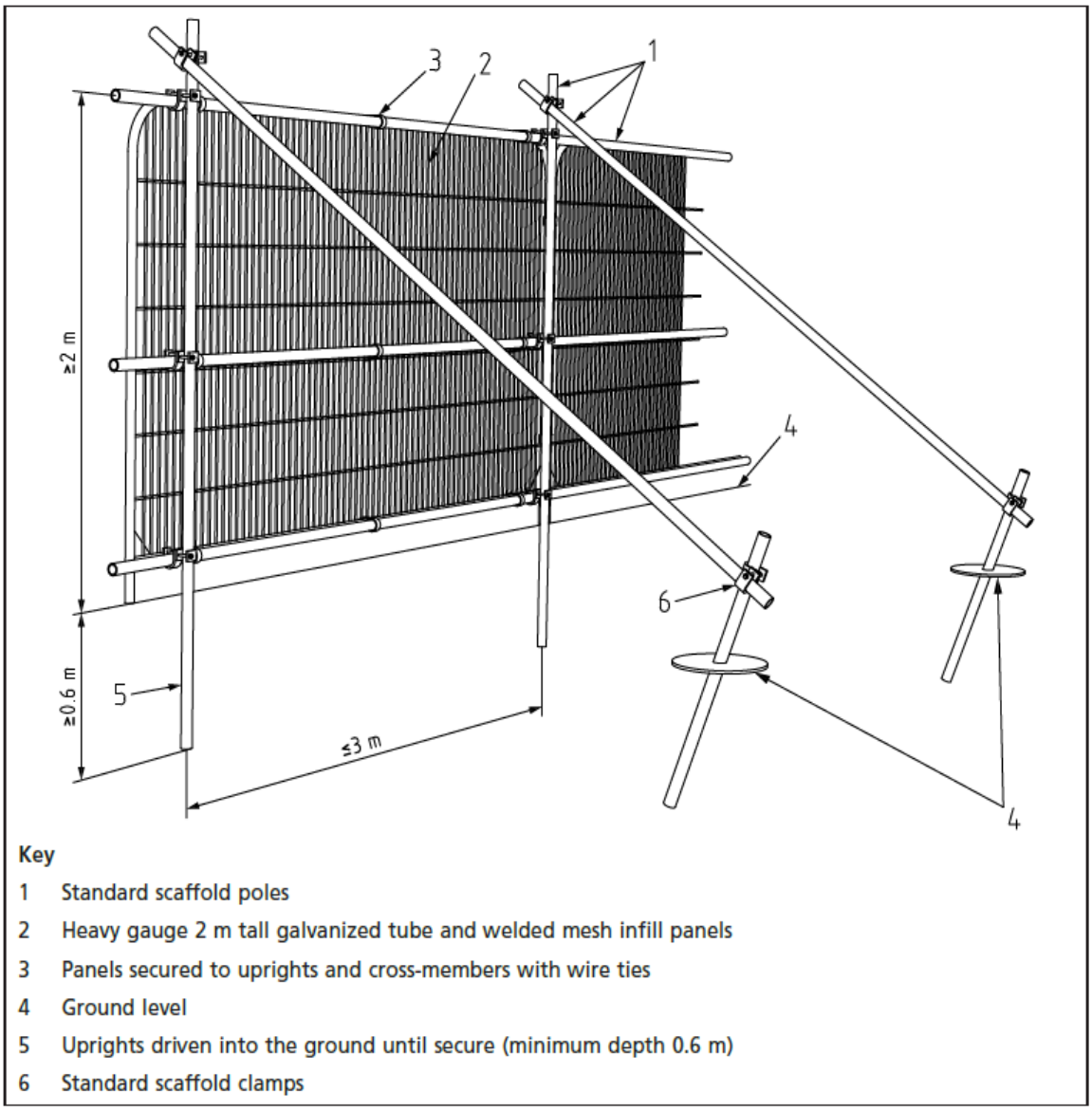
Tree protection fencing is required to avoid accidental damage to the soil structure within the RPAs from unauthorized vehicular activity or material storage. Barriers should be fit for purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees. Barriers should be maintained to ensure that they remain complete and fit for purpose.

