BS5837 Arboricultural Impact Assessment & Method Statement



82 Madrid Road, Barnes, London, SW13 9PG

Client: Mr. & Mrs. Freud

Job Reference: 05209R

Planning Ref: 24/2046/HOT

Consultant: Keiron Hart (BSc Hons, C.Env, F.Arbor.A, MICFor,

MEWI, AARC, APAEWE, VETcert)

October 2024





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1. Executive Summary

- 1.1 Tamla Trees ltd has been appointed by Mr & Mrs Freud to provide advice on the arboricultural issues relating to the advised development: "Demolition of existing rear extension, construction of a single storey rear extension with associated partial raising of an existing party wall, loft extension with front dormer."
- 1.2 We surveyed the site in October 2024. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction Recommendations". A small Cherry tree referenced as T1 within this report will be removed to facilitate construction/ ensure a suitable balance between the tree and extended building. T1 (Cherry) is a small tree and whilst tree removal is regrettable the size and low visual amenity associated with this tree mean it is not considered a constraint tree worth of design manipulation. Scope exists to plant a replacement tree of a similar size further from the extended building. The removal of this tree means there are no proposed works within the Root Protection Area (RPA) of any other trees.
- 1.3 Remaining surveyed trees will be protected with herras fencing and basal shuttering for the street tree referenced as T5 (Purple Leaf Plum). Ground protection will cover any RPA overspill outside the fenced protection area as required (but none identified at this stage, to be kept under review) to allow realistic movement close to the proposed work area. It is envisaged that services will connect to the main dwelling (existing) services, no new excavations have been advised. In the event of a soakaway being required its location is indicative shown (Section 5.6).
- 1.4 The tree issues can be summarised as: Removal of T1 (Cherry)> Effective Tree Protection> Service Connections> Site operative knowledge of tree protection issues> Soft landscaping to make good.
- 1.5 The site is within the London Borough of Richmond Upon Thames administrative area. The property is within the CA76 Madrid Road Conservation Area. No Tree Preservation Order (TPO) is advised. The site is currently the subject of some building works and materials stored below T2 (Cypress) and any other trees require careful removal by hand before the implementation of the protection measures detailed in this report. Subject to adherence to the protection measures detailed within this report there should be a limited impact on retained trees.
- 1.6 This report is based on the client plans ref: Proposed layout Plan Dr No: MADRID ROAD-BH-750-P-101 (and associated drawings)



2. Statutory Protection

2.1 At the time of writing, we are advised as follows:

Yes CA76 Madrid Road
n a Conservation Area. Exemptions apply for treen many circumstances.
TBC
Area
Individual
Group
Woodland
-
-

before any tree works is advised. An <u>application</u> may be required before undertaking works. (ii) At the time of writing Richmond Council constraint plan indicates the property is within a Conservation Area but does not confirm whether any of the surveyed trees are the subject if a TPO.







3. Terms of Reference

3.1	BS5837:2012 'Trees in relation to design, demolition and construction – recommendations'
3.2	BS3998:2010 'Tree work – recommendations'
3.3	Arboricultural Associations Approved Tree Work Contractors <u>List</u>
3.4	https://www.trees.org.uk/Help-Advice/Help-for-Tree-Owners/Guide-to-Tree-Pruning
3.5	NJUG 4 - National Joint Utilities Group "Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume
	4, issue 2. London: NJUG 2007" To include Operatives Hand-out Guidance
3.6	Foundation design, tree species water use - NHBC Chapter 4.2 Building near trees
3.7	TDAG Trees Planning & Development – A guide for delivery
3.8	TDAG Trees in Hard Landscapes – a guide for delivery
3.9	TDAG Tree Species Selection for Green Infrastructure – a guide for specifiers
3.10	BGS Open-Source Soil Data http://www.bgs.ac.uk/nercsoilportal/maps.html
3.11	HSE (2014) Avoiding danger from underground services: https://www.hse.gov.uk/pubns/books/hsg47.htm
3.12	Eissenstat & Yanai (1997) The ecology of root lifespan. Advances in Ecological Research, 27, 1-60.
3.13	Hendricks & Pregitzer (1992) The demography of fine roots in a northern hardwood forest. Ecology, 73, 1094-1104.
3.14	BRE Digest 412: Desiccation in clay soils.
3.15	Matheny & Clark (1998) Trees and Development: A Technical Guide to Preservation of Trees During Land Development.
3.16	https://www.richmond.gov.uk/services/parks and open spaces/trees



4. The Trees

4.1 The trees can be summarised as follows:

BS 5837 Cat	А	В	С	U
Specific Trees	-	Т4	T1, T2, T3, T5	-
Total Number	None	1 tree	4 trees	None*

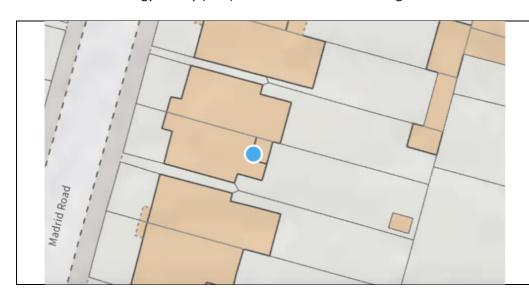
^{*}Based on available access.

4.2 There were no hedgerows that qualify for consideration under the 1997 Hedgerow Regulations.



5.1 Site Specific Soils

- 5.1.1 Soil is an important factor in tree growth and the type of underlying soil can impact on successful integration of new developments.
- 5.1.2 A free draining sandy soil containing sand/gravel is likely to lead to water being accessible in the upper horizons during the growing season and available at greater depths and trees will generally be forced to explore a larger volume/ depth on such soils. The structure of such soil also makes compression more difficult (by heavy construction plant), and root penetration is easier for the trees. By comparison, a clay soil is more easily compressed, particularly when wet and compression can have a greater impact on tree health.
- 5.1.3 British Geology Survey (BGS) data indicates the following:



Soil Description

Bedrock Deposits: London Clay Formation - Clay and silt. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period.¹

Superficial Deposit: Kempton Park Gravel Member - Sand and gravel. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.²

¹ https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=LC

² https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=KPGR



Underlying Soil Material contains Clay	At depth below sand and gravel.
Soil Type increased rooting depth profile?	Yes
Increased risk of soil compaction due to soil type	No*

^{*}Depending on level/ depth of clay.

