



Arboricultural Impact Assessment

76 Lawn Road, Camden NW3 2XB

Client Name: Amy Gunning & Richard Lipsitz

Project Number: P3430.1.3

Date: 25 August 2021

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Date:	25 August 2021
Version:	FINAL

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1 Report Summary

This Arboricultural Impact Assessment has been prepared to support a planning application for development at 76 Lawn Road, Camden, London.

The site is a detached residential property in North London. It is proposed to excavate a basement level beneath the current building footprint, extended further into the garden to the rear.

The site contains several trees, both to the front and rear, which could be affected by development. The potential impacts on trees and proposed mitigation measures are set out in the table.

Potential Development Impact	Trees Affected	Proposed Mitigation Measures
Removal of trees due to incompatibility with the development, or due to condition / structural damage.	T1, T2, T3, T4, T5 and T6.	Provide replacement planting to compensate for removals.
Excavation within the RPA for the basement, leading to root damage and removal.	T7.	Use hand excavation for the final 600mm closest to trees and to 600mm depth. Use a clean, sharp hand saw for root removal to minimise wound size. The excavation must be lined with an impermeable membrane to prevent leachate from concrete affecting tree roots.
Future structural damage leading to tree removal to alleviate.	All retained trees.	Design foundations to tolerate the presence of trees.
Damage to tree roots from compaction and contamination from construction activities. Damage to tree stems and crowns from construction activities.	All retained trees.	Erect protective fencing to encompass all sections of tree crowns and RPAs, whichever is the greater, with this erected prior to the commencement of development and maintained in place until all development is complete. Install ground protection where working space is required within any RPA.

At the time of writing the report, it is understood that the site is within the Parkhill Conservation Area and that trees T1 and T7, as numbered within this report, are subject to Tree Preservation Orders. The status of tree protection can change at any time and must be confirmed with the Local Planning Authority prior to the commencement of any tree work.

This report sets out that the removal of four trees is required to allow space for development, together with the methodology for construction and tree protection requirements. As all trees that require removal are of small size and / or low quality, with only one having any public visibility, the impact of tree removal is considered to be minimal.

The removal of a further two trees is required irrespective of development, due to tree condition and structural damage. It is recommended that their removal is included within the application to avoid having to construct the development to minimise impacts on trees that have no long-term future. New planting will be required to replace one of these, as the tree is subject to a Tree Preservation Order.

Any development impacts on retained trees can be effectively mitigated, subject to the correct implementation of all tree protection and the construction methodology.

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2 Introduction

2.1 Brief

agb Environmental Ltd was commissioned by Amy Gunning & Richard Lipsitz to undertake an Arboricultural Survey at 76 Lawn Road, Camden, London to accompany a planning application. The purpose of the survey was to identify:

- Age class, condition, dimensions, general health and Root Protection Area (RPA);
- Constraints and potential tree removals in respect of the proposed layout;
- The location and means of protecting retained trees; and
- Preliminary methodology for implementing the proposed layout.

2.2 Documents and Information

The following documents were utilised in the preparation of this report:

- Drawing 01-2274-A-Topographic Survey - Topographical Survey;
- Drawing 20007_PA4_P_20_105_Landscape Plan;
- R11438 Front Garden Wall Report;
- Drawing R11438-EXT1; and
- BS5837:2012 *Trees in relation to design, demolition & construction - Recommendations*.

2.3 Survey Details and Constraints

The survey was undertaken on the 8th October 2019 by the agb Environmental Arboricultural Consultant, in adherence to the principles of BS5837:2012 *Trees in relation to design, demolition & construction - Recommendations*. Tree inspections have been undertaken from ground level using non-invasive techniques only, in accordance with the principles of the Visual Tree Assessment method developed by Mattheck and Breloer (1994).

The survey obtained data on seven individual trees and one group. Trees with a stem diameter below 75mm, when measured at 1.5m above ground level, were not included. The terms used to explain the data recorded are provided in **Appendix 1**.

Comments on tree condition and safety relate to the condition of trees at the time of survey. It should be recognised that tree condition is subject to change in response to a range of factors. This report does not take into account potential extreme climatic events that would be unexpected in this locality (which could include, but aren't restricted to, severe windstorms, floods or drought), or potential outbreaks of pests or diseases.

This report contains work recommendations to manage the risks posed to and by trees responsibly, reducing them to an acceptable level. Even after the recommended work has been carried out some trees could still fail, but it is unlikely that such failure will cause significant harm unless the weather conditions are extreme and / or there are major hidden defects.

This report considers the potential for trees to influence soil in such a way as to cause the proposed development, or other buildings, to suffer tree related subsidence or heave damage,

but does not attempt to quantify this. Operations carried out in the vicinity of the trees, either in the past or future, could affect their health and stability; such operations could include, but aren't restricted to, trenches dug for the installation or repair of utilities.

3 Site and Surrounding Area Context

3.1 Site Description

The site was a semi-detached two-storey dwelling on the west side of Lawn Road, Camden. Surrounding land use is predominantly residential, with surrounding mature tree cover.

Vehicular access was via the driveway along the southern boundary, with pedestrian access from steps to the rear of the front garden. The site sloped up from the road to the house, with a level raised lawn area, containing trees and shrubs. The house was located in the eastern half of the plot, with a patio area directly to the rear, leading to a level rear lawn, containing mature trees and shrubs via a flight of steps to the south. Access to the rear garden was via the house or side path and gate along the south boundary.

3.2 Soil Assessment

Information from the Geology of Britain viewer (British Geological Survey, 2021) indicates that the bedrock geology local to the property is London Clay Formation – Clay, Silt and Sand. Clay soils generally have a high potential for volume change in response to soil moisture change, possibly resulting from the presence of trees.

An assessment of the soil conditions within the site will be required to inform foundation construction. This assessment must be made by a qualified structural engineer or geotechnical consultant.

3.3 Existing Tree Stock Summary

Photographs are provided in **Appendix 2**. Full details of all trees surveyed are provided in the Tree Survey Table in **Appendix 3**, with locations in relation to the site in the Tree Constraints Plan (TCP) in **Appendix 4**.

A summary of the trees surveyed is provided in **Table 3.1**.

Table 3.1. Tree survey summary.

Categorisation	Cat A	Cat B	Cat C	Cat U
Trees	1	2	3	1
Groups	0	0	1	0
Species	Trees		Groups	
Apple	1		-	
Cherry	1		1	
Cotoneaster	1		-	
Swamp Cypress	1		-	
Holm oak	-		1	
Magnolia	1		-	
Sycamore	1		-	
Yew	1		-	

4 Statutory Tree Protection

It has been confirmed with Camden Council via a telephone enquiry (11th December 2019) that the site was located within the Parkhill Conservation Area (CA), and that the trees numbered within this report as T1 and T7 are subject to Tree Preservation Orders (TPO). The status of tree protection can change at any time and should be confirmed with the Local Planning Authority (LPA) prior to any works on the trees taking place.