The location for the tree protection fencing is shown on the tree protection plan delineated by a black dashed line. The location of the fencing is set out on the outer edge of the root protection areas. The protective fencing must be in place prior to any works beginning and before any plant or materials enter the site.

As the site is a small residential property, it may be acceptable to use orange mesh barrier fencing in place of the Heras fencing as shown below, however this would require the consent of the planning authority. The mesh fencing will be supported either by metal pins or wooden stakes driven into the ground, with the final stake or pin in the line attached to a fixed point such as the existing boundary wall.

Should this method of tree protection fencing not be acceptable to the Local Planning Authority, then the full specification tree protection fencing shown overleaf must be used.

Figure 2 Default specification for protective barrier



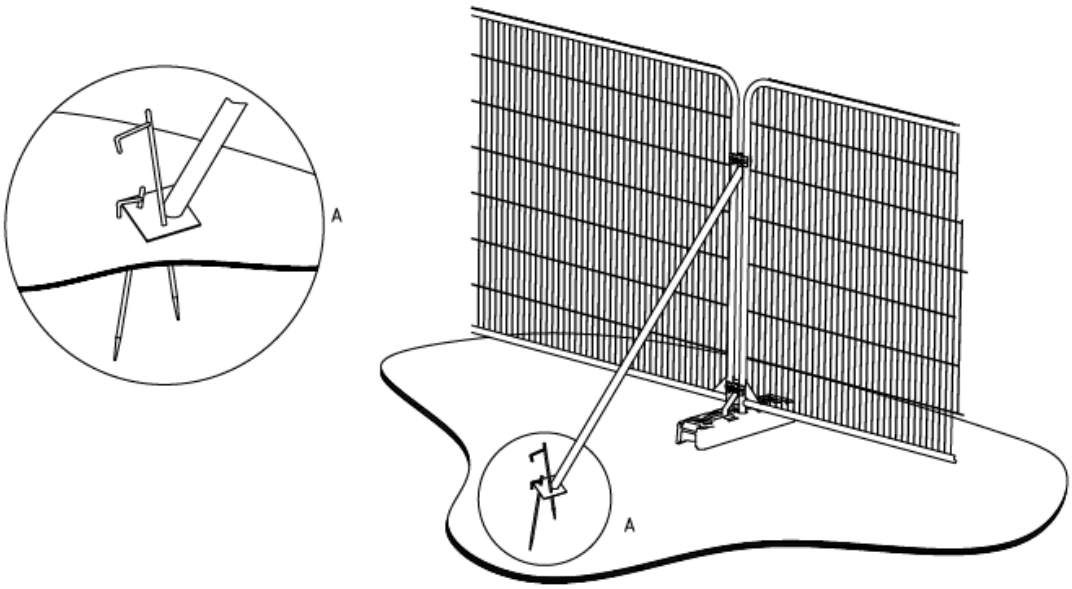
Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

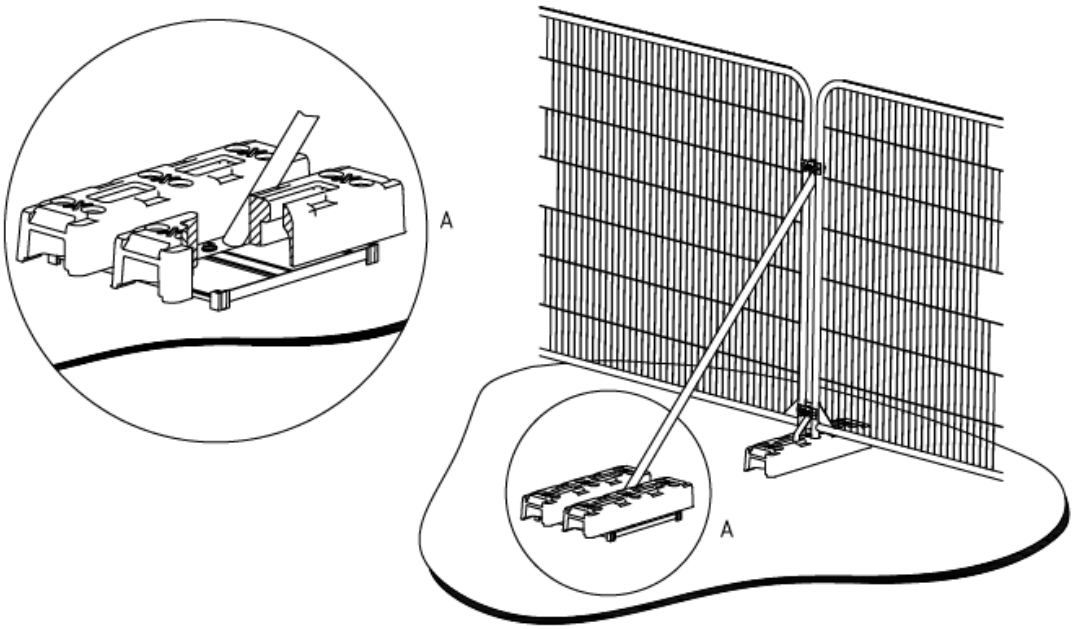
Tree protection fencing specification from BS 5837:2012 Figure 2 Section 6.2.2 of BS.