- 5.1.4 All comments regarding soils should be verified with onsite geotechnical investigations and laboratory testing with foundation depth and design undertaken by a structural engineer comment regarding soils should be verified with onsite geotechnical investigations and laboratory testing with foundation depth and design undertaken by a structural engineer in accordance with the requirements of NHBC Chapter 4.2.
- 5.1.5 BS5837 indicates: 4.6.2 "The RPA for each tree should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution." It advises at Section 4.6.3 That any deviation in the RPA from the original circular plot should take account of a number of site-specific factors.
- 5.1.6 BS5837 recognises that the root morphology of trees may be affected by a number of factors and in certain situations the plotting of RPA's will deviate from the circle to reflect site specific considerations. It is our experience that to consider structures such as driveways, houses and garages as areas trees cannot utilise for rooting (and to then modify RPA plotting where they exist within an identified RPA) is too simplistic and not aligned with how trees actually utilise soil.
- 5.1.7 Within around 3 to 4m of the base of mature trees there will generally be a structural root system providing both support and the main structure/ root architecture for smaller roots to originate. These larger roots have the very real capacity to be influence by any significant structures (footings, roads to adoptable standard construction etc) where there may be a physical obstruction close to them and this can affect root morphology in such locations. In addition to this there will generally be a noticeable increase in structural rooting to the southwest of mature trees in the UK to reflect the prevailing wind direction, particularly where a tree may be isolated/open grown increasing its wind exposure. Root growth and location will also be influenced by the presence of other trees, structures sheltering trees etc all of which can combine to affect the shape and location of a structural root system.



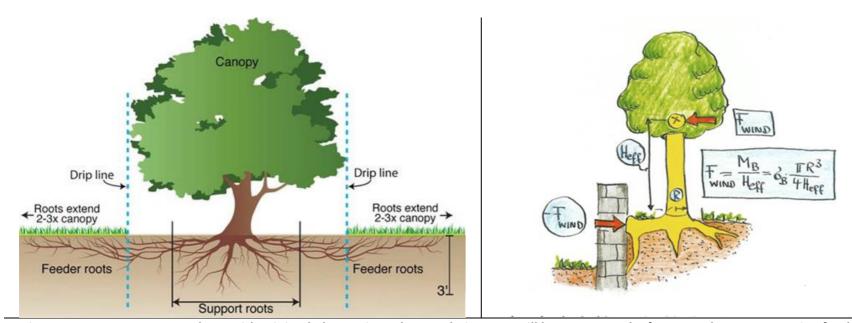


Fig 2 – Open grown trees or those with minimal obstructions close to their stems will have a network of structural roots supporting feeder/fine root growth beyond (above left). In certain situations, root morphology can be affected by structures close to the main stem (above right: Mattheck).

5.1.8 Beyond the structural (and generally permanent) root system will be a network of smaller roots which in turn subdivide to fine roots. Fine roots will also be found throughout the root system (i.e. both close to and distant from a tree) to maximise soil resource uptake and reflect underlying soil conditions. Some larger roots (>25mm and sometimes much larger) can extend away from this area and remain permanent particularly where there may be a constant supply of water (such as a broken downpipe on a building some distance away) which encourages a roots development. Generally, the smaller roots (<10mm and particularly fibrous roots) outside of the immediate structural root plate can be considered to be in a state of constant change. They will grow seasonally, and tree roots generally grow at night. Small fibrous roots are also mostly short lived (ranging from anything



between 10 days to over a year³). The cyclical death and decay of roots releases both nitrogen and carbon into the soil and is an important part of soil nutrient cycling process. The extent and location of the trees fine root system reflects a trees resource requirement (as resources are removed from certain areas of the soil and exploited in others) as well as the resource capacity required to form such a fibrous root system. Fine roots produced near the soil surface tend to live longer than those deeper in the soil⁴. The fine root system shows species variation and will also vary in depth (depending on species dynamics and underlying soil conditions). Adopted highways generally have a footing that extends < 0.5m and most UK residential properties have footings in the range of 0.5-1.5m depth.

³ Eissenstat & Yanai (1997) The ecology of root lifespan. *Advances in Ecological Research*, 27, 1-60.

⁴ Hendricks & Pregitzer (1992) The demography of fine roots in a northern hardwood forest. *Ecology*, 73, 1094-1104.



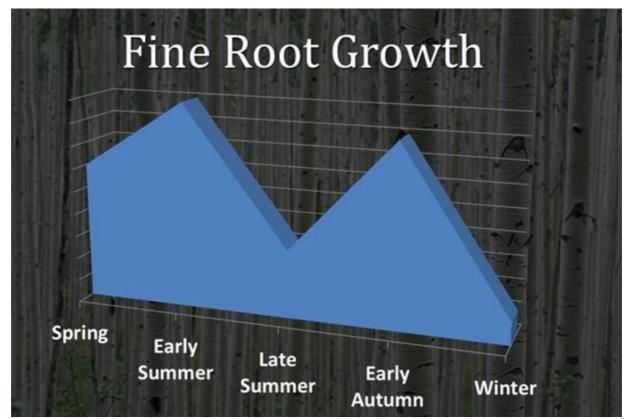


Fig 3 – Fine root growth is (generally) seasonal peaking in late spring and again in early autumn but dying back in winter dormant periods when photosynthetic production ceases. This is an important part of the soil nutrient cycle and demonstrates that a static RPA as calculated by BS5837 is a 'simplistic' view of the tree rooting dynamic. (Image Source: Tamla Trees)

5.1.9 The fine root system shows species variation and will also vary in depth (depending on species dynamics and underlying soil conditions). Adopted highways generally have a footing that extends < 0.5m and most UK residential properties have footings in the range of 0.5-1.5m depth. Trees will easily root below these depths, and this is evidenced by the fact that every year in the UK there are thousands of tree related subsidence cases.



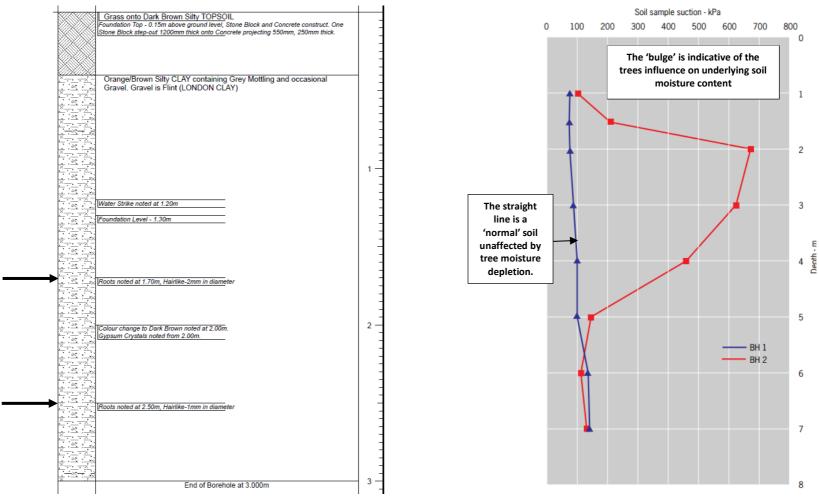


Fig 4 – Borehole log 10m from mature Oak tree on clay soil detailing fine roots to depths of 2.5m indicated with arrows (Source: Tamla Trees project) and annotated soil moisture depletion by trees showing a peak influence at 2m and extending to 5m (above right)



5.1.10 Against this backdrop rooting information seeking to manipulate RPA shapes to account for the presence of houses, garages etc outside of the immediate zone of structural rooting (3-4m) is not considered appropriate. Unless ground obstructions are present within the immediate structural rooting area or to such a depth as to nullify potential fine root growth (below basements or retaining wall step changes in levels for example) Tamla Trees Itd will show RPA's in a circular fashion but seek to maximise the quality and positioning of specified tree protection measures and encourage ground treatments (such as mulching – see Section 5.7). Clients and developers must implement these measures for them to be effective. A failure to protect trees during the development process adversely affects soil and roots. Symptoms may not present themselves for a number of years following the development as the tree(s) enter a spiral of potentially irreversible decline.