Where statutory tree protection is in place, this provides the LPA with a degree of control over tree work. Anyone wishing to carry out work to protected trees will need to contact the LPA prior to commencing any work, with the process dependent on the nature of tree protection in place. The presence of statutory tree protection may prevent work that would otherwise be rightfully conducted, such as reducing overhanging branches from a neighbour's tree back to the boundary.

For trees within a CA, statutory protection is relevant to any tree species with a stem diameter of 75mm or above, when measured at 1.5m above ground level. Anyone wishing to carry out work to such trees is legally required to notify the LPA a minimum of six weeks before commencing. The LPA may treat the notification as a planning application, including a public consultation and a site visit from an officer. If the LPA objects to the proposed work, it must serve a TPO during the six-week period to prevent it taking place. If the six-week period lapses without a TPO having been served, the work may then proceed, normally to be completed within two years of notification, beyond which a new notification is required.

Where trees are subject to TPO, work requires written permission from the LPA. Applications must be submitted using the standard form, normally available from their website or on request. This is treated as a planning application, with a period of public consultation and a visit from an officer. The LPA must normally determine the application within eight weeks, issuing a decision letter. The applicant has a right of appeal if dissatisfied with the decision.

In both circumstances, where work is required in an emergency, this is exempt from the above process, though anyone carrying out such work should contact the LPA to advise them that this is the case prior to commencing.

If this report is submitted to accompany a planning application, any tree work specified, relating to trees subject to statutory tree protection, will be considered as part of that application. Therefore, if planning permission is subsequently granted, this would normally provide permission for all tree work. Clarification may be sought from the LPA over this.

5 Principal Survey Findings and Arboricultural Impacts

The main findings are summarised in the following section. For ease of reference, it is recommended that this section is cross referenced with the information and plans provided within **Appendices 3, 4 and 5**.

5.1 Development Proposals

The proposal is to construct a basement level beneath the current building footprint, with the exception of the rear of the property where the basement area will extend further into the garden. External changes to landscaping and the driveway arrangement form part of the proposal.

5.2 Tree Removals and Reduction

Details of all tree work and tree removals are provided in **Table 6.2** and illustrated on the Tree Protection Plan (TPP) provided in **Appendix 5**.

5.2.1 Removal and Reduction for Reasons of Condition

Work previously recommended irrespective of development is as follows:

- Removal of T2 to prevent property damage; and
- Crown reduction of T4 to prevent obstruction of the garden space.

In July 2021, a Structural Appraisal of the stability of the front garden wall was carried out following concerns over the damage to the retaining wall along the road frontage. This report is provided in **Appendix 6**.

This report finds that the damage is likely to be caused by the tree, and that the wall is at risk of collapse. It is not possible to repair the wall with the tree retained. Therefore, the report recommends removal of the tree to allow wall reconstruction.

The proposed construction is designed to bridge the tree's roots to avoid the need to remove them. It is assumed that the tree would be felled to ground level or ground to below, and the stump treated to prevent regrowth.

5.2.2 Removal and Reduction for Reasons of Incompatibility

Trees T3, T4, T5 and T6 would need to be removed to make space for the proposed development.

5.2.3 Assessment of Proposed Tree Removal and Reduction

The removal of T1 would have a significant impact visually, as this tree is prominent within the street scene. Given the clearly visible damage to the wall and that the tree leans towards the road, its removal appears to be inevitable at some point. If left, the risk of wall collapse will increase, which poses a threat to pedestrians and road users. It is not clear what the consequence of wall collapse would be on the tree's stability, but in a worse-case scenario, the tree could also fail onto the road.

Even assuming the wall collapses or is removed, the tree already conflicts with the wall run and this conflict would only increase over time due to incremental expansion of the trunk and roots. The wall is already distorted by the tree, pushing it out into the highway. Any new wall with the tree retained would have to extend into the highway to avoid direct contact with the tree. This would not be permitted. Therefore, the only approach that allows a suitable retaining wall to be constructed along the boundary line requires tree removal.

The tree is subject to a TPO. There would be scope to plant a new tree within the front garden to compensate for the loss. This should be planted further back from the boundary wall to minimise future potential for damage.

It is recommended that the opportunity is taken now to address this situation, as part of the planning application, rather than wait until a later date and force the development to be designed around a tree that clearly has no long-term viability. So, though the removal of T1 will alter the design, development would not be the reason for its removal.

The four trees that require removal solely due to the development are of small size and / or low quality, with only T3 having any public visibility due to its location within the front garden. The largest and best quality tree to the rear will be retained.

5.3 Tree Interface with Proposals

Where trees are retained, both the works required to develop the site and its future use have potential to adversely affect trees, either causing damage to them or threatening their long-term retention. Damage can occur both above ground to tree crowns, limbs and trunks, and to roots below ground within the calculated RPA. The potential causes of such threats, together with proposals to avoid or minimise them, are set out in this section.

Table 5.2: Potential arboricultural impacts and proposed mitigation.

Development Activity	Potential Risk	Consequence	Mitigation
Building construction close to trees.	Future structural damage.	Tree removal.	Design foundations to tolerate tree presence at mature size, with respect to local soil conditions.
Excavation within RPAs.	Over excavation, accidental and poor root removal. Leachate from concrete affecting tree roots.	Excessive root loss and root die-back.	Hand excavate the closest 600mm to trees, to a depth of 600mm, using a sharp hand saw, or secateurs if appropriate, to remove roots. Line foundations with an impermeable membrane.
Construction activities, including materials delivery, transport and storage, contractor parking, site facilities and working areas.	Soil compaction and contamination. Accidental contact damage.	Root damage and die-back. Crown damage, die-back and loss.	Erect tree protective fencing round the entire RPA and crown spread, whichever is the greater, for the entire duration of the development. Where construction access is required within any RPA, install ground protection on any areas of unsurfaced ground, for the entire duration of the development.

Excavation for the basement extension is required within the RPA of T7. This will result in the permanent loss of existing unsurfaced rooting environment. However, most of the RPA is bordered by unsurfaced garden space, so providing ample contiguous rooting environment.

6 Arboricultural Method Statement

The information in this section has been provided on the basis of the plans provided at the time the report was prepared. Should the site layout alter in the future, the advice provided may have reduced relevance and need to be revised prior to the commencement of the development.

6.1 Guidance Utilised

This section provides a site specific Arboricultural Method Statement (AMS), based on guidance provided within:

- BS5837:2012 *Trees in relation to design, demolition & construction - Recommendations*;
- BS3998:2010 *Tree work - Recommendations*; and
- Volume 4 - *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (Issue 2, 2007).

6.2 Contact Details

The details of all the principal points of contact are provided in the table below.

Table 6.1: Principal contact details.

Contact	Name	Address	Contact Details
Local Planning Authority	Tree and Landscape Officer	London Borough of Camden 5 Pancras Square c/o Town Hall Judd Street London WC1H 9JE	020 7974 4444 planning@camden.gov.uk
Client	Amy Gunning & Richard Lipsitz	26A Upper Park Road London NW3 2UT	-
Arboricultural Consultant	Richard Parmee Arboricultural Consultant	agb Environmental Ltd Newmarket Business Centre 341 Exning Road Newmarket CB8 0AT	01638 663226 richard@agbenvironmental.co.uk

6.3 Tree Works

Tree works should be the first activity on site to prevent accidental damage during development and to enable sufficient clearance such that the proposals can be implemented.