The default specification is shown above at Figure 2. Where it is not possible to drive a pole into the ground, for example on hard surfacing, figure 3 overleaf, applies.

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

All weather signs should be affixed to the barriers, no more than 12m apart. The purpose of the signs is to inform all site personnel of the purpose of the fencing and their requirements.

Suggested site warning sign format

Ground protection during demolition and construction

Should 'temporary access' be needed within the root protection area during construction, the fencing should be set back the minimum amount to achieve the required room and ground protection boards used. The suitability of this surfacing for ground protection, and whether it needs to be reinforced to bear the weight of machinery, should be assessed by an engineer and discussed with an arboriculturist. **This will require the consent of the LPA and project arboricultural consultant.**

Where the set back of the fencing exposes unmade ground, the ground must be protected before any works take place on site. This is to prevent root damage and soil compaction.

The ground protection might comprise of one of the following: (section 6.2.3.3 of BS)

A) For pedestrian movements only or for the erection of scaffolding, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;
B) For pedestrian-operated plant up to a gross weight of 2 tonnes, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;

Appendix 6

Draft Arboricultural Method Statement

Tree works:

Recommendations for tree works can be found in the tree surgery schedule in Appendix 5 and should be carried out in accordance with BS 3998:2010 '*Tree work. Recommendations'*. To ensure this, the use of a competent and insured tree surgery contractor is essential. The main contractor and tree surgery contractor must ensure that any necessary consents have been received from the local authority and that no protected species are harmed whilst carrying out site clearance or tree surgery works.

The following information must be sought:

- Current employers, public and product liability insurance
- Waste carriers' licence
- Qualification and experience of key personnel, including relevant NPTC certificates
- COSHH assessment
- Tool and task-based risk assessment, including a Working at Height Risk Assessment
- Site specific risk assessment
- Emergency procedure plan
- Method Statement

A list of suitable tree surgeons is found at:

http://www.trees.org.uk/find-a-professional/Directory-of-Tree-Surgeons

Bio security measures are important and found at:

https://www.forestry.gov.uk/biosecurity

Fires and site storage: No fires should be lit on the site regardless of the distance to the crown of the trees. All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside root protection areas unless on the existing and intact hard surfacing. No discharge of potential contaminants should occur where there is a risk of run off into Root Protection Areas.

Temporary buildings for site use: It is most likely that the site will be managed from the existing building, however if required any temporary buildings must be positioned outside the RPAs on the area that will form the new patio. Careful consideration is required on the positioning of temporary buildings to ensure that any generator exhausts, kitchen extractors or other sources of hot air are not vented into the crown or under the crown of the tree as these can cause scorching to the leaves or bark or a build-up of harmful gasses in the crown.

Protection of tree canopies: Cranes are often used close to trees, both to lift materials into place and when delivering materials to the site. Work must be carefully planned so that there is sufficient room to avoid hitting the canopy during transportation or operation. Arboricultural supervision may be required; however, it is the responsibility of the contractor to assess and plan the work.

Arboricultural site supervision

An initial site meeting:

Before works have started, but after the tree surgery and tree protection measures are in place. At this meeting the site manager, contractor, arboricultural consultant should discuss methodology and the tree protection measures will be examined. A '*What you need to know about working near trees at 15 Chalcot Square, London*', sheet will be issued which includes contact details.

Further site supervision will be required at points to be agreed during the scheme.

