agb ENVIRONMENTAL

Arboricultural Method Statement

77 Lawn Road, Camden NW3 2XB

Client Name:	Laura Bolohan & Xavier Menguy
Project Number:	P2468.2.1
Date:	1 September 2017

ENABLING DEVELOPMENT

Client:	Laura Bolohan & Xavier Menguy
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1 Report Summary

An Arboricultural Impact Assessment was provided to support a planning application for development at 77 Lawn Road, Camden. Planning permission was granted, subject to a Planning Condition relevant to a single off-site tree, T8, yew:

7. Prior to the commencement of any works on site, details demonstrating how Tree T8 shall be protected during construction work shall be submitted to and apporoved by the Council in writing. Such details shall follow guidelines and standards set out in BS5837:2012 "Trees in Relation to Construction".

A site visit, focussing on the development area in proximity to T8 has identified the following:

- The ground level within the site is 550mm lower than the level in which the tree grows;
- The long-term presence of the boundary wall and its foundations, the garage and its base, and hard surfacing within the site, can be assumed to have acted both as a barrier and a deterrent to root growth into the site – root growth from T8 into the site is likely to be either negligible or absent; and
- The long-term presence of the garage will have prevented crown growth into the site for at least half of the southern crown face.

Therefore, the work is not considered to pose a significant threat to T8 as:

- Negligible root loss is expected; and
- Any section of the crown extending into the site can be reduced back to the site boundary without adverse impact on tree health or stability.

Recommendations are provided on the use of tree protection and the methodology for all demolition, excavation and construction work to minimise the potential for these to cause harm to the tree. Subject to the correct implementation of these measures, successful retention of T8 is entirely feasible.

Contents

2 Introduction

2.1 Brief and Proposals

Agb Environmental was commissioned to provide an Arboricultural Impact Assessment *P2468.1.0 - 77 Lawn Road, Camden AIA March 2016,* to support proposed development at 77 Lawn Road, Camden, in October 2015. The development included the construction of an enlarged basement to the front, side and rear of the property, and a ground floor extension to the side and rear only. Planning permission was granted in January 2017. However, this was subject to the following Pre-commencement Condition:

7. Prior to the commencement of any works on site, details demonstrating how Tree T8 shall be protected during construction work shall be submitted to and approved by the Council in writing. Such details shall follow guidelines and standards set out in BS5837:2012 "Trees in Relation to Construction".

In January 2017 agb Environmental was commissioned to provide an Arboricultural Method Statement to address this Pre-commencement Condition.

To inform this report, a second site visit took place on 1st February 2017, carried out by the agb Environmental Consultant Arboriculturist, to gather further information on the site conditions in the vicinity of T8. Discussion has also taken place with the project's Structural Engineer over the requirements of foundation construction and basement excavation. This information has been used to propose a methodology to minimise the impact of development on T8.

2.2 Documents and Information

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

- Lwn_LA - Prec Cond (A);
- P2468.1.0 - 77 Lawn Road, Camden AIA March 2016
- BS5837:2012 *Trees in Relation to Design, Demolition & Construction - Recommendations*.

3 Principal Survey Findings and Arboricultural Impacts

The main findings are summarised in the following section. Information within this section is relevant only to the conditions within proximity to T8. For information on site conditions within the wider site, please refer to *P2468.1.0 - 77 Lawn Road, Camden AIA March 2016*. For ease of reference, it is recommended that this section is cross referenced with the information provided within **Appendices 1, 2 & 3**.

3.1 Site Conditions

The key findings of the site visit are as follows:

- Between the site and the neighbouring property to the north is a brick retaining wall, running along the boundary and extending to the west beyond the calculated Root Protection Area (RPA) of T8.
- This wall extends to 550mm above the ground level within the site;
- The tree stands approximately 550mm from this wall within the neighbouring property;
- Ground level within the neighbouring property is at the same height as the top of the boundary wall;
- A pre-fabricated garage stands immediately inside this boundary wall, with the north-western corner located such that the eastern section of the on-site RPA of T8 is beneath the garage base, with the garage wall extending along the boundary to the east beyond the calculated RPA;
- Ground within the site, both within and beyond the calculated RPA, is covered with hard surfacing, which has been in place for a considerable period.

