BS5837 Arboricultural Impact Assessment & Method Statement

109 Greencroft Gardens, South Hampstead, London, NW6 3PE

Client: **P Martin**

Job Reference: 05252Rv4

Planning Ref: 2024/3603

Consultant: Keiron Hart (BSc Hons, C.Env, F.Arbor.A, MICFor, MEWI, APAEWE, VETcert)

Tamla Trees
consulting arborists

January 2025

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1. Executive Summary

1.1 Tamla Trees ltd has been appointed by P Martin to provide advice on the arboricultural issues relating to the installation of a garden room/ gym. We surveyed the site in December 2024. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations". The garden room is assembled by hand from materials carried manually to site given all access is through the main property.

1.2 T5 (Lime) will be removed to facilitate the proposal. This is a low-quality suppressed tree with evidence of basal area decay.

1.3 The structure encroaches into the Root Protection Area (RPA) of T4 (London Plane) and T7 (London Plane). The building is supported on a ground bearing slab cast at ground level (i.e. no excavation other than raking to level ground). This minimises the real impact on the retained trees. The full foundation design will be confirmed by a structural engineer. **Note:** Removal of T3, T5 & T6 (Lime) provided by way of s211 Notification ref: 2024/5239/T

1.4 The services connection will track away from retained trees towards the property and be positioned so as to avoid the RPA of T1 (Palm) and T2 (Silver Birch). Hand digging will be used for all service and excavation works on the basis that there is no machinery access to the rear garden area.

1.5 The potential tree issues can be summarised as: **Effective tree protection> Installation (including ground bearing slab footings) of the garden room structure> service provision> landscaping.**

1.6 The site is located within the London Borough of Camden. The property is within a Conservation Area (South Hampstead), but we have not been advised of a Tree Preservation Order (TPO).

1.7 Subject to the working practices and tree protection measures outlined within this report there should be no discernible impact on the retained trees. This report is based on the client plans ref: 1055-DR-1100-P01 and associated drawings

2. Statutory Protection

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

Conservation Area Status	
Is the site located within a Conservation Area?	Yes South Hampstead
Notes: (i)All trees larger than 7.5cm diameter at 1.5m above ground level are subject to regulations within a Conservation Area. Exemptions apply for trees which are dead and dangerous but clarification before any tree works is advised. A notification is required in many circumstances.	
Tree Preservation Order Status	
Are inspected trees subject to a TPO?	TBC
Type of TPO	~~**Area**~~
	~~**Individual**~~
	~~**Group**~~
	~~**Woodland**~~
TPO Reference	-
Date TPO Made	-
Notes: (i) The type and details of any TPO determine which trees are 'protected'. Exemptions apply for trees which are dead and dangerous but clarification before any tree works is advised. An application may be required before undertaking works. (ii) Conservation Area advised; we have not been advised of any TPO affecting the trees.	