Fig 5 - Manion's spiral of tree decline for Norway Spruce (modified by Mrkva 1993)



5.1.11 BS5837 Section 4.6.3 Site Specific Assessment:

Section	Consideration	Site Specific Comments
4.6.3 (a)	the morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures, and underground apparatus);	 T5 (Purple Leaf Plum) is an established street tree and surface features such as the adjacent kerb line and upper soil made/ compacted ground to form the footpath and road will have likely manipulated the shape of the immediate structural root plate around the basal area of the tree. Fine root growth will extend below and beyond (kerb and footpath to gardens) these features. Trees T1 – T4 (inclusive) are within soft garden areas and as such there were not site features likely to adversely impact the general rooting of these trees.
4.6.3.(b)	topography and drainage;	The site is level with no adverse topographical features likely to impact drainage.
4.6.4.(c)	the soil type and structure;	 Soil is indicated by the BGS as Kempton Park (gravel and sand). This increases aeration and reduces risk associated with compaction. This risk is reduced further by the protection measures detailed within this report. It should be noted that London Clay is detailed below the gravel and sand and the depth of this is not known. Detailed foundation design and further comment on soil is deferred to the project structural engineer. Tree protection and ground protection measures detailed in this report will only be effective if these are instated immediately prior to all site works and maintained for the duration of the works. These must be briefed to all contractors, so they understand their purpose.
4.6.4.(d)	the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.	 The proposed removal of T1 (Cherry) means there are no RPA incursions from the proposed works to other retained trees. On the basis that the tree protection measures are installed prior to any on site activity and maintained for the duration of the works there should be a minimal impact on the retained trees.



5.2 Root Protection Area (RPA) Incursions

5.2.1 The following incursions into the RPA's of trees to be retained have been identified:

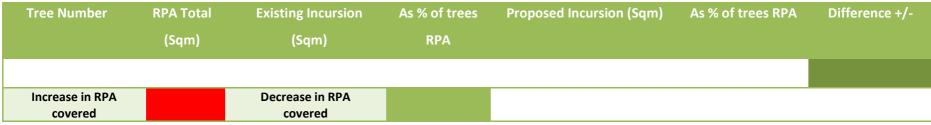
BS 5837 Cat	Α	В	С	Summary
RPA Incursion	-	-	T5	Access – The site will be accessed over a long-standing hard standing pedestrian access (side) and through the main dwelling which is the subject of wider refurbishment works. There is a minor risk to direct lower stem damage of T5 (Purple Leaf Plum) on the basis this is an established street tree. As a result, basal shuttering is proposed. This need only protect the lower stem on the basis that the established footpath and road are existing hard surfaces limiting the risk of any adverse ground compaction in these areas.
	-	-	-	Demolition – No demolition works are proposed.
	-	-	-	Construction/ Footings (Extension) – The removal of T1 (Cherry) means no construction or footing excavation works are proposed within the RPA of retained trees.
	-	-	T2	Surfacing – The proposed rear terrace surface area extends towards but not into the RPA of T2 (Cypress). As a result, no special surfaces are proposed.
	-	-	-	Site Storage – There is ample space on site for storage of materials to the front of the property and in the area to the immediate rear of the property. In the event of any fence line manipulations to facilitate storage temporary ground protection must be laid.
				Services – The proposal is envisaged to tie into the service connections of the existing property (which are outside retained tree RPA's). The general principles of NJUG 4 – National Joint Utilities Group "Guidelines for the planning, installation, and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London: NJUG 2007" should be adhered to. Special guidance (overview) on hand digging is included within this report for any service excavation which may be required within the RPA. All new manhole



chambers must be located outside the RPA of any retained tree. Contractors (demo & construction) must be made aware of this requirement.

Landscaping (Soft) —All making good must be with BS3882 compliant topsoil raked out by hand. See Section 5.7 for further details. Likely limited given the nature of this site and the fact the proposal is a residential development. We would encourage the use of mulch below tree canopies where possible. This benefits tree health and vitality and reduces issues associated with leaf fall (on lawns for example).

5.2.2 There are no RPA incursions following the removal of T1 (Cherry).



Note: *Includes 16sqm of existing building retained. ** New extension only *** Combined incursion % including existing retained and proposed.

- 5.2.3 It is recognised that BS5837 recommends all structures be placed outside the RPA of retained trees: 5.3.1 The default position should be that structures (see 3.10) are located outside the RPAs of trees to be retained. However, where there is an overriding justification for construction within the RPA, technical solutions might be available that prevent damage to the tree(s) (see Clause 7). If operations within the RPA are proposed, the project arboriculturist should: a) demonstrate that the tree(s) can remain viable and that the area lost to encroachment can be compensated for elsewhere, contiquous with its RPA; b) propose a series of mitigation measure.
- 5.2.4 It is considered in this instance that there is 'overriding justification' on the basis that there are no RPA incursions proposed.



Tree & Development Risk Indicator

Λ

- The removal of T1 (Cherry) means there is considered to be very minimal development pressure on any other retained tree subject to the protective measures detailed within this report being implemented.
- Note: This level of risk if a visual guide only and is only relevant if all advised tree protective measures are put in place prior to any on site activity and maintained for the duration of the works.
- **Note:** Only on-site testing can confirm the local soil conditions below foundation level, but available information suggests the presence of a soil with a high SAND & GRAVEL content.



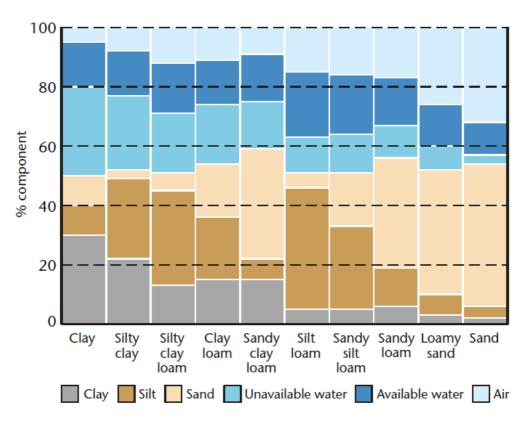


Fig 6 – Diagram showing the typical particulate composition and air/ water content at field capacity for mineral soil types⁵ The variation in soil type has a direct bearing on the potential impact of adverse construction techniques (such as soil compaction) as well as overall root system morphology & development. Clay soils tend to have shallower rooting as moisture remains readily available while soils containing free draining gravel and sand can encourage deeper rooting based on reduce soil bulk density and greater seasonal variations in moisture availability.

 $^{^{5}}$ Forestry Commission (2005) The Influence of Soils and Species on Tree Root Depth



5.3 Tree Pruning & Removal

5.3.1 T1 (Cherry) is proposed for removal. T1 (Cherry) is a small tree and whilst tree removal is regrettable the size and low visual amenity associated with this tree mean it is not considered a constraint tree worth of design manipulation.