Tree work is a potentially dangerous occupation. All tree work contractors should be required to provide evidence that they are competent to undertake the required works and are adequately insured. The contractor should also be asked to provide a site-specific risk assessment prior to commencement of any tree works. All tree works should be in accordance with BS 3998:2010 *Tree work - Recommendations*.

Some of the trees may possess features that increase their potential for use by nesting birds and roosting bats. It is recommended that all tree works take place outside of the main bird nesting season (generally accepted as being March-August inclusive). Where work is required on trees containing cracks, cavities, splits and major (>100mm diameter) dead wood, it is

recommended that these features are inspected by a licensed ecologist or bat surveyor prior to work being carried out.

Details for all tree work are given in **Table 6.2**.

Table 6.2: Tree works.

Tree No.	Species	Work Recommended Irrespective of Development	Work Required to Facilitate Development
T1	Sycamore	Remove to allow boundary wall reconstruction.	None, assume removed
T2	Cotoneaster	Remove within one year of survey date.	None, assumed removed.
T3	Magnolia	None	Remove due to direct conflict with the layout.
T4	Apple	Reduce crown to south by 2m within one year of survey date.	Remove due to direct conflict with the layout.
T5	Yew	None	Remove due to direct conflict with the layout.
T6	Cherry	None	Remove due to direct conflict with the layout.

6.4 Tree Protection

Following tree works and before any other works commence on site, tree protective fencing shall be immediately installed in accordance with the Tree Protection Plan (TPP) in **Appendix 5** and specification in **Appendix 7**. All fencing must be signed accordingly with warning notices. It shall by default be located on the outer edge of the RPA or crown spread, whichever is greater, except where working space is required within RPAs.

Ground Protection will be required in proximity to new buildings and surfaces where the required working space is within the RPAs of retained trees. Where this is specified, ground protection shall be installed in accordance with the TPP in **Appendix 5**.

Detail on pedestrian-suitable ground protection is provided in **Appendix 8**. If more substantial protection is required, it is recommended that a proprietary ground protection system is installed, capable of evenly spreading the maximum anticipated load without compaction.

Following initial installation and at any time tree protection is altered as specified within this report, before any further works commence on site it is recommended that this be viewed and signed off, by the Project Arboriculturist. All protection shall remain in place as specified during the entire development.

6.5 Construction Access / Materials Storage

Access to the site for all activities will be from Lawn Road. Following the removal of trees from the front garden, this area provides space for use during the development.

Access to the rear of the property will be via the southern boundary. Space within the rear of the site for materials storage and any other associated activities will be restricted and

measures should be put in place to minimise the need to occupy space not required directly for development.

The limitations on materials storage are those given under **General Guidance** in 6.9.

6.6 Provision of New Foundations Within RPAs

Information in this section will be relevant to tree T7.

Hand excavation must be used for the initial 600mm depth, within the final 600mm of excavation closest to trees, to minimise the potential for root damage. Where roots below 25mm diameter are encountered, these shall be cut using a clean, sharp, hand saw, or secateurs if appropriate. In the event that roots exceeding 25mm diameter are encountered, no severance must take place without first consulting the Project Arboriculturist, to assess the impact of removal on tree health and stability.

All excavation and root severance should be supervised by the Project Arboriculturist.

Where new foundations are constructed within the RPA, the excavation must be lined with an impermeable membrane to prevent leachate from concrete affecting tree roots.

The long-term presence of trees may have led to desiccation of the surrounding soil through water uptake.

The design of all foundations and surfaces likely to be affected by trees must be specified by a suitably qualified structural engineer, with consideration given to the proximity and species of trees, and the surrounding soil conditions.

6.7 Service Provision

At the time of reporting we have no information on proposed routes for underground services. It is recommended that when service route locations are known these are submitted and approved by the Project Arboriculturist.

All service runs should be designed to avoid any RPA if possible. In the event that services must pass through any RPA, priority must be given to alternatives to excavation, such as thrust boring. If excavation is required, service runs must either be routed to pass through the outer third of the RPA diameter, where root loss is less critical, or if this is not feasible, passing directly beneath the trunk, parallel to the radial spread of tree roots, rather than across it.

All excavation must be carried out using hand tools only, including air spades, with roots above 25mm diameter retained unless approval for removal is provided by the Project Arboriculturist.

6.8 Schedule of Works and Supervision

Supervision is recommended for key stages during development where these have greatest potential to result in tree damage if carried out incorrectly. Arboricultural supervision may be made a requirement of the development by way of appropriate planning conditions. This supervision should be provided by the designated Project Arboriculturist. Following supervision, a photographic report would be presented to the LPA.

A proposed schedule detailing the scope and frequency of arboricultural supervision visits is detailed below in **Table 6.3**. This schedule is intended to minimise the potential for

development to result in damage to retained trees, providing a logical sequence of works. However, the LPA may request an alternative schedule within any planning conditions.

Table 6.3: Schedule of works and supervision.

Sequence	Activity	Supervision Responsibility
1	Pre-commencement meeting.	LPA Tree Officer, Principal Contractor, Site Manager, & Project Arboriculturist.
2	All tree works and removals.	Project Arboriculturist.
3	Installation of all tree and ground protection in accordance with the TPP.	Site Manager & Project Arboriculturist.
4	Basement excavation within the RPAs of T7.	Site Manager & Project Arboriculturist.
5	All remaining development.	Site Manager.
6	Removal of all tree protection following completion of all development.	Site Manager.
7	Soft landscaping.	Project Landscape Architect.
8	Assessment of tree condition post-development.	Project Arboriculturist.

6.9 General Guidance

The following general precautions must also be taken during the construction phase:

- No materials or fuel shall be stored close to or within the RPAs of trees to be retained or where new trees are to be established;
- No bonfires within 10m of the outer edge of the crown or RPA of a tree to be retained;
- Mechanical equipment must not be refuelled within the RPAs of retained trees or areas where new trees are to be established;
- No cement mixing or storage within RPAs of retained trees or new planting locations;
- Cement mixers must not be washed within or uphill of the RPAs of retained trees or areas where new trees are to be established;
- The soil level within the RPA of a retained tree must not be raised or lowered without the agreement of the local authority Tree Officer;
- No plant shall be operated within the RPAs of retained trees unless the soil is suitably protected against compaction;
- Excavation should not take place within the RPAs of retained trees unless an arboricultural consultant or the local authority Tree Officer is supervising the work;
- The guidance provided by NJUG (2007) should be followed when installing underground services within the RPAs of retained trees;
- Surface water runoff must not be redirected into or out of the RPA of a retained tree;

- No materials shall be dumped within the RPA of a tree, whether in a skip or on the ground; and
- No vehicles shall be parked or operate within the RPA of a retained tree.