After each site supervision, a short report will be sent to the contractor, client and local authority within 10 days of the visit to form a record of compliance.

Appendix 7

Tree related legislation

Tree preservation orders and Conservation Areas

From information on Camden Council's website, it is understood that the site is located within a Conservation Area, however it is not known if any of the trees are the subject of a Tree Preservation Order. No works may be carried out to the trees or shrubs with a diameter in excess of 75mm or above at 1.5m above ground level without consent from Camden Council. Failure to obtain permission for works to trees protected by a conservation area or TPO is a criminal offence, punishable by a fine of up to £20,000 per tree and/or a criminal record. Unlimited fines may be handed down from the Crown Court for serious breaches.

If the offence relates to the removal of a protected tree, the landowner is also placed under a duty to plant another tree of an appropriate size and species in the same place, which can be enforced with a Tree Replacement Notice.

Anyone who carries out work in a way that is not likely to destroy the tree is liable to a fine in the Magistrates' Court of up to £2,500.

Ecological considerations

The Wildlife and Countryside Act 1981, as amended, The Conservation of Habitats and Species Regulations 2010 and the Countryside and Rights of Way Act 2000, provide statutory protection to species of flora and fauna including birds, bats and other species that are associated with trees.

Occupiers Liability Act 1957 and 1984

The Occupiers Liability Act (1957 and 1984) places a duty of care to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore, this report includes recommendations within the tree tables for work required for safety reasons. 'Common sense risk management of tree (National Tree Safety Group 2012)' states that *'The owner of the land on which a tree stands, together with any party who has control over the tree's management, owes a duty of care at Common Law to all people who might be injured by the tree. The duty of care is to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property'.*

Common law enables pruning back to the boundary line providing the work is reasonable. Other restrictions, such as tree preservation orders/conservation areas still apply.

The owner of a tree is not obliged to trim their trees or hedges to prevent them from crossing over a boundary. Whilst the tree owner is not obliged to cut back the branches, the person whose property is overhung has the right to cut back the branches to the boundary providing there are no planning or legal restrictions on the trees such as Tree Protection Orders or if they are located in a church yard, in which case suitable consent must be obtained. Such pruning works must be undertaken to a suitable standard and must not cause damage to the tree.

The resulting debris remains the property of the tree owner, but you must not cause any damage to their property when returning it back to them and you do not have the right to trespass on the tree owner's property in carrying out the works. In the interests of good neighbourly relations, we would encourage neighbours to discuss their intentions with each other before carrying out such works, providing the work is reasonable and that the trees are not subject to TPO or Conservation Area protection.

Appendix 8

Statement of methodology and reference material

Statement of methodology

Review of Architects plan and TreeRadar survey.

Site visit made by Ian Lee on 13th May 2025.

Tree survey using Visual Tree Assessment carried out in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations'* (BS). All investigations were from ground level only and binoculars were used when necessary. All trees with a trunk diameter of 75mm or above were surveyed. Obvious hedges and shrub masses were identified where appropriate. Information collected is in accordance with recommendations in subsection 4.4.2.5 of BS and include species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree was then allocated one of four categories (U, A, B or C).

Received material: -

24031-701-GroundFloor

24031-700-LowerGroundFloor

24031-001-SiteLocationPlan

15230-01-A1

Reviewed text: -

BSI. BS 3998:2010 *Tree Work-Recommendations.*

BSI. BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*

R.G.Strouts and T.G.Winter 'Diagnosis of ill-health in trees' TSO 1994

Castle Point Borough Council website

C. Mattheck 'The body language of trees' 2015

Appendix 9

Caveats & Exclusions

Specific report caveats

1. At the time of writing this report, the protected tree status is not fully known but does include Conservation Area protection. Therefore, I advise that a further check is made with Camden Council before any works to trees take place, to ensure that all appropriate consent has been obtained.
2. No internal diagnostic equipment was used other than a sounding mallet and probe and all inspections were from ground level only, with the aid of binoculars where necessary.
3. The survey is concerned solely with arboricultural issues.
4. Any changes in ground level, or excavations near to tree roots not discussed within this report may change the stability and condition of the trees and a further examination would be required.
5. As trees are a dynamic living organism this report is only valid for a period of 12 months, in respect to their health and condition.
6. Only the trees listed in this report have been examined.
7. The tree information is from the time of the survey. Some pests, diseases and fungi only appear seasonally, therefore it is possible not all issues that may affect the health of the trees could be observed.