3.2 Development Proposals

The proposal is to increase the accommodation by enlarging the basement to the north, east and west, and above ground extending the building to the north and west. The work would require excavation to the front and north sides of the house to create new accommodation, including an underground garage with a green roof.

It is understood from liaison from the project's Structural Consultant that the following work is required to construct the basement and above ground extension:

- The garage will need to be cleared from the site to both provide access and space for development;
- Piling will take place just inside the boundary wall, within the current ground level and along the length of the basement area;
- The boundary wall will be removed, with sheet piling installed to prevent soil collapse following wall removal – this is required to ensure contractor safety during further works;
- Once piling and wall removal is completed, the ground will be excavated and new basement walls constructed;
- The above ground section of the extension will be constructed.

3.3 Constraints

The tree is owned by the neighbouring property owner, and is therefore not within the control of the site's owner – it cannot be removed without consent from the owner.

The site's owner owes a common law duty of care to the owner of T8. Essentially, if work taking place within the site poses a foreseeable risk to T8, then either reasonable action must be taken by the site's owner or anyone carrying out work on their behalf to prevent harm to the tree, or they could be held to be in breach of the duty of care, becoming liable for any costs or damages arising.

3.4 Opportunities

3.4.1 Crown

At the time of reporting, the tree is not subject to any statutory protection. Therefore, at any time the site's owner is at liberty to reduce any part of T8 that crosses the boundary and enters their property. This is subject to the common law duty of care, which may limit extreme reduction likely to result in either tree instability or health.

The tree species is yew, known to be tolerant of hard pruning, so reduction to the site boundary is reasonable, not considered to pose a foreseeable risk to the tree's health or stability.

The long-term presence of the garage will have prevented growth into the site from the eastern section of the crown.

3.4.2 Roots

The height difference in ground levels between the site and the neighbouring property is 550mm. Ninety percent of tree roots are commonly found in the top 600mm below ground level. Roots may grow deeper, but not generally in abundance. The difference in ground levels is such that it is unlikely few, if any, roots would extend down beneath the ground level within the site.

Assuming roots were present at that depth, the boundary wall and garage will have foundations below the ground level, which would act as a barrier to root growth into the site.

Even if roots had grown beneath the wall's foundations, the rooting conditions within the site would be far less favourable to growth than within the unsurfaced ground within the neighbouring property, due to the long-term presence of the hard surfacing and the garage within the site.

Therefore, it is assumed that the presence of roots from T8 within the proposed area of excavation for the basement extension, is either negligible or non-existent. Consequently root loss due to excavation would not have an impact on T8.

3.5 Potential Impacts Arising from Development

Three potential impacts from development are considered to be relevant:

- Damage to, or loss of, the crown, during demolition and construction from accidental contact or deliberate reduction, leading to a decline in tree health;
- Loss of roots due to excavation, leading to a decline in tree health, or instability; and
- Damage to roots from sheet piling installation, leading to a decline in tree health.

These can be mitigated as follows:

- Crown reduction to the site boundary prior to the commencement of any work, and carried out in accordance with BS3998:2010 will remove any part of the crown within the site that may otherwise be damaged or removed inappropriately. The installation of tree protective fencing along the boundary would offer protection to the off-site section of the crown, though as all work would need to take place within the site to avoid intrusion into the neighbouring property, it is assumed that all site activities would be controlled to prevent accidental or deliberate encroachment across the boundary;

- Demolition of the garage could only take place from within the site, so the roof and walls would have to be pulled back into the site, away from T8, which would reduce the risk of material falling onto the tree;

- As set out above, root growth from T8 into the site is considered to be either negligible or non-existent. Therefore, excavation will not result in root loss affecting either tree health or stability. In the event roots are found in the area of excavation, hand excavation close to the boundary and the use of a sharp saw for root severance will minimise damage;

- The conventional approach to the installation of sheet piling would be to insert this behind the boundary wall to full depth prior to wall removal. This risks damaging or severing any roots extending to meet the back of the wall. Instead, the sheet piling required within and just beyond the calculated RPA will be installed gradually, with brick work removed course by course and the piling lowered incrementally, until either wall removal reveals no roots are present behind the wall, or the wall is removed to ground level within the site.