7 Conclusions

Development requires the removal of four trees (T3, T4, T5 and T6) due to direct conflict with the layout. Both trees are of low quality, Category C, with at best only minor local prominence. As a consequence, tree removal will result in a very small loss of amenity value.

Two trees (T1 and T2) require removal due to condition, irrespective of development. Though in the absence of development their removal may not occur in the immediate future, removal now as part of the development avoids the need to design the construction around trees that have no long-term viability; for T1 in particular it does not make sense to follow a methodology designed to minimise harm to a tree that will need to be removed in the next year or two to prevent damage or harm to highway users.

Retained trees have potential to be damaged by development. The methodology and all tree protection requirements are provided to minimise this potential.

A pre-commencement meeting and arboricultural supervision, for key stages in the development that have potential impacts upon trees, are specified to ensure that all tree protection requirements and the methodology are clearly understood and correctly implemented.

Any development impacts on retained trees can be effectively mitigated, subject to the correct implementation of all tree protection and the construction methodology.

8 References

British Geological Survey. (2021) *Geology of Britain viewer* [online]. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (Accessed 25th August 2021)

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National Joint Utilities Group. (2007). Volume 4 *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (Issue 2) [online]. Available at: <http://www.njug.org.uk/document-download/?URL=http://www.njug.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf> (Accessed 23rd July 2015)

Appendix 1 Explanatory Notes for Terms Used in Appendices 3, 4 & 5

Tree Number

Number used to indicate the approximate position on plans inserted as **Appendices 4 & 5**.

Species

The species identification is based on visual observations.

Age Class

Sapling or newly established (Y) = a size which could be easily transplanted;

Semi-mature (SM) = prior to seed bearing age and could be transplanted with care;

Early Mature (EM) = of seed-bearing age, may be close to or have achieved mature height, but with considerable apical dominance and lacking a broad, domed crown;

Mature (M) = fully grown, annual growth is much reduced, with a broad, domed crown;

Old Mature (OM) = exceptionally old for the species, possibly starting to decline;

Veteran (V) = often old for the species, the crown may be retrenching or displaying damage, containing features that provide many opportunities for wildlife, likely to offer important habitat.

Condition

The physiological condition of the tree:

Good (G) = normal growth and twig extension showing good vitality, canopy of typical density, with foliage of normal size and colour for the species - no notable indication of ill health.

Fair (F) = reduced twig extension, minor deadwood, but other than that few signs of ill health;

Poor (P) = small internodes and low vitality, the canopy may be thinning and contain dead twigs and/or branches in the outer canopy, discoloured, dwarfed, misshapen or wilting foliage, obvious presence of disease or infection;

Dead (D) = Dead

Height

The height of the tree measured to the nearest metre, or half-metre if below ten metres.

Crown Spread

The distance from the tree trunk to the most relevant of the four cardinal points of the compass, measured in metres.

Compass Bearing

N = north; S = south; E = east; W = west;

Crown Clearance

The existing height of the first significant branch or section of canopy, to the nearest half-metre, to inform on ground clearance, crown/stem ratio and shading.

Diameter at Breast Height (DBH)

Trunk diameter 1.5m above ground level recorded in millimetres measured with a diameter tape. If branches emerge below 1.5m, or if the trunk divides at or close to this height, the trunk diameter will be measured at a different height above the ground and this height will be mentioned. More than one figure indicates that the individual has several stems. Many stems are indicated with an 'M', where it is not possible to determine the number. If the DBH has been estimated this will be marked with an asterix (*) in the column.

PRF

Potential Roost Features – features that have potential for use by bats for roosting, likely to require further inspection if tree work is required.

Category & Remaining Contribution

The category assessed using the guidance in Table 1 of BS 5837:2012 and the potential for safe tree retention based on the current context.

(A) (light green) Trees of high quality and value: in such condition as to be able to make a substantial contribution (a minimum of 40 years is suggested);

- A1 - Exemplary arboricultural specimens
- A2 - Trees of particular visual importance as arb/landscape features
- A3 - Significant conservation/historical value.

(B) (mid blue) Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested);

- B1 - Might have been Cat A but downgraded because of impaired condition.
- B2 - Present in numbers - reduced value as individuals but higher as a collective group.
- B3 - Trees with material conservation or other cultural value.

(C) (grey) Trees of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm;

- C1 - Unremarkable tree, limited merit/impaired condition.
- C2 - Trees present in groups/woodlands without inferring greater collective value.
- C3 - Tree with no material or other cultural value.

(U) (dark red) Trees in such a condition that any existing value would be lost within 10 years and should, in the current context, be removed under sound arboricultural management.

Radius of the RPA

The radius of a circular Root Protection Area (RPA) in metres as specified using the guidance contained in BS 5837:2012.

Appendix 2 Tree Photographs



Photograph 1. T1, sycamore, located to the west of Lawn Road in raised front garden. Viewed looking towards the north.



Photograph 2. T1, viewed looking towards the south.



Photograph 3. T2, cotoneaster, located close to the property elevation. Viewed looking towards the west.



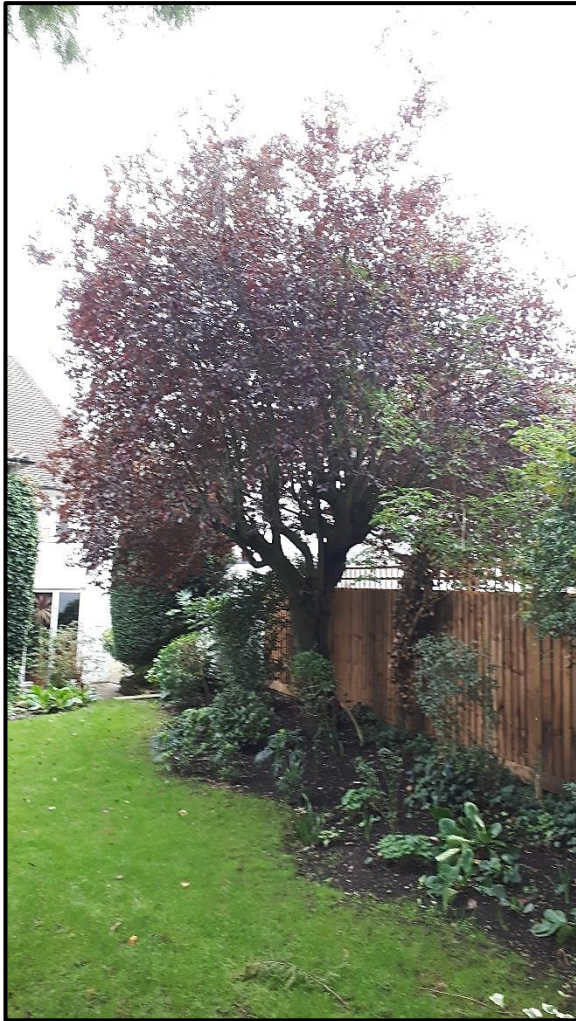
Photograph 4. T3, magnolia, located to the south of the front garden. Viewed looking towards the south.