Appendix 10

My experience and qualifications

PROFILE: Ian Lee

MICFor MArborA BSC (Hons) Tech Cert (Arbor A)

Ian has nineteen years' experience as an arboricultural consultant in the private and public sector. Ian is a professional member of the Arboricultural Association and has a degree in Forestry. Ian has considerable expertise in problem solving in relation to trees and the planning process and complex construction issues.

Ian has a deep understanding and knowledge on the operation and interpretation of TreeRadar extending back to 2011 and has carried out two research and development visits with Sharon Hosegood Associates in 2016. This research continues with international colleagues.

Ian currently stands as the Institute of Chartered Foresters representative to the London Urban Forest Partnership.

Ian has managed a team delivering volume tree surveys and has produced woodland management plans.

Specialities

- Trees in relation to development, including appeals and planning hearings
- Tree root investigations, including TreeRadar©
- Tree hazard evaluation
- Tree preservation orders
- Manager of volume tree surveys

Professional bodies:

- Chartered member of the Institute of Chartered Foresters (ICF)
- Professional member of the Arboricultural Association

Qualifications:

- Arboricultural Associations Technicians Certificate
- BSc (Hons) Forestry and Forest Products
- Lantra Visual Tree Assessment

Appendix 11

Glossary

Arboriculture	Formerly all aspects of the culture of trees, especially for forestry. Latterly, the art and science of cultivating and managing trees as groups and individuals, primarily for amenity and other non-forestry purpose**.**
Arboricultural method statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculturist	Person who has, through relevant education, training and experience in the field of trees in relation to construction.
Architecture	In a tree, a term describing the pattern of branching of the crown or root system.
Biodiversity	The variability among all living organisms of an ecological complex.
Biomechanical	Pertaining to the mechanical functions and properties of living organisms, such as trees.
Body language	In trees, the outward display of growth responses and/or deformation in response to mechanical stresses.
Branch	A limb extending from the main stem or parent branch of a tree.
Branch bark ridge	The raised arc of bark tissues that forms the acute angle between a branch and its parent stem
Branch collar	The swelling or roughened bark often found at the base of a branch which should be left intact if the branch is to be pruned off.
Canker	A lesion in which bark and cambium have been killed, sometimes exposing the wood and often showing a swollen appearance owing to the encircling growth of new tissues.
Cambium	Layers of meristematic cells in the cells peripheral to the phloem that give rise to bark.
Canopy	The topmost layer of twigs and foliage in a tree.
Co-dominant	In trees, a similarity between two or more stems or branches with regard to their size and their position within the canopy.
Column	In the wood or phloem of a tree, an axially elongated zone of tissue that is distinguished form the surrounding tissue; e.g. Live verses dead or decayed versus non-decayed.
Construction exclusion zone	An area based on the root protection area from which access is prohibited for the duration of the project.
Coupe	An area of woodland that has been (or is about to be) selectively clear-felled or coppiced.
Crown	In arboriculture, the main foliage-bearing portion of a tree.
Crown lifting	The removal of shortening of the branches that form the lower part of the crown of a tree.
Crown reduction	Pruning in order to reduce the size of the crown of a tree.
Crown thinning	Pruning inside the crown of a tree in order to reduce its density.
Defect	In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.
Dieback	The death of part of a plant, usually starting from a distal point and often progressing proximally in stages.