Fig 7 – T1 (Cherry) October 2024. It is proposed to remove this tree.



Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat	

Proposed Removal

Tree No.	Species	Proposed Tree Works	BS Cat
T1	Cherry	Remove	C1

- 5.3.2 **Birds** In the event future tree works are required to be completed between 1st March & the 31st of July (inclusive) a due diligence check for nesting birds must be completed before work starts in order to comply with the Wildlife & Countryside Act 1981. This check should be recorded in the Site-Specific Risk Assessment. If active nests are found work should not take place until the young have fledged.
- 5.3.3 **Bats** It should be noted that in England and Wales, the relevant legislation is the Wildlife and Countryside Act (1981) (as amended); the Countryside and Rights of Way Act, 2000; the Natural Environment and Rural Communities Act (NERC, 2006); and by the Conservation of Habitats and Species Regulations (2010).

Tree Pruning Indicator



- The nature of the proposal relative to the position and size of retained trees means we do not envisage the extension generation new pruning pressures.
- The local authority retain control over tree pruning works by way of the Conservation Area.
- **Note:** This is an indicative assessment. All and any future works should be undertaken in accordance with BS3998 (Tree Works), and we recommend the use of Arboricultural Association approved contractors.⁶

⁶ https://www.trees.org.uk/ARB-Approved-Contractor-Directory



5.3.4 Please note that this is not a health and safety assessment report and that vigilance for the emergence of any fungal pathogens is advised. T5 (Purple Leaf Plum) to the front of the site (and within the public highway) has above average deadwood and canopy die back. T4 (Poplar) is a large 3rd party tree with no access to assess/ inspect. This tree has been reduced before which will necessitate repeating this work (at around 5-year intervals) to manage the risk of regrowth detachment from around old pruning wounds.



5.4 Demolition & Foundations

5.4.1 All tree protection will be installed prior to any on site activity. The proposed tree protection procedure can be summarised as follows:

Stage 1

- Remove existing materials from around the base of all trees (by hand).
- Install BS5837 Tree Protective Fencing and Temporary Ground Protection (if required) as as indicated (See Appendix 6).
- Brief all contractors on purpose of tree protection.

Stage 2

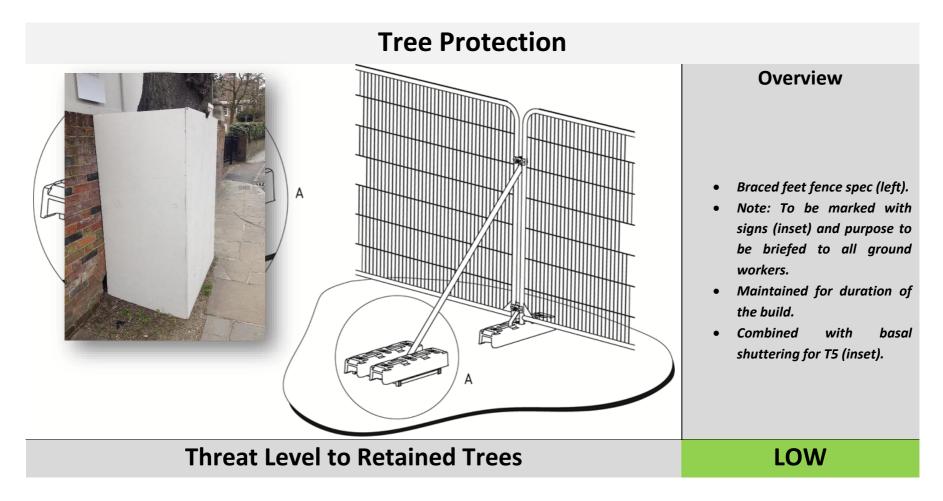
- Construct extension.
- Undertake service connections works (note: any rear garden soakway to be located outside retained tree RPA's).

Stage 3

- Protection remains in place for complete development cycle. Removed prior to soft landscaping.
- BS3882 compliant topsoil imported and raked out where required to 'make good'.
- Undertake soft landscaping (to include mulch below tree canopies where possible).



5.4.2 High quality BS5837 compliant fencing will be installed **prior to any further on-site activity.**





5.4.3 All internal tree protection must be appropriately signed to ensure that all site operatives know its purpose.



Fig 8 – Professional grade weatherproof tree protection signs no smaller than 297 x 420 mm (A3) should be placed on protective fencing.



5.4.4 Temporary ground protection is not formally indicated at this stage but should any manipulation to protective fencing be required to generate incursions towards trees it will be laid. This should be kept under formal review by the site manager. Please note damaging trees in a Conservation Area can constitute a criminal offence.

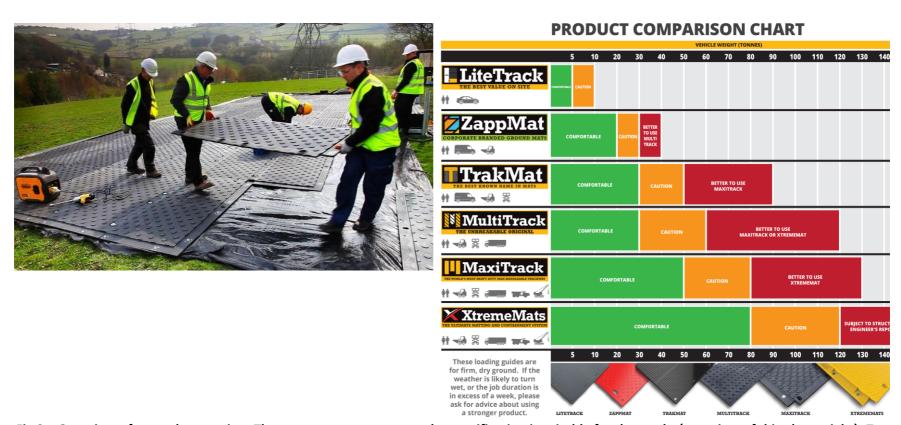


Fig 9 – Overview of ground protection. The contractor must ensure the specification is suitable for the works (overview of this above right). To be kept under review and installed as required (i.e. if there are any changes to the proposed fencing detailed at Appendix 6).





Fig 10 – Temporary ground protection is an effective way of allowing access through the RPA of retained trees. It must be installed prior to any on site activity and maintained for the duration of all works to be effective. Above left Tamla Trees project ground protection in place and above right being removed following the completion of site works. (Note: depending on the length of time it is in place it will adversely affect underlying grass ground cover which will need reseeded/ turfed accordingly)



5.4.5 **Site Manager/ Consultant Sign Off:** At this point a site inspection is required to confirm the appropriate tree protection measures have been completed.

Date of Inspection	Compliance with Tree Protection Plan?			
	Yes		No	
Destification Assigns (income makes)				
Rectification Actions (insert notes)				
Site Manager Signature:				
Print Name:				
Ashavicultural Consultant Signatura				
Arboricultural Consultant Signature:				
Print Name:				

SITE TREES ARE NOW ADEQUATELY PROTECTED AND DEMOLITION/ CONSTRUCTION ACTIVITY CAN COMMENCE



5.5 Surfaces near Trees

5.5.1 The proposed rear terrace indicated on the site plans is located outside the RPA of any retained tree. As such no special surfaces are proposed.