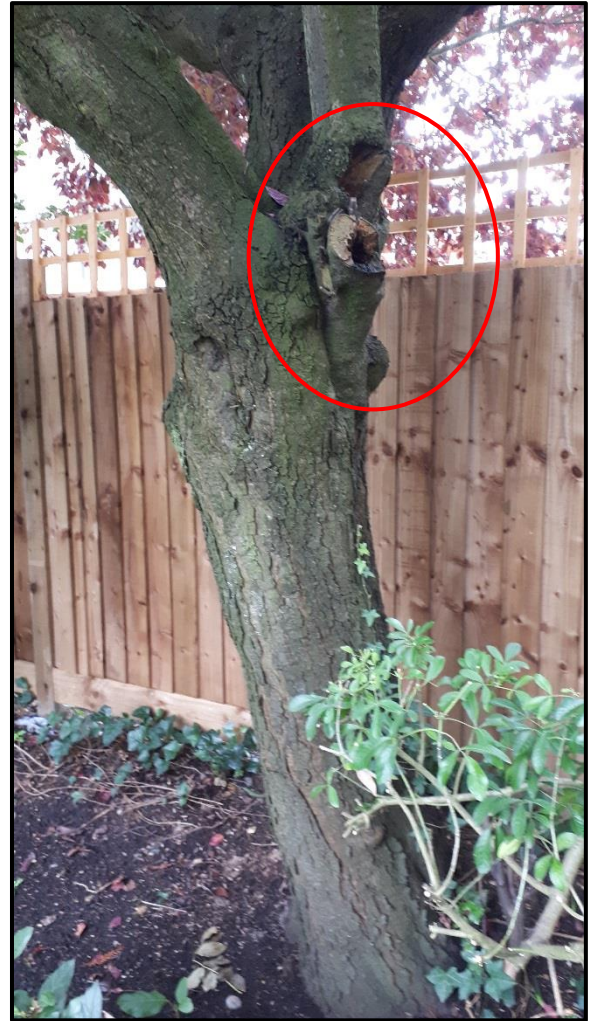
Photograph 5. T4, apple. Located in the rear garden. Note lean of main stem. Viewed looking towards the north-east.



Photograph 6. T5, yew. Viewed looking towards the south-east.



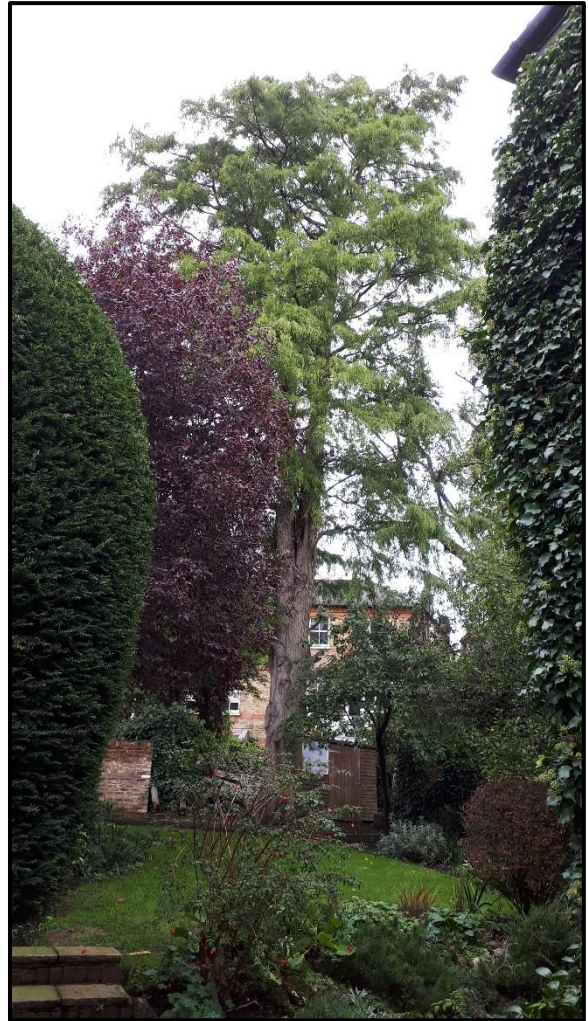
Photograph 7. T6, cherry, located centrally in the rear garden along the southern boundary. Viewed looking towards the south-east.



Photograph 8. Close-up of T6, showing pruning wound with associated decay and cavity (circled).



Photograph 9. G1, cherry (centre-left) and holm oak (centre-right), with mutual crown formation. Viewed looking towards the north-west.



Photograph 10. T7, swamp cypress, located to the far west of the rear garden. A high quality and dominant tree in the surrounding environment. Viewed looking towards the north-west.

Appendix 3 Tree Survey Table

All work recommendations provided in this table are given on the basis of tree condition at the time of the survey and do not relate to any development proposal.