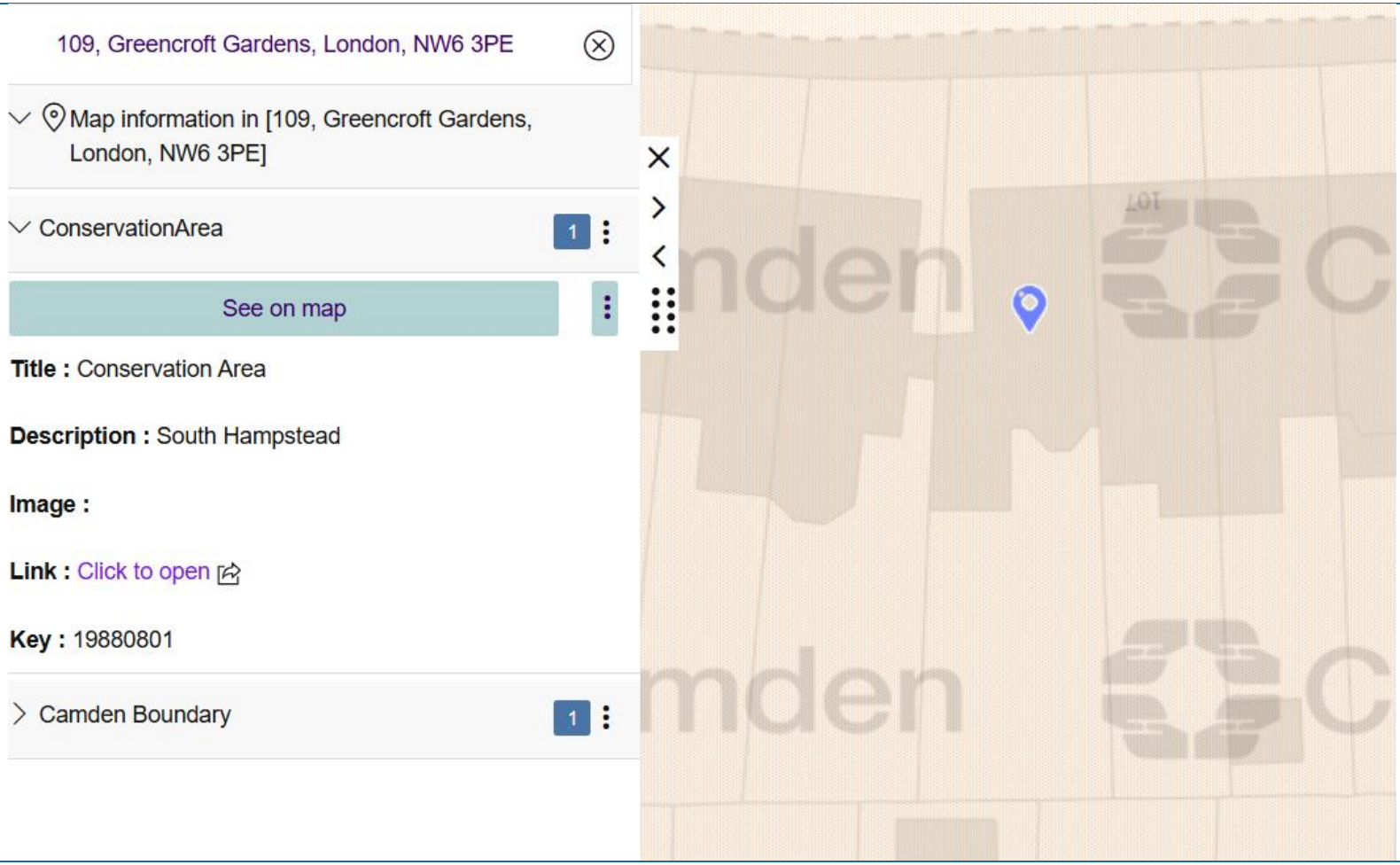


Fig 1 – Constraint Plan from Camden Council showing property and Conservation Area (Dec 2024)

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 List

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.camden.gov.uk/documents/20142/7839847/Belsize.pdf/005f1fcf-7fc8-557f-0365-c3544a251eb9

3.17 https://www.camden.gov.uk/trees-planning-permission

4. The Trees

4.1 The trees can be summarised as follows:

BS 5837 Cat	A	B	C	U
Specific Trees	T4 & T7	-	T1, T2, T3, T5, T6	-
Total Number	2 trees	None	5 trees	None*

*based on available access.

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

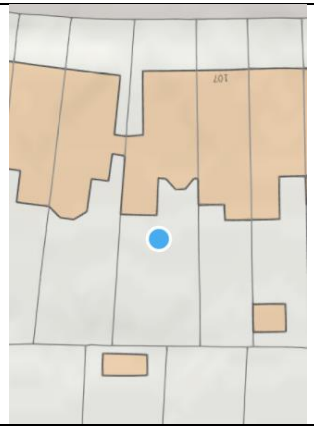
5.0 Arboricultural Impact Assessment

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 As shown below the site is located within what is defined as London Clay. Engineers should account for this accordingly in all footing designs.



Soil Description
Bedrock Deposits: London Clay Formation - Clay, Silt And Sand. Sedimentary Bedrock formed approximately 48 to 56 million years ago in the Palaeogene Period. Local environment previously dominated by deep seas.[1] **Superficial Deposits:** None recorded.

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

Underlying Soil Material contains Clay	**Yes**
Soil Type increased rooting depth profile?	**No**
Increased risk of soil compaction due to soil type	**Yes**

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 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.