5.6 Site Service Provision

5.6.1 All services should be designed outside the RPA where possible and no manhole/ chambers should be located within the retained tree RPA. Where further excavations are required, these will be undertaken by hand if within the RPA of retained trees.

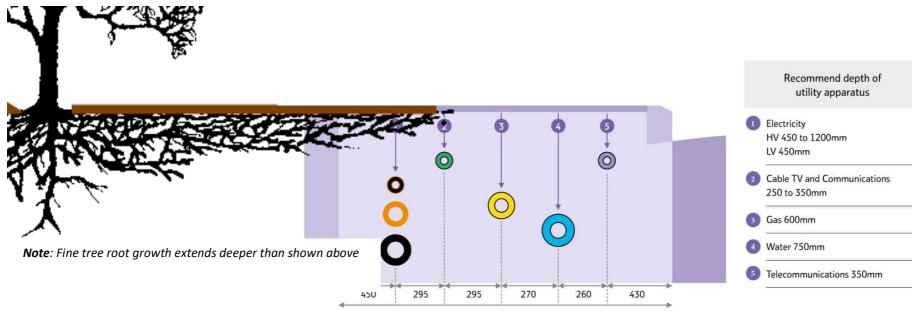


Fig 11 – Annotated service installation depth drawing (source: Thorne & Derrick). Service installations occupy the same soil volume/ depth where the greatest level of tree roots will likely be found. It is envisaged that services will connect with existing ones present on site serving the existing property. If a new soakaway is proposed it should be located within the part of the rear garden not affected by the RPA of trees. Please note the overspill RPA of T4 (Poplar) into the site.



5.6.2 **Soakaway** – A new soakaway is not advised but should one be proposed, it should be located in the area of the rear garden which is not within the RPA of retained trees.

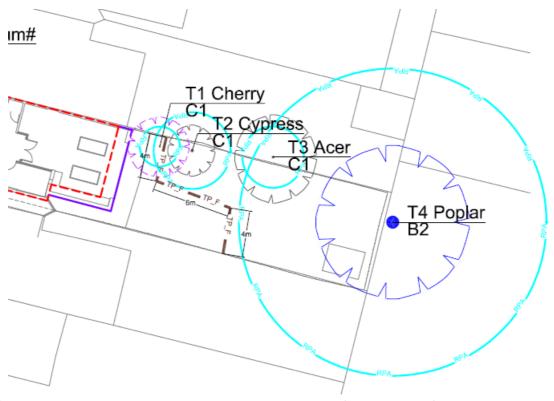


Fig 12 – In the event of a soakaway being required it must be located outside of tree root RPA's. Note out building/ garden room not shown which likely makes a soakaway difficult to achieve given the lack of available space.



5.6.3 **Services** - Any activity to excavate within the RPA (not currently indicated – for information) has the capacity to cause root damage and should be hand dug in accordance with the principles detailed as follows:

PLEASE NOTE THIS OPERATION HAS AN ELEVATED CAPACITY TO CAUSE DAMAGE TO TREE ROOTS

Planning the excavation: A 'toolbox talk' will spot mark and agree the locations and working practices. In the event tree roots (multiple &/or roots >25mm in diameter) are encountered work will stop and progress with hand tools only. Please note this process should also be utilised for the excavation of the leading edge of the expanded lower ground floor/ terrace area with an inspection of all uncovered roots prior to any tanking/ wall construction to ensure no significant roots from t1 have been adversely affected.



Fig 13 – Advised tools/ materials which should be available for all excavation works within RPA

5.6.5 Digging around tree roots is a skill and operatives must proceed with caution. Once a root is located it is often necessary to use a combination of hand tools and a stiff hand brush to track and 'trace' the roots location. Spot marking roots >25mm with spray paint is advised. All roots >25mm in diameter will be retained. Please also note that retention of all roots where possible (including fibrous ones) is advised.



- 5.6.6 **How deep?** The excavation need only be as deep as the relevant service to be installed requires. **WARNING**: Breaking the ground has the potential to uncover services/ destabilise adjacent structures etc. Some general advice from the HSE can be found here.
- 5.6.7 **Root Wrapping/ Protection:** In the event the footing works expose any roots >25mm in diameter these must be wrapped or protected with a covering of soil if left exposed overnight or for longer than any single 4-hour period before backfilling following service install.





5.7 Ground Level Changes, Landscaping & Soil Remediation

5.7.1 All 'making good' will be with BS3882 compliant topsoil raked out by hand (to no more than 100mm depth within any tree RPA) and then seeded/planted as appropriate. Further comment on full landscaping details is beyond the scope of this report.



Fig 14 – All 'making good' topsoil will be BS3882 compliant and raked out by hand to no greater depth than 100mm.



5.7.2 We encourage the use of composted bark mulch below tree canopies where possible to aid water retention and increase soil microbial activity. This is particularly relevant to mature retained trees.

Mulching



Overview

- Circular area edged to 50-100mm depth to stop mulch from 'creeping' on to surround lawn.
- Composted mulch then spread around below tree by hand no need to lift or remove underlying grass.
- Mulch topped up annually/ as required.
- Positive benefits for mulched trees

Threat Level to Retained Trees

LOW



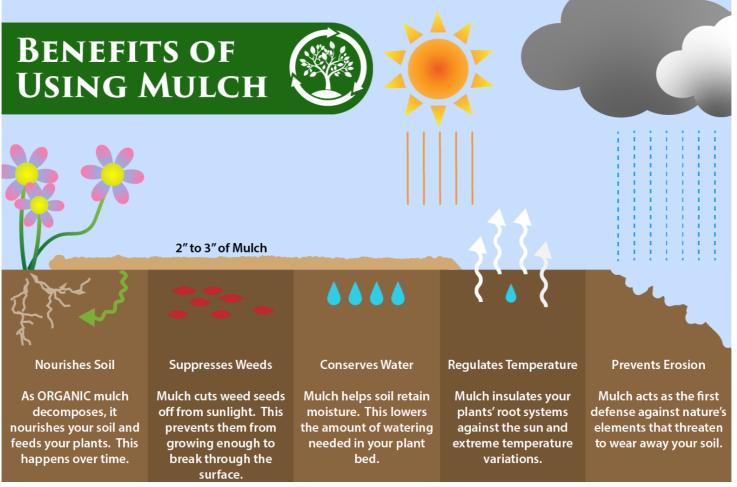
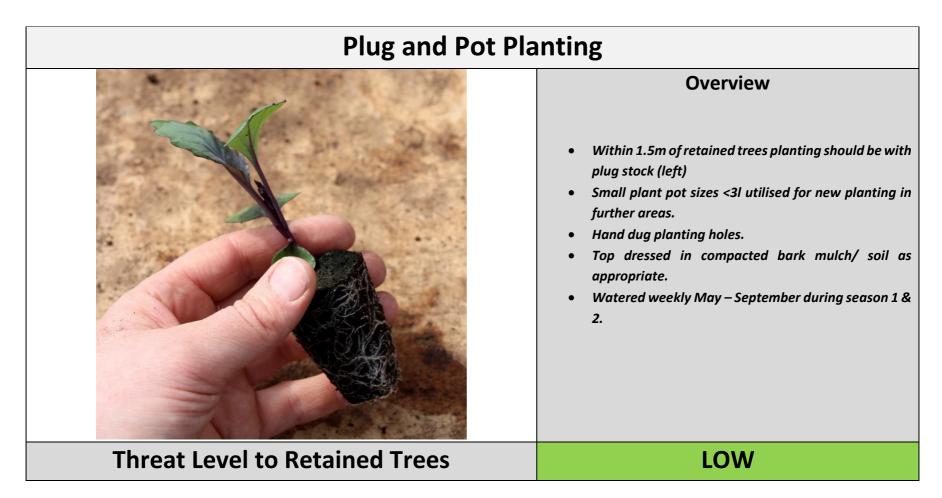