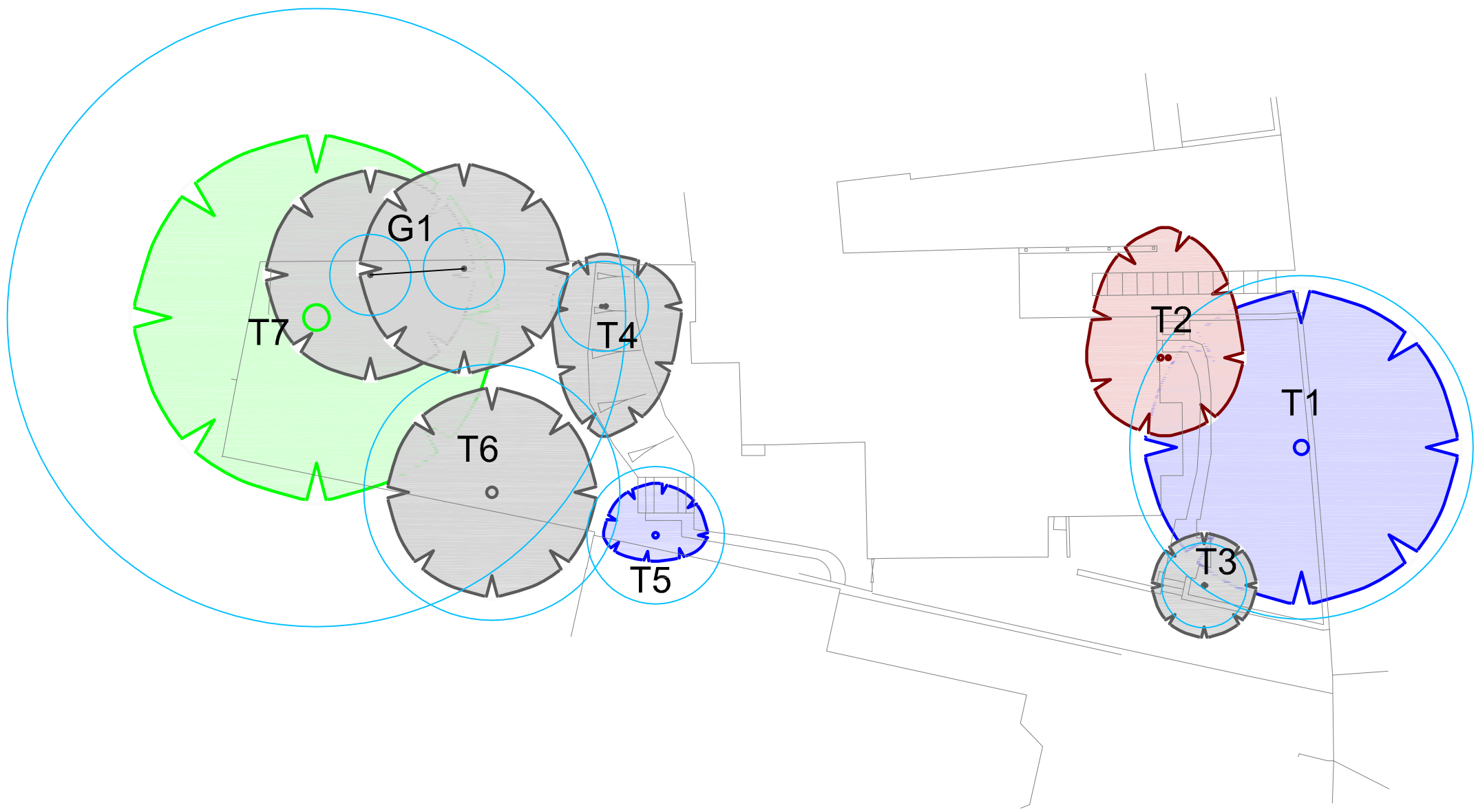
Tree No.	Species	Age	Con	Height (m)	Spread (m)				Crown Clear. (m)	DBH (mm)	Comments	PRF	Recommendations	BS 5837 Category	Rem. Cont. (est.)	RPA Radius (m)
					N	S	E	W								
T1	Sycamore <i>Acer pseudoplatanus</i>	EM	G	12	6	6	6	6	2.0	550	Dominant tree alongside pavement. Good extension growth and crown density. Main stem leans at 13 degrees to the east at 1.5m. Previously pollarded at 4m with good regrowth. Several 25-50% occluded crown lifting wounds, up to 150mm diameter at 3-4m. Possible decay within some of the wounds. All unions appear normally formed. Retaining wall exhibiting crack and bricks out of alignment.	N	Long-term retention compromised due to damage to the retaining wall. Consider removal and replacement to prevent wall and / or tree failure onto highway.	C1**	10-20	6.60
T2	Cotoneaster <i>Cotoneaster sp.</i>	M	G	6.0	5	3	3	3	0	160 190	Intermediate overgrown shrub, touching front elevation of property. May cause direct damage to the building in future. Forms two stems at 1m with normally formed union.	N	Remove within one year of survey date.	U	<10	3.00
T3	Magnolia <i>Magnolia sp.</i>	EM	G	4.0	2	2	2	2	1.0	M 80 60 60 70	Intermediate tree of good extension growth and crown density. Multi-stemmed form. Forms four stems at ground level.	N	No work recommended.	C1	20-40	1.68
T4	Apple <i>Malus sp.</i>	EM	G	5.0	2	5	3	2	1.5	120 80	Intermediate tree of good extension growth and crown density. Main stem leans at 25 degrees to the south-east. Forms two stems at 0.7m with acute angled V-Shaped union (VSU) and bark inclusion (BI). Longitudinal basal bark damage to the north-west.	N	Reduce crown to south by 2m within one year of survey date.	C1	10-20	1.68

Tree No.	Species	Age	Con	Height (m)	Spread (m)				Crown Clear. (m)	DBH (mm)	Comments	PRF	Recommendations	BS 5837 Category	Rem. Cont. (est.)	RPA Radius (m)
					N	S	E	W								
T5	Yew <i>Taxus baccata</i>	EM	G	5.0	2	1	2	2	0.5	220	Intermediate tree location in elongated raised border. Good extension growth and crown density and single stemmed form. Pruned in domed shape. Southern face recently pruned back to boundary.	N	No work recommended.	B1	20-40	2.64
T6	Cherry <i>Prunus sp.</i>	M	F	7.0	4	4	4	4	2.0	410	Intermediate tree of fair extension growth and crown density. Previously pollarded at 3 to 4m with fair regrowth. 130 x 300mm unoccluded wound at 1.4m to the east, with internal decay. 100mm diameter wound containing extensive decay at 1.8m to the west.	N	No work recommended	C1	10-20	4.92
G1	Cherry Holm oak <i>Quercus ilex</i>	EM M	G	5.0	4	4	4	4	2.0	130 Max.	Co-dominant pair of intermediate trees of fair extension growth and crown density. Single stemmed form. Western tree leans at 30 degrees at 1.5m to the south-east. Mutual crown formation.	N	No work recommended.	C2	20-40	1.56
T7	Swamp cypress <i>Metasequoia glyptostroboides</i>	M	G	22*	7	7	7	7	4.0	990	Dominant tree of good extension growth and crown density. Forms two co-dominant stems at 6m, with VSU. Several fully occluded wounds, 200mm diameter, at 2.2 and 1.8m to the southwest and south-east respectively up to 5m above ground level. Buttress roots at base of stem.	N	No work recommended.	A1	40+	11.88

* Indicates estimated value due to access constraints.






** Downgraded categorisation in light of Structural Engineer's Report.

Appendix 4 Tree Constraints Plan



REV	DATE	DESCRIPTION
-----	------	-------------

LEGEND

-  Category U
-  Category A
Trees of high quality
-  Category B
Trees of moderate quality
-  Category C
Trees of low quality
-  RPA using formula in accordance with BS5837:2012

LOCATIONS ARE APPROXIMATE.

PROJECT

76 LAWN ROAD, CAMDEN,
LONDON NW3 2XB

TITLE

TREE CONSTRAINTS

CLIENT

RICHARD LIPSITZ



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DATE 15/10/19
SCALE 1:200 @ A3