Direct damage	Direct physical damage to a structure of surface from pressure exerted by the trunk or growing roots.
Dormant bud	An axillar bud which does not develop into a shoot until after the second season following its formation. Many such buds persist through the life of a tree and develop only if stimulated to do so.
Ecosystem services	The benefits that a particular species or range of species bestow upon others (including humans) though ecological relationships. Such services can sometimes be estimated in a form that allows them to be included in financial accounting.
Epicormic	Pertaining to shoots or roots which are initiated on mature woody stems; shoots can form tin this way from dormant buds or they can be adventitious.
Failure	In connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil.
Flush cut	A pruning cut close to the parent stem which removes part of the branch bark ridge.
Foreseeable	In hazard assessment, pertaining to failure and associated injury of damage which are predictable on the basis of evidence from a tree and its surroundings.
Fungi	Organisms of several evolutionary origins, most of which are multicellular and grow as branched filamentous cells within dead organic matter or living organisms.
Hazard	A thing, a process or a potential event that has the potential to cause harm.
Heartwood	The dead or predominantly dead central wood of various tree species whose outer living wood, sapwood, has a finite and pre-determined lifespan.
Independent in the landscape	Point at which a newly planted tree is no longer reliant on excessive or abnormal management intervention in order to grow and flourish with realistic prospects of achieving its full potential contribute to the landscape.
Level arm	A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch.
Landscape character	A distinct, recognisably and consistent pattern of elements in the landscape that make one landscape different from another, rather than better or worse.
Mulch	Material laid down over the rooting area of a tree or other plant to help conserve moisture, suppress weeds and encourage a beneficial microflora.
Mycorrhizal	Pertaining to an intimate symbiotic association between plant roots and specialised fungi.
PICUS	The Picus Sonic Tomograph is a non-invasive tool for assessing decay in trees. It works on the principle that sound waves passing through decay move more slowly than sound waves traversing solid wood. By sending sound waves from a number of points around a tree stem to a number of receiving points, the relative speed of the sound can be calculated and a two-dimensional image of the cross-section of the tree can be generated
Pollard	A term for a pollarded tree

Pollarding	The complete or partial removal of the crown of a young tree so as to encourage the development of numerous branches; also, further cutting to maintaining this growth pattern.
Probability	A statistical measure of the chance that a particular event (e.g. a specific failure of a tree or specific kind of harm to persons or property) might occur.
Resistograph	The IML-RESI system is based on the measurement of drilling resistance. The IML-RESI operates in a similar manner to a normal drill. A drilling needle with a diameter of 1.5mm is inserted into the wood under constant drive. While drilling, the resistance is measured as a function of the drilling depth of the needle. The data is printed and stored electronically at a scale of 1:1 simultaneously. Although invasive the relatively small needle diameter causes very little damage, testing is normally only undertaken to confirm the remaining stem wall thickness in decaying trees.
Retrenchment	Progressive reduction in the size of the crown of an old tree, by means of the dieback of breakage of twigs and small branches, accompanied by the enhanced development of the lower or inner parts of the crown.
Risks	The likelihood of the potential harm from a particular hazard becoming actual harm.
Root protection area	A layout tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. BS 5837:2012 *'Trees in relation to design, demolition and construction – Recommendations'.*
Root flare	Thickened and expanded base of s tree stem at ground level form which buttress roots form.
Rootplate	The central part of the root system of a tree, consisting of the large-diameter main roots and a dense mass of smaller roots and soil.
Service	In construction, any above-or below-ground structure o apparatus for utility provision.
SULE	Safe useful life expectancy of a tree (Barrell)
Stag-headed	In a tree, a state of dieback in which dead branches protrude beyond the current living crown.
Stress	In plant physiology, a condition under which one or more physiological functions are not operation within their optimum range, for example owing to lack of water, inadequate nutrition or extremes of temperature.
Stub cut	A pruning cut which is made at some length distal to the branch bark ridge.
Target pruning	The pruning of a twig or branch so that tissues recognisably belonging to the parent stem or branch are retained and not damaged.
Targets	In tree hazard assessment, persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.
Tree Preservation Order	In Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.

Tree protection plan	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposal, showing trees for retention and illustrating the tree and landscape protection measures.
Utility	An undertaker by statute that has a legal right to provide customer services (e.g. communication, electricity, gas and water).
Veteran tree	*'A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species'.* Ancient Tree Guide No. 4 (ATF, 2008).
Vigour	In tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter growth.
Vitality	In tree assessment, an overall appraisal of physiological and biomechanical processes, in which high vitality equates with near-optimal function, in which high vitality equates with healthy function.
Visual Tree Assessment (VTA)	In addition to the literal meaning, a system expounded by Matteck and Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.
White-rot	Various kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded.
Wound	Injury caused to a tree by a physical force.

ARBORICULTURAL IMPACT ASSESSMENT REPORT

BS 5837:2012 *'Trees in relation to design, demolition and construction. Recommendations'*

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