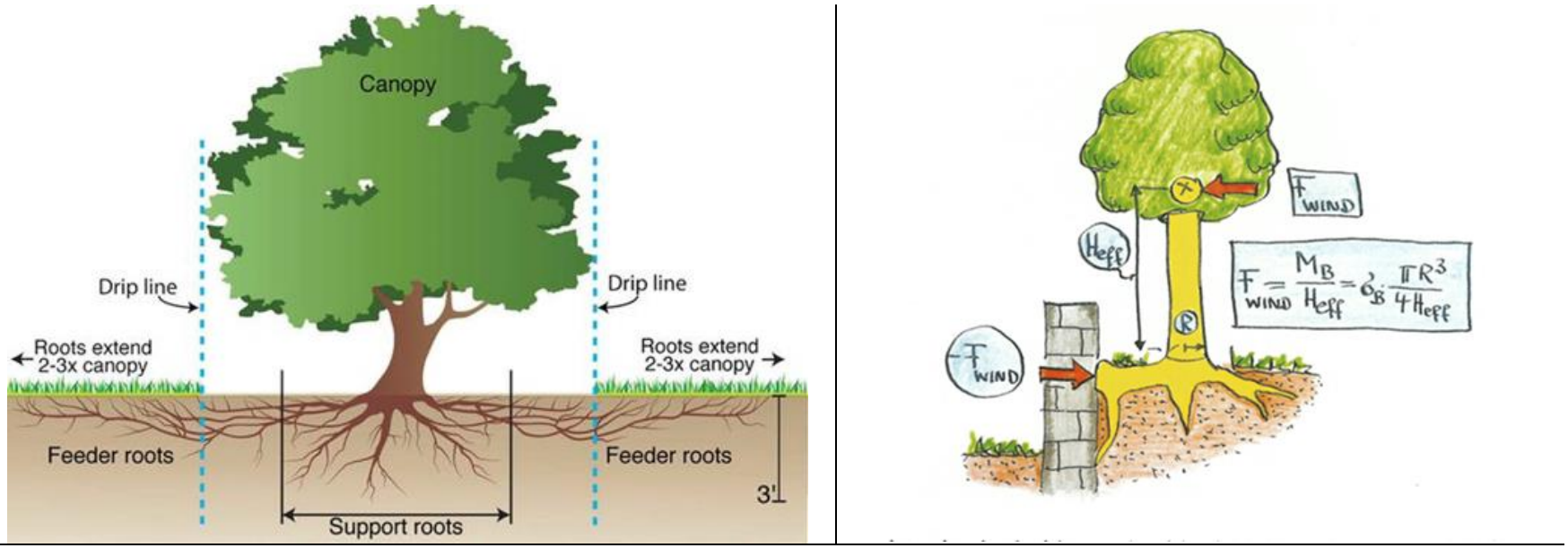


Fig 2 – Open grown trees or those with minimal obstructions close to their stems will have a network of structural roots supporting feeder/ fine root growth beyond (above left). In certain situations, root morphology can be affected by structures close to the main stem (above right: Mattheck)

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 year[2]). 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 soil[3]. 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.

[2] Eissenstat & Yanai (1997) The ecology of root lifespan. *Advances in Ecological Research,* 27, 1-60.
[3] Hendricks & Pregitzer (1992) The demography of fine roots in a northern hardwood forest. *Ecology*, 73, 1094-1104.

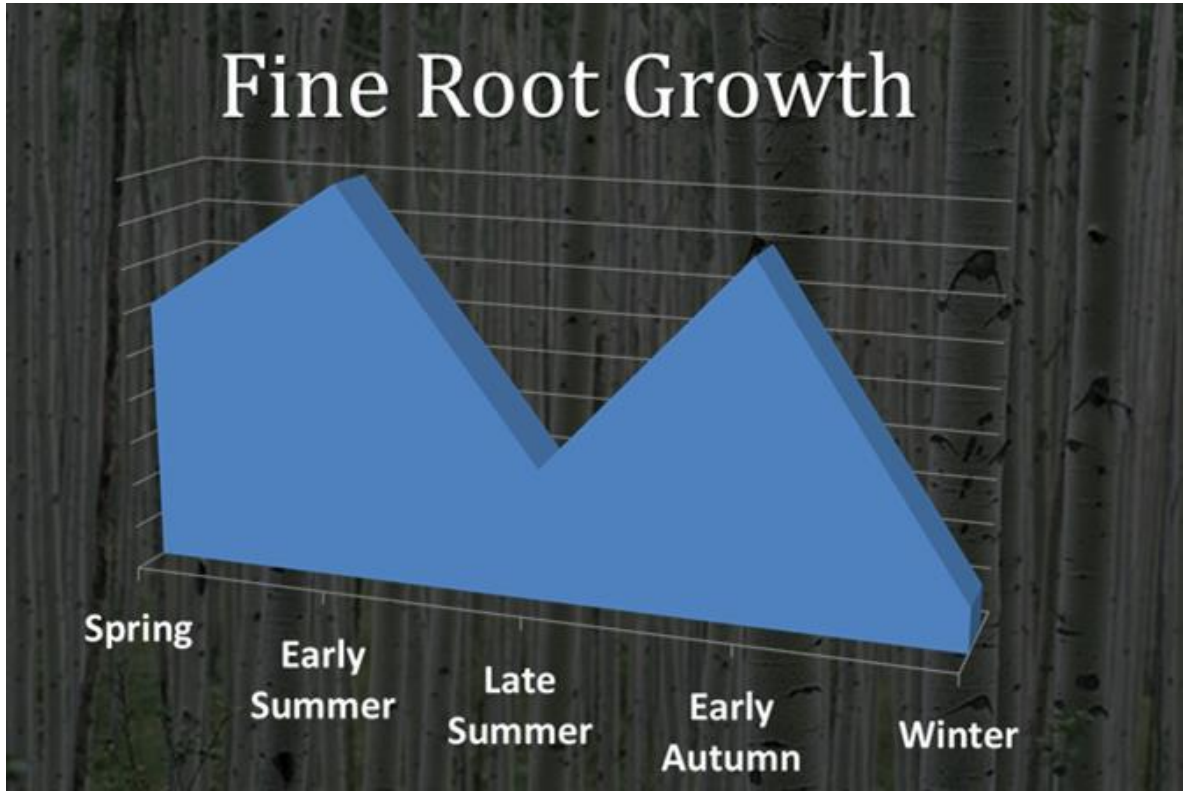


Fig 3 – Fine root growth is (generally) seasonal peaking in late spring and again in early autumn but dying back in winter dormant periods when photosynthetic production ceases. This is an important part of the soil nutrient cycle and demonstrates that a static RPA as calculated by BS5837 is a 'simplistic'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