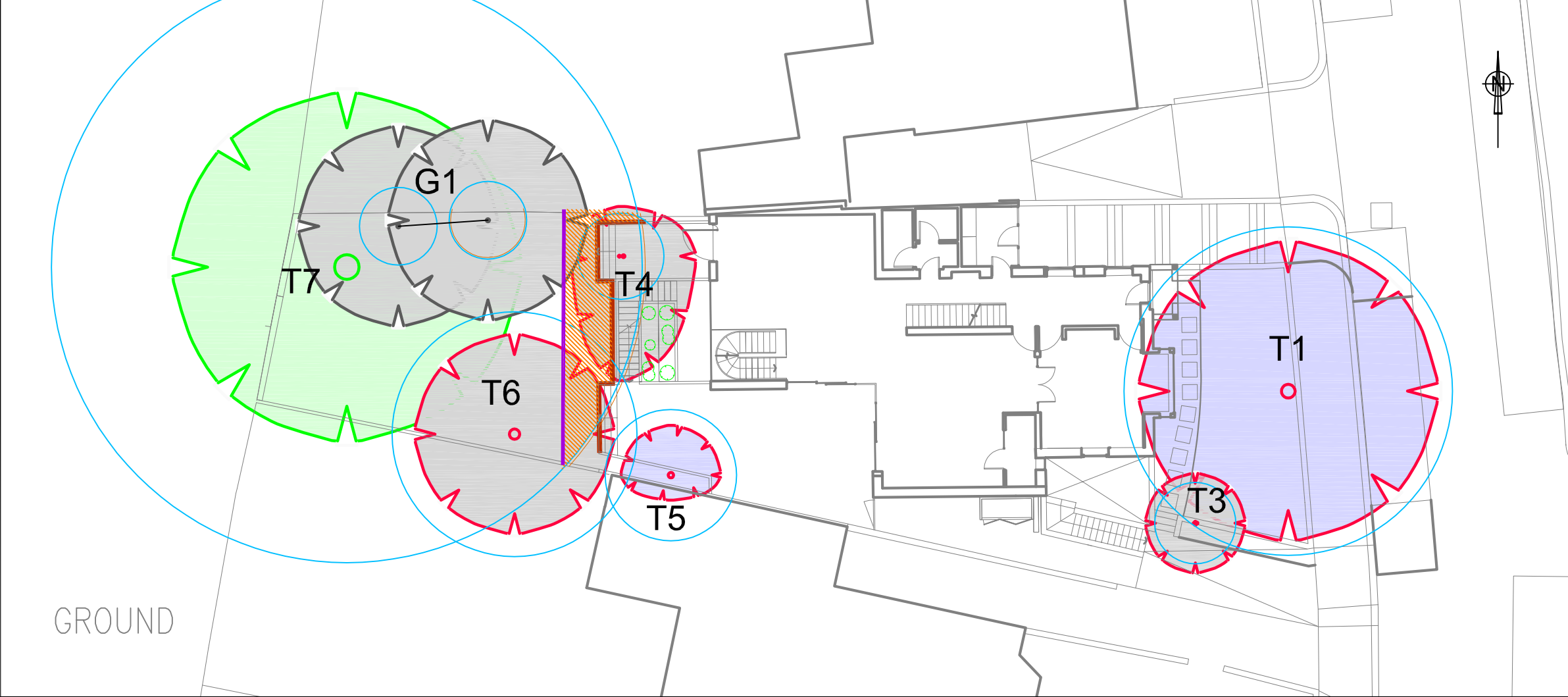
PROJECT NUMBER . DRAWING NUMBER

P3430.1 . 001

Trees categorised in accordance with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations"

The original of this drawing was produced in colour – a monochrome copy should not be relied upon

Appendix 5 Tree Protection Plan



REV	DATE	DESCRIPTION
<div>LEGEND</div> <div><div><div></div><div>Category A</div><div>Trees of high quality</div></div><div><div></div><div>Category B</div><div>Trees of moderate quality</div></div><div><div></div><div>Category C</div><div>Trees of low quality</div></div><div><div></div><div>RPA using formula in accordance with BS5837:2012</div></div><div><div></div><div>Tree incompatible with proposals</div></div><div><div></div><div>Location of Protective Fencing</div></div><div><div></div><div>Ground protection</div></div><div><div></div><div>Hand excavation</div></div></div> <div>LOCATIONS ARE APPROXIMATE.</div>		
<div>PROJECT</div> <div>76 LAWN ROAD, CAMDEN, LONDON NW3 2XB</div> <div>TITLE</div> <div>TREE PROTECTION</div> <div>CLIENT</div> <div>RICHARD LIPSITZ</div>		
<div><div><div>agb</div><div>ENVIRONMENTAL</div></div><div>agb Environmental Ltd</div><div>Newmarket Business Centre, 341 Exning Road, Newmarket, CB8 0AT Tel: 01638 663 226 Email: info@agbenvironmental.co.uk Web: www.agbenvironmental.co.uk</div></div>		
<div>DATE22/11/19</div> <div>SCALE1:200 @ A3</div>		
<div>PROJECT NUMBER . DRAWING NUMBER</div> <div>P3430.1 . 002 revD</div>		
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Appendix 6 Structural Engineer's Report

Project Title

76 Lawn Road NW3

Report Title

Structural Appraisal of the
stability of the front garden wall

Document Reference:

R11438-RO1

Prepared By

George Pelentrides

Date

27 July 2021

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1	INTRODUCTION & BRIEF DESCRIPTION	
2	INSPECTION	
3.	DISCUSSION	
4.	CONCLUSIONS & RECOMMENDATIONS	
5.	PHOTOS	

1 INTRODUCTION & BRIEF DESCRIPTION

Jampel Davison & Bell are engaged by Amy Gunning and Richard Lipsitz to provide structural engineering services for the re-development of 76 Lawn Road.

This is a structural appraisal of the stability of the front garden wall that has been a concern. The latest inspection of the wall was undertaken by George Pelentrides on 26 July 2021.

The garden wall varies slightly in height between 0.9m and 1m above the pavement. It retains a height of earth of about 0.8m and the garden slope which rises at an angle of about 15 degrees to the horizontal. A large tree is located in the front garden against this wall. The wall is severely distressed in the vicinity of the tree (photo 1).

The front garden wall is constructed in solid brickwork, 215mm thick, in red facing bricks and cement mortar. The bricks are different to those to the building and to the return garden walls, indicating that the front wall was probably rebuilt at some point in the past.

2 INSPECTION

The wall is leaning outwards; maximum movement is severe at the location of the tree where the out of plumbness is of the order of 80mm to below the brick on edge coping. The coping itself has been forced further outwards by a further 30mm. The brick on edge coping has also lifted significantly in the vicinity of the tree forming a horizontal crack. The tree trunk is in contact with the wall (photo 2),

There is a large vertical crack at a distance of about 2.4m from the tree towards the drive that tapers from 12mm at the top to hairline at the bottom (photo 3). The wall on the tree side of the crack is leaning further out than that on the other side of the crack.

Another crack at a distance of about 2.3m on the other side of the tree tapers from 5mm to hairline at the bottom (photo 4).

A near vertical crack at the location of the crack varies in width between 2 and 5mm.

There is further cracking beyond the two tapering cracks.

3 DISCUSSION

The severe distress to the wall has been caused by the tree.

The outward movement appears to have been caused by the physical growth of the tree trunk.

The tapering cracks indicate uplift of the wall and this is likely to have been caused by the physical growth of tree roots beneath the wall.

Some further movements are likely, due to the tree roots extracting ground moisture and causing volumetric changes in the shrinkable clay. The major concern however appears to be the forces exerted on the wall by the physical growth of the tree trunk and the tree roots beneath the wall.

4 CONCLUSIONS & RECOMMENDATIONS

The severe outward movement of the wall has compromised its stability and the wall at the vicinity of the tree is at risk of collapse

Repair is not considered a viable option given the severity of the movement and damage and given the potential of the tree trunk and tree roots to cause further damage.

Rebuilding the wall is necessary and would also necessitate the removal of the tree since the tree would obstruct reconstruction.