4 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, and is relevant to T8 only. This information must be treated as an addendum to information already provided within *P2468.1.0 - 77 Lawn Road, Camden AIA March 2016*.

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.

4.1 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*.
- Volume 4 - *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (Issue 2, 2007).

4.2 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
Client	**Laura Bolohan & Xavier Menguy**	77 Lawn Road Camden NW3 2XB	-
Agent	**Enric Torner**	3rd Floor Flat 87D Dancer Road SW6 4DU	07577 016437 enrictorner@icloud.com
Arboricultural Consultant	**Richard Parmee** Principal Arboricultural Consultant	**agb Environmental** Newmarket Business Centre 341 Exning Road Newmarket Suffolk CB8 0AT	01638 663226 richard@agbenvironmental.co.uk

4.3 Tree Works

Tree works should be the first activity on site to prevent accidental damage during clearance / demolition / construction and to enable sufficient vehicular 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*.

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

Table 6.2. Tree works.

Tree No.	Species	Work Required Irrespective of Development	Work Required to Facilitate Development
T8	Yew	None.	Reduce southern crown spread to site boundary.

4.4 Tree Protection

Following tree works and before any other works commence on site, it is recommended that tree protective fencing is installed on the site boundary to span the RPA of T8. This is in addition to tree protection specified within the Tree Protection Plan (TPP) provided in **Appendix 3**. However, due to the limited space available, coupled with the need to remove the garage and boundary wall, and excavate within the site, conventional installation of tree protection in this location would not be possible.

The feasibility of supporting tree protective fencing, likely to be in accordance with the specification in **Appendix 4**, should be investigated to seek a means of supporting such fencing for the full duration of the basement excavation and foundation construction works.

If it is not feasible to maintain fencing in this location, then the Site Manager will need to put measures in place to prevent any accidental or deliberate encroachment of development activities into the neighbouring property.

Following completion of foundation construction, the above ground section of the extension would be constructed entirely within the site boundary. Fencing could be installed at this point to provide protection to T8, maintained in place until all construction had been completed.

At any stage where tree protection is installed, and before any further works commence on site, it is recommended that this be viewed and signed off, by the project arboriculturist or the LPA's Tree Officer. All protection shall be in place during the entire construction phase of the development.

4.5 Construction Access / Materials Storage

All access will be from Lawn Road. It is assumed that the main access route will be via the driveway, giving access to the rear, with the pedestrian path providing limited access to the front of the property only. No access to the working area will be required through the neighbouring property.

General guidance on all development activities with regards to trees is provided in **Section 4.12.**

4.6 Demolition

This will have to take place from within the site, as no access to the north of the garage will be possible. As a consequence, the garage roof, walls and base must be pulled back away from the site boundary and T8. The limited space available and the nature of the garage's

construction means that hand demolition would be appropriate. This approach would allow for greater control to prevent accidental damage to the crown of T8.

As few, if any, roots are assumed to be within the site, garage base and hard surface removal are not considered to pose a risk to roots. Subsequent excavation would remove any roots present, so no special measures are required for this work.

4.7 Boundary Wall Removal

Once the garage roof and walls have been removed, hand demolition of the boundary wall will take place. Sheet piling will be installed following wall removal to prevent collapse of the previously retained soil, both to maintain the safety of contractors and to prevent exposure of tree roots. Where sheet piling is to be installed within any part of the RPA of T8, this must be lowered gradually following removal of courses of bricks, until the wall foundation has been reached. This approach will minimise the potential for damage to any roots immediately behind the retaining wall.