Fig 15 – Benefits of Mulch (Image Source 1st Stop Landscape Supply (US)



5.7.3 Where soft landscape planting occurs within the RPA of retained trees, we advise the use of small pot sizes and plug planting where possible to minimize the risk of root disturbance.





5.8 Tree Shading of Proposal

5.8.1 The single-story extension benefits from 2 skylights and large glazed bifold doors to an open plan dining/ kitchen area. In addition, the trees within the immediate vicinity of the property are small and unlikely to cast much shade towards it other than in the immediate morning period. As such tree shade is not considered an issue.

5.9 Arboricultural Project Supervision

- 5.9.1 Most damage to trees on developments sites is caused inadvertently and to ensure continued protection during development a system of site monitoring is normal.
- 5.9.2 Basic checks will be undertaken as the construction phase progresses to ensure that protective fencing remains intact and ensure the proposed works close to trees are completed in accordance with this report. Any unforeseen issues can be identified and discussed with the consulting arboriculturalist before any damage to trees occurs.
- 5.9.3 This approach allows a strong working relationship with the site manager/ construction staff to identify issues that may affect retained trees and ensure they are addressed before they escalate.
- 5.9.4 After each site inspection is completed, a formal record will be sent to the local authority. On this basis we would advise the following inspection regime:



Visit Detail	Date	Status
1st Site Inspection Attend site once tree protection is in place. Inspect/Toolbox talk with site operatives regarding tree protection measures but prior to any on site works. Update local authority on findings.	ТВС	Incomplete
Final Site Inspection Final site visit to confirm that no damage has been done to retained trees/ identify any remedial actions in the event damage has occurred. Assess any required tree surgery following construction. Update local authority and project team on findings.	ТВС	Incomplete

Note: Actual visit dates subject to change/ confirmation depending on project program.



Appendix 1 – BS5837 Survey Key

BS 5837 Cat	Description
	Those of high quality and value: in such a condition as to be able to make a substantial contribution (> 40 years)
Α	
	Those trees of moderate quality and value: those in such a condition as to make a significant contribution (> 20 years)
В	
	Those trees of low quality and value: currently in an adequate condition to remain until new planting could be established (> 10 years)
С	
U	Those in such a condition that any existing value would be lost within 10 years, and which should, in the current context, be removed regardless of development (< 10 years)

Note: Subcategories are denoted in the tree survey data (A1, B1, C2 etc.). You are referred to BS5837 for further detail if required.

Tree No.	T (tree), G (group), H (hedge), W (woodland) + Ref No.
Species	Common Name
Ht (m)	Measured height in metres
DBH (m)	Diameter at 1.5m above ground level
No of stems	An indication of the trees form @1.5m (1 = single stem, m/s = multi-stemmed)
Branch Spread	In m to cardinal points
Cr Ht Clearance (m)	Overall height of lowest branches from the ground level on side of proposed development
Life Stage	Young, Semi-Mature, Early Mature, Mature, Over-Mature
General Observations	Observations on the condition of the tree(s)
Tree Work Specification	Proposed tree works in accordance with BS3998
BS Cat	See above
Life Exp	Estimated remaining contribution in years.
RPA Radius(m)	Radius of the trees Root Protection Area measured from the trunk to the edge of the RPA circle in metres



Appendix 2 – BS5837 Tree Classification

The classification of trees is undertaken during the survey to inform decisions as they relate to designs and retention/ removal. The 'value' of a tree in terms of its visual amenity is subjective and the full condition of a tree may not be apparent given access and other site-specific factors. If a tree is proposed for retention in many respects its BS category is irrelevant. We encourage the retention of all trees where the design realistically allows this with the exception of U cat trees (as these are usually 'defect' trees). There should not be a presumption that all C category trees can or should be removed. Generally, A & B Category trees are those of greatest value to a development and designs should be manipulated to retain these where possible. Further detail on classification of trees is contained at Section 4.5 of BS5837. Some selective extracts are detailed below:

- **4.5.2** The purpose of the tree categorization method, which should be applied by an arboriculturist, is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.
- **4.5.5** When determining the appropriate category for any given tree, group, or woodland (see **4.4**), the arboriculturist should start by considering whether the tree falls within the scope of category U. Assuming that it does not, the arboriculturist should then proceed on the presumption that all trees are considered according to the criteria for inclusion in category A. Trees that do not meet these criteria should then be considered in light of the criteria for inclusion in category B. This process should be repeated, as required, until the appropriate quality or value assessment is reached.
- **4.5.6** Trees of generally high quality and/or value which have a defect or defects that do not reduce their retention span below the suggested 40-year threshold, should be placed in category A, i.e. they should not be downgraded as a result of minor imperfections. **Tamla Trees Note:** We do not apply a simple >40 = Cat A approach as many trees will have retention values in excess of 40 years but not be considered Cat A.
- **4.5.11** The tree survey might identify the presence of veteran trees on the site. The implications of their presence on the use of the surrounding land should be assessed at the earliest possible stage of the design process. Where such trees are to be retained, particular care should be taken in the design to accommodate them in a setting that aids their long-term retention.

Please note assessments are made based on available access and factors can affect full inspections (3rd party tree location, extensive basal undergrowth, Ivy etc). This survey is not a full health and safety inspection although obvious defects (where noted) will be identified.

BS5837 Table 1 is shown on the following page and provides detail on the relevant categorisation. Elements of this remain subjective and if a tree is shown for retention its category is somewhat irrelevant as we consider all trees should be afforded the same value/ protection if to be retained.



Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)							
Trees unsuitable for retention	(see Note)							
Category U Those in such a condition that they cannot realistically be retained as living trees in	 Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline 							
the context of the current land use for longer than 10 years	Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality							
To years	NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.							
	1 Mainly arboricultural qualities	3 Mainly cultural values, including conservation						
Trees to be considered for rete	ention							
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2				
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation		Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2				
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2				



Appendix 3 – BS5837 Survey Data

Tree No.	Species	DBH (m)	No of Stems	Ht (m)		Crown	Spread		BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPR (m)
					N	Е	S	W				(,			
T1	Cherry	0.13	1	4.2	2.3	2.3	2.4	2.5	C1	Early mature	20 to 40	2.3	Small ornamental.	Remove	1.6
T2	Cypress	0.25	1	5.8	2	1.8	2	1.9	C1	Mature	20 to 40	1.8	Small established ornamental. Ivy establishing.	No works	3
ТЗ	Acer	0.2	M/S	3.1	3.3	3.4	3.6	3	C1	Mature	20 to 40	1.7	3rd party ornamental Maple.	No works	2.4
T4	Poplar	1	1	18	6	6	6	6	В2	Mature	20 to 40	2	Ivy covered 3rd party tree with no access to inspect. Previously reduced.	No works	12
T5	Purple Leaf Plum	0.34	1	6.5	3	3.2	3.3	3	C1	Mature	10 to 20	2.2	Spring feature tree but marked down on the basis of canopy dieback.	No works	4.1



Appendix 4 – Tree Works Schedule

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat

Proposed Removal

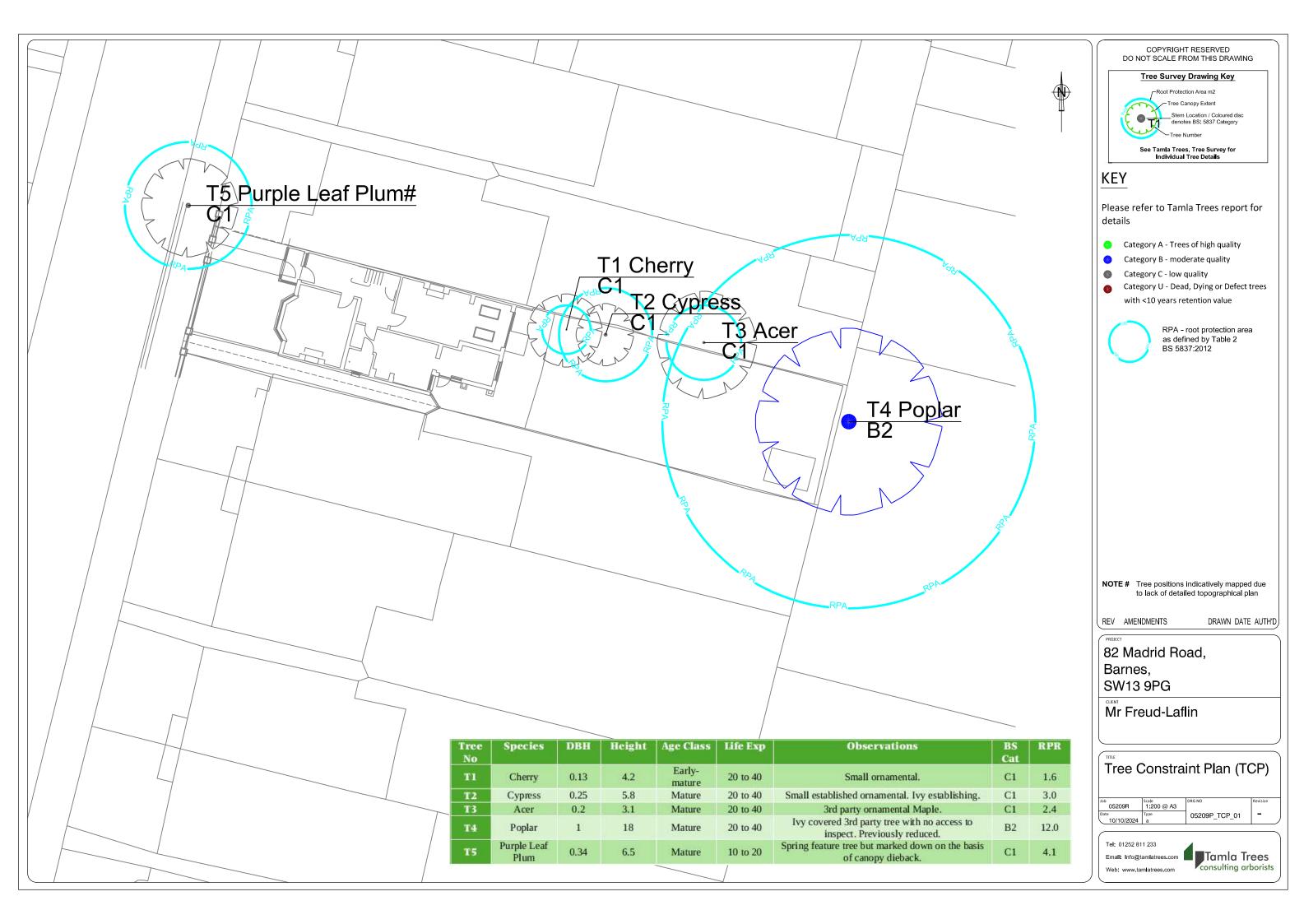
Tree No. Species		Proposed Tree Works			
T1	Cherry	Remove	C1		

NOTE: All tree works to be undertaken in accordance with BS 3998:2010 'Tree work - Recommendations'.

NOTE: We recommend using Arboricultural Association approved contractors who can be sourced here



Appendix 5 - Tree Constraints Plan



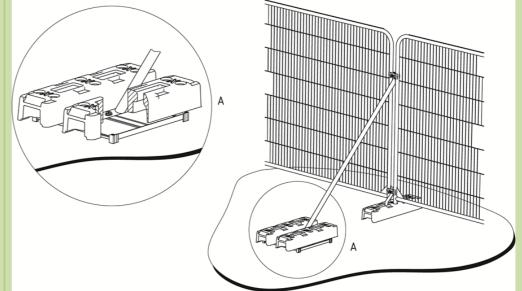


Appendix 6 - Tree Protection Plan

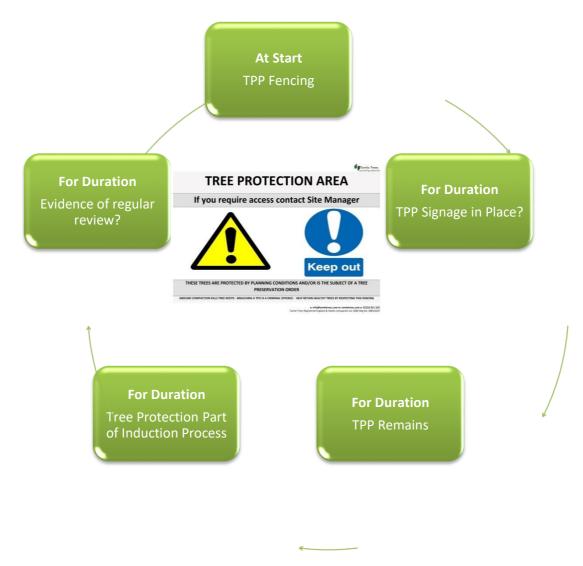
Tree protection is essential to successfully integrate the proposal into the surrounding trees. It is designed to manage the impact on the underlying soil and rooting environment. It must therefore be installed prior to any further site activity. Even apparently minimal tracking of the soil near trees has the capacity to irretrievably modify the soil environment to the detriment of tree health and stability.