It is therefore recommended that the tree is removed and the wall reconstructed

Our proposals for the reconstruction of the wall are shown on drawing R11438/EXT1. The wall would be reconstructed in reinforced concrete clad with brickwork and designed to span between pads located at some distance from the tree in order to reduce the impact of the tree roots on the new construction.

5 PHOTOS



Photo 1 -View of front garden wall and tree



Photo 2 - Leaning wall at tree location



**Photo 3 – Vertical tapering crack at approximately 2.4m
from the tree towards the driveway**



Photo 4 – Tapering vertical crack at about 2.3m the other side of the tree



Photo 5 – Cracking at the tree location

G. Pelentridis

G. PELENTRIDES BSc CEng MICE

Appendix 7 Tree Protective Fencing Specification

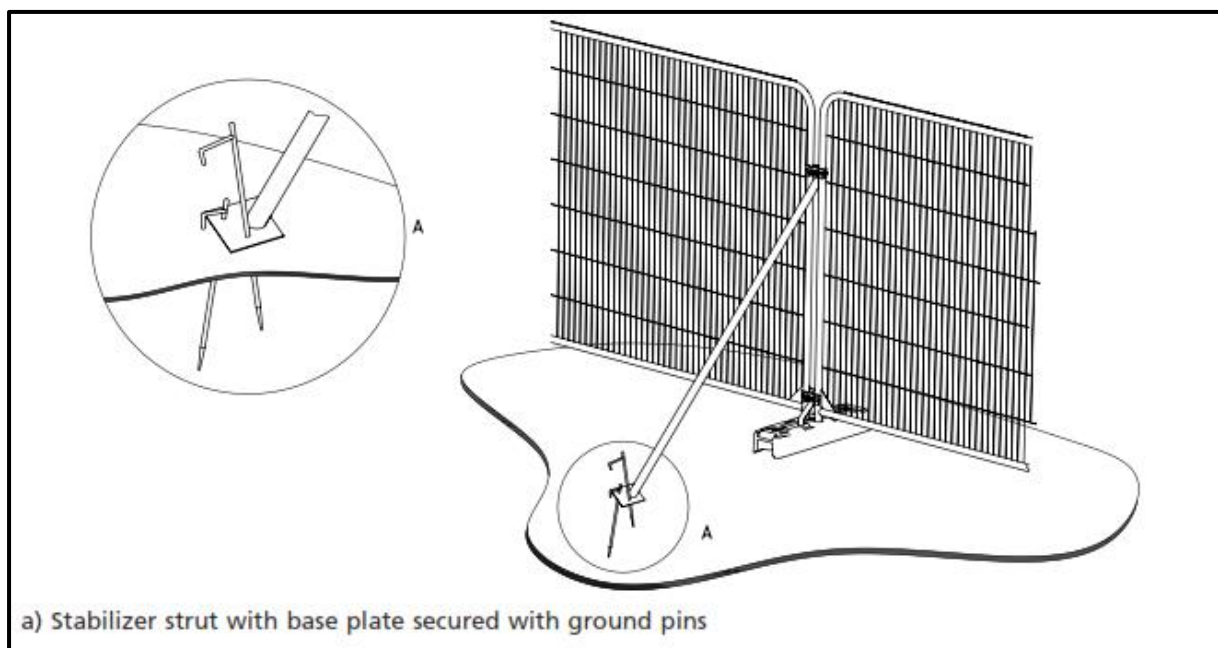
Specifications:

Tree Protective Fencing Panels shall be 2.0m high x 3.5m in length. (see image below).



Tree protective fencing example.

Given the surface onto which the fencing will be placed, it is considered that Heras-type fencing will be most appropriate form of tree protection. The fencing will comprise of continuously joined panels, and will be secured utilising an 'above ground stabilizing system', with the fencing base stabilizer strut secured with ground pins with a base plate, as illustrated below:



Tree protective fencing construction.

Location:

Fencing shall be positioned as far as possible on the perimeter of the Root Protection Area (RPA) to define a Construction Exclusion Zone and will be further identified by 'Tree Protection' warning signs (see image below).



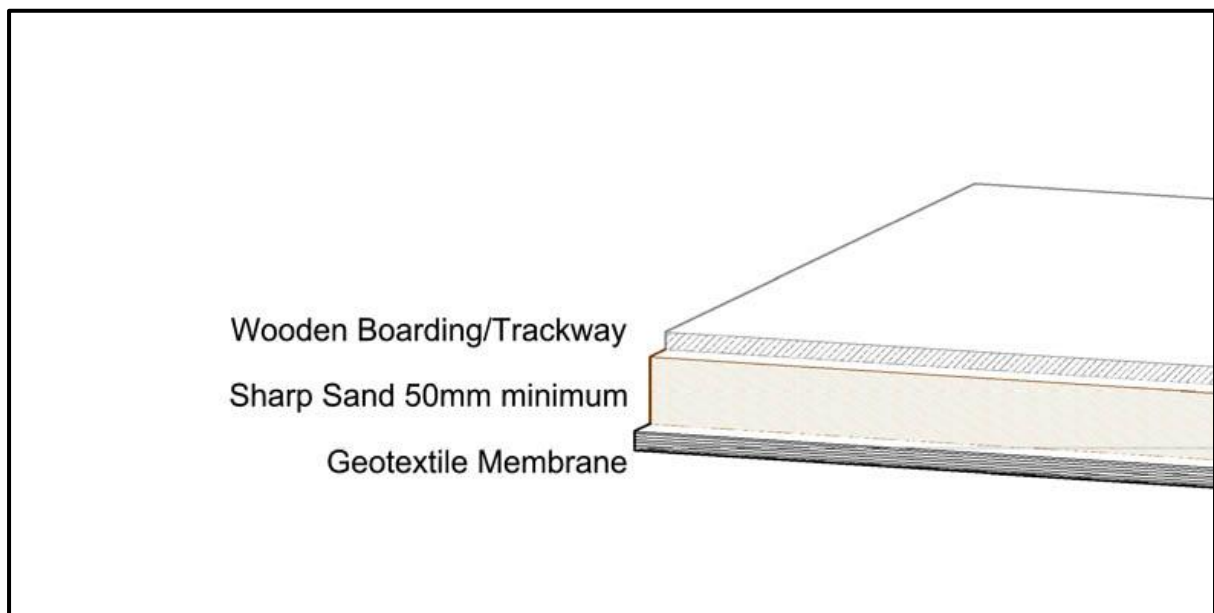
Appendix 8 Pedestrian Ground Protection Details

Specifications:

Ground protection should be laid directly onto the existing ground level with no excavation, prior to the commencement of all development, and in accordance with the details provided in the Tree Protection Plan.

Ground protection should be installed as follows:

- A geotextile membrane is laid directly on the soil surface;
- Onto this is laid a minimum depth of 50mm sharp sand, or 100mm bark; and
- Boards or protective trackways are then laid onto the sand/bark layer.



Ground protection example.

All ground protection shall remain in place for the duration of all development activities, or until replaced by new permanent surfaces using reduced-dig construction techniques.