Once the wall foundation and garage base has been reached, sheet piling can be installed conventionally to greater depth, on the assumption that few, if any, roots would be present at that depth.

4.8 Provision of Piles

These will be installed using a piling rig, operating entirely from within the site. As excavation will take place once piles are installed, which would remove any roots that may be present, no special measures are required for this work. 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.

4.9 Basement Excavation and Foundation Construction

The presence of sheet piling would prevent any soil collapse during this process, maintaining the stability of soil within the RPA of T8. As this work will take place at depth, no tree roots are expected to be present, and no special measures are recommended for this work.

However, in the event any tree roots are found, hand tools only must be used for excavation of the closest 300mm horizontally to T8, for the first 600mm depth, to minimise the potential for root damage. The area in which this may be relevant is shown on the TPP in **Appendix 3**.

Where roots below 25mm diameter are encountered, these shall be cut cleanly using a sharp saw. If roots exceeding 25mm diameter are encountered, no severance must take place without first consulting the project arboriculturist or LPA's Tree Officer. 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.

4.10 Above Ground Construction

Due to access constraints, this work must take place entirely within the site boundary, working from within the footprint of the extension. The presence of tree protective fencing, if installed, will provide protection to the crown of T8. If it is not feasible to install this fencing, then increased care will be required when constructing above ground to avoid accidental contact with the crown.

However, as all materials will need to be delivered and installed from within the site, and there will be no need nor consent for materials to extend across the boundary, it is assumed that control measures would be put in place by the Site Manager to prevent any part of the development from affecting neighbouring property.

4.11 Schedule of Works and Supervision

Supervision is recommended for key stages 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 arboricultural consultant. Following supervision, a photographic report would be presented to the LPA.

The recommended schedule of works and points at which supervision is required are set out 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	Crown reduction of T8.	Project Arboriculturist.
2	Installation of all tree protection in accordance with the TPP.	Site Manager & Project Arboriculturist.
3	Garage demolition.	Site Manager.
4	Wall demolition, including installation of sheet piling.	Site Manager.
5	Hard surface removal.	Site Manager.
6	Pile installation.	Site Manager.
7	Basement excavation using hand tools, if required.	Site Manager & Project Arboriculturist.
8	All construction works.	Site Manager.
9	Removal of all tree protection following completion of all development.	Site Manager.
10	Assessment of tree condition post-development	Project Arboriculturist.

4.12 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.
- There shall be 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 shall be mixed or stored within the RPAs of retained trees or areas where new trees are to be established.
- 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.
- No vehicles shall be parked or operate within the RPA of a retained tree.

5 Conclusions

Development will require the removal of the boundary wall and garage along the north of the site, part of which will take place within the indicated RPA of off-site yew tree T8. Once removed, piling, basement excavation, foundation and wall construction will take place in the area currently occupied by the garage, boundary wall and hard surfacing.

Development has potential to adversely affect T8 through:

- Accidental damage to the crown during demolition and construction;
- Loss of roots during foundation construction; and
- Root loss or tree instability due to basement excavation.

A site visit, focussing on the development area in proximity to T8 has identified the following:

- The ground level within the site is 550mm lower than the level in which the tree grows;
- The long-term presence of the boundary wall and its foundations, the garage and its base, and hard surfacing within the site, can be assumed to have acted both as a barrier and a deterrent to root growth into the site – root growth from T8 into the site is likely to be either negligible or absent; and
- The long-term presence of the garage will have prevented crown growth into the site for at least half of the southern crown face.

Therefore, the work is not considered to pose a significant threat to T8 as:

- Negligible root loss is expected; and
- Any section of the crown extending into the site can be reduced back to the site boundary without adverse impact on tree health or stability.

Recommendations are provided on the use of tree protection and the methodology for all demolition, excavation and construction work to minimise the potential for these to cause harm to the tree. Subject to the correct implementation of these measures, successful retention of T8 is entirely feasible.