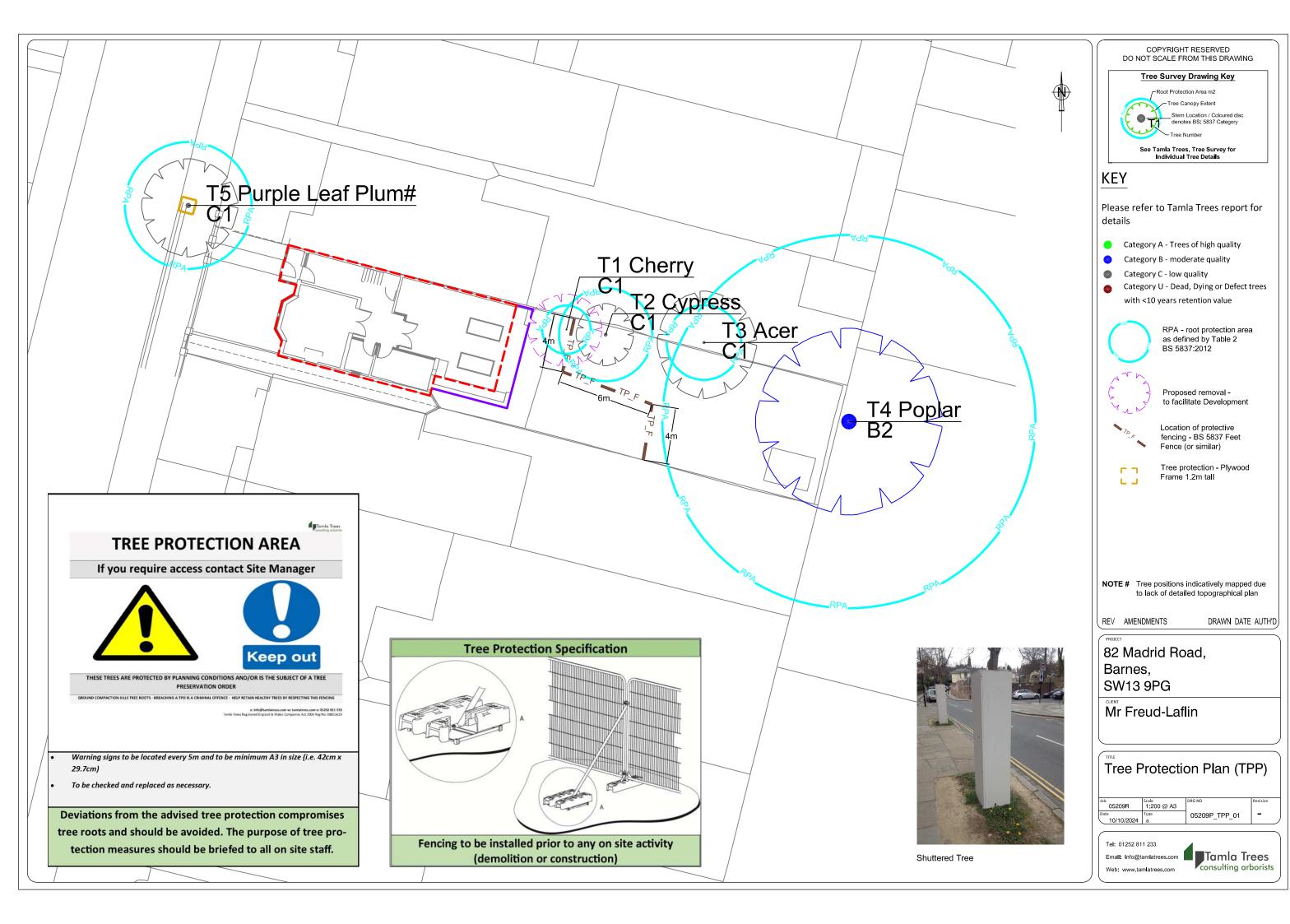
All our fencing specifications accord with advice and guidance within BS 5837. Modifications to fence types are possible but should be discussed prior to implementation. In all other instances the form detailed below should be shown. This offers the best protection to retained trees.

- All tree protection must be in place prior to any site activities. It is recommended that this fencing is installed prior to any site works (including demolition).
- To be effective Tree Protection must remain in place for the duration of the development and form part of the site induction process.
- Fencing spec (right) to be installed prior to any on site activity.
- Combined with temporary ground protection (if required) and basal shuttering of T5 (not shown right).





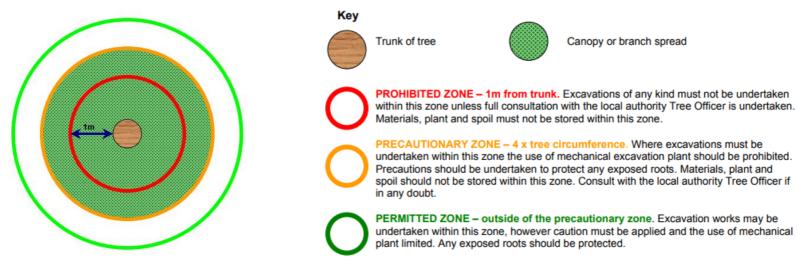






Appendix 7 - Tree & Services Plan

- Service information not yet available.
- To be kept under review as part of site inspection process.
- **Note:** All service companies should be provided with a copy of the Tree Protection Plan as early in the design process as possible to ensure that service routes are located outside RPA's where possible.
- NJUG 4 National Joint Utilities Group "Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London: NJUG 2007" to be adhered to at all times. A copy is available here.



Extract from National Joint Utilities Group "Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London: NJUG 2007"



Service information not available but likely to tie into existing property.



Appendix 8 – Site Photographs



Image 1 – T1 & T2 – Existing materials to be removed carefully by hand before tree protection is installed.





Image 2 – T3 – 3rd party Acer



Image 3 –T5 Purple Leaf Plum – Basal shuttering advised.



Appendix 9 – Limitations

Full Legal Disclaimer

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Specific - Trees

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to risk/ target areas and in accordance with relevant HSE quidance. Tamla Trees Itd can provide further information on this matter if required. Where full access to trees (Ivy, materials at base, location on 3rd party land) was not possible Tamla Trees Itd accept no liability for issues that arise.

Please note no statutory control checks have been undertaken (unless specified). Where tree surgery works have been identified these works are based on the assumption that planning is approved, no tree works should be undertaken prior to determination of this application without up-to-date confirmation of the Tree Preservation Order / Conservation Area Status of the vegetation. All works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of protected species.

Any comment/ measurements relating to 3rd party trees have been made without full access to the tree(s). Should these trees have any impact on the proposed development we would advise you to instruct us to contact the 3rd party and undertake further detailed inspection work.

A legal Duty of Care requires that any tree works specified in this report should be performed by qualified, arboricultural contractors who have been competency tested to determine their suitability for such works in line with Health & Safety Executive Guidelines. Additionally, all works should be carried out according to British Standard 3998 (2010) Recommendations for Tree Work.