6 References

Mattheck, C. and Breloer, H. (1994) *The body language of trees.* London: TSO

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 Tree Photos

Plate 1 (above). View looking beyond the northern site boundary showing the base of the trunk of T8, yew, relative to the garage wall on the boundary (far right), and the ground level in which the tree stands.

Plate 2 (left). View looking to the north at the site boundary, showing the boundary retaining wall (left) and garage (right), with the level difference between the neighbouring property and the site visible, most clearly evident looking at the ground level by the garage door in relation to the top of the wall.

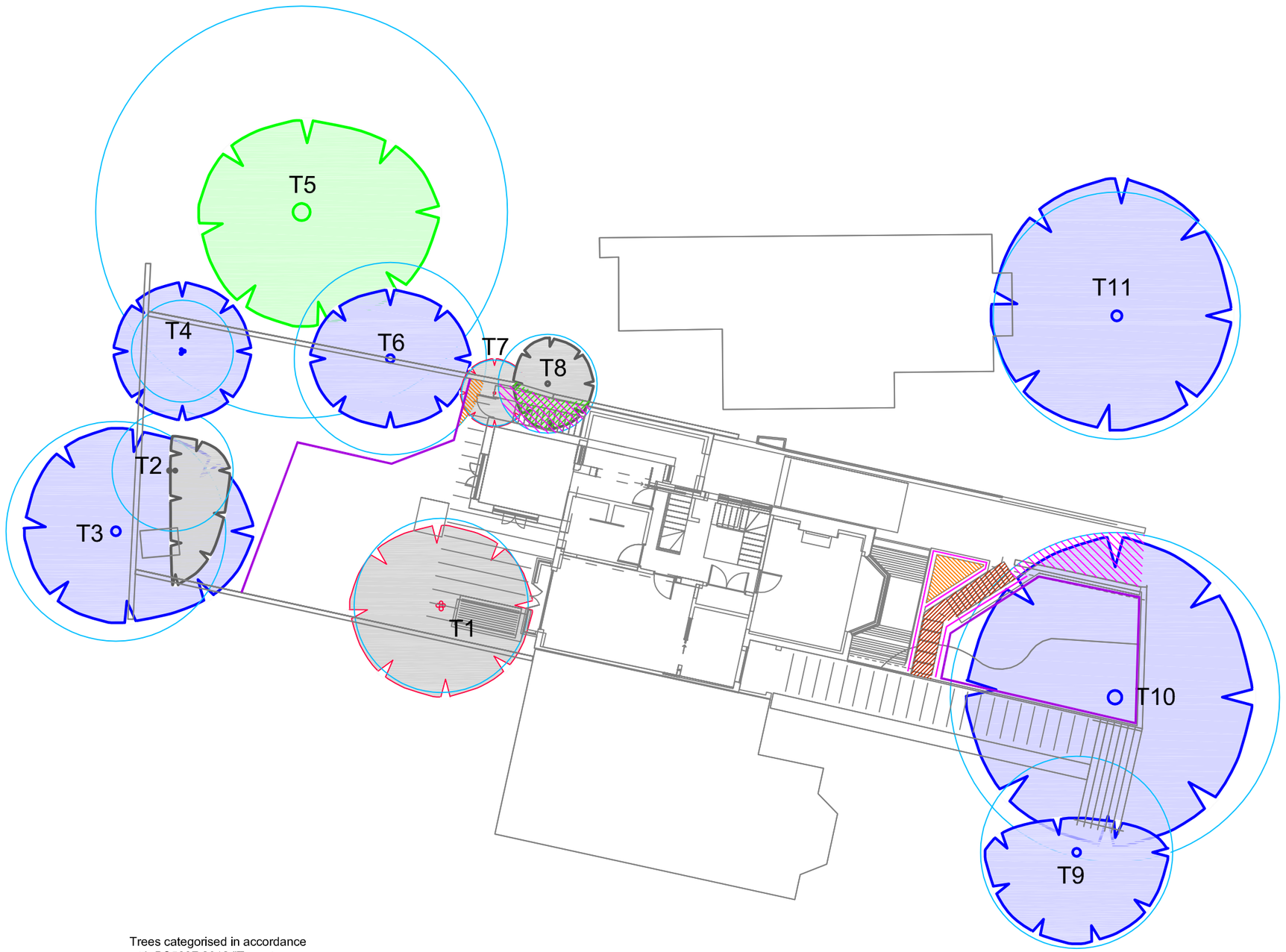
Appendix 2 Tree Survey Table

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	Condition	Height (m)	Spread (m)				Crown Clearance (m)	DBH (mm)	Comments	Recommendations	BS 5837 Category	Remaining Contribution (est.)	RPA Radius (m)
					N	S	E	W							
T8	Yew *Taxus baccata*	M	Fair	4.5	2	2	2	1.5	1.0	180*	Small, off-site tree subject to regular trimming to control its size and shape.	No work.	C1	40+	2.16

* Indicates estimated value due to access constraints.

Appendix 3 Tree Protection Plan



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

REV	DATE	DESCRIPTION

LEGEND

- 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
- Tree Incompatible with proposals
- Location of Protective Fencing
- Crown Management
- Ground protection
- Hand dig construction
- Hand dig wall construction
- Reduced dig construction methodology and permeable surface

LOCATIONS ARE APPROXIMATE.

PROJECT

77 LAWN ROAD, CAMDEN

TITLE

TREE PROTECTION

CLIENT

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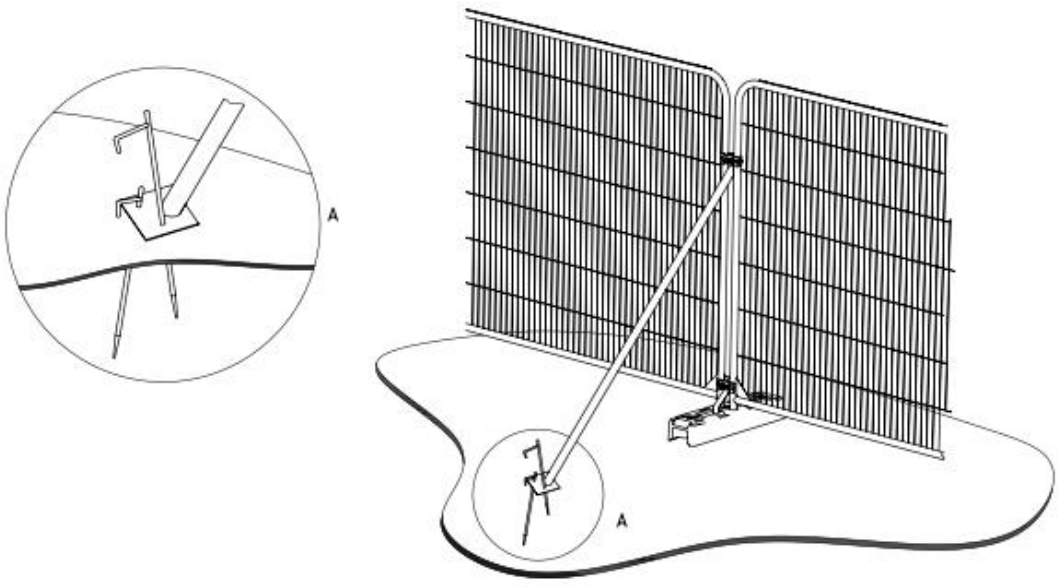
Appendix 4 Tree Protective Fencing Specification

Specifications:

Tree Protective Fencing Panels shall be 2.3m high x 3m in length. (see image below).

Tree protective fencing example

Given the existing soft surface onto which the fencing will be placed in addition to the small, constrained nature of the site, it is considered that Heras fencing will be most appropriate from of tree protection. The Heras 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:



a) Stabilizer strut with base plate secured with ground pins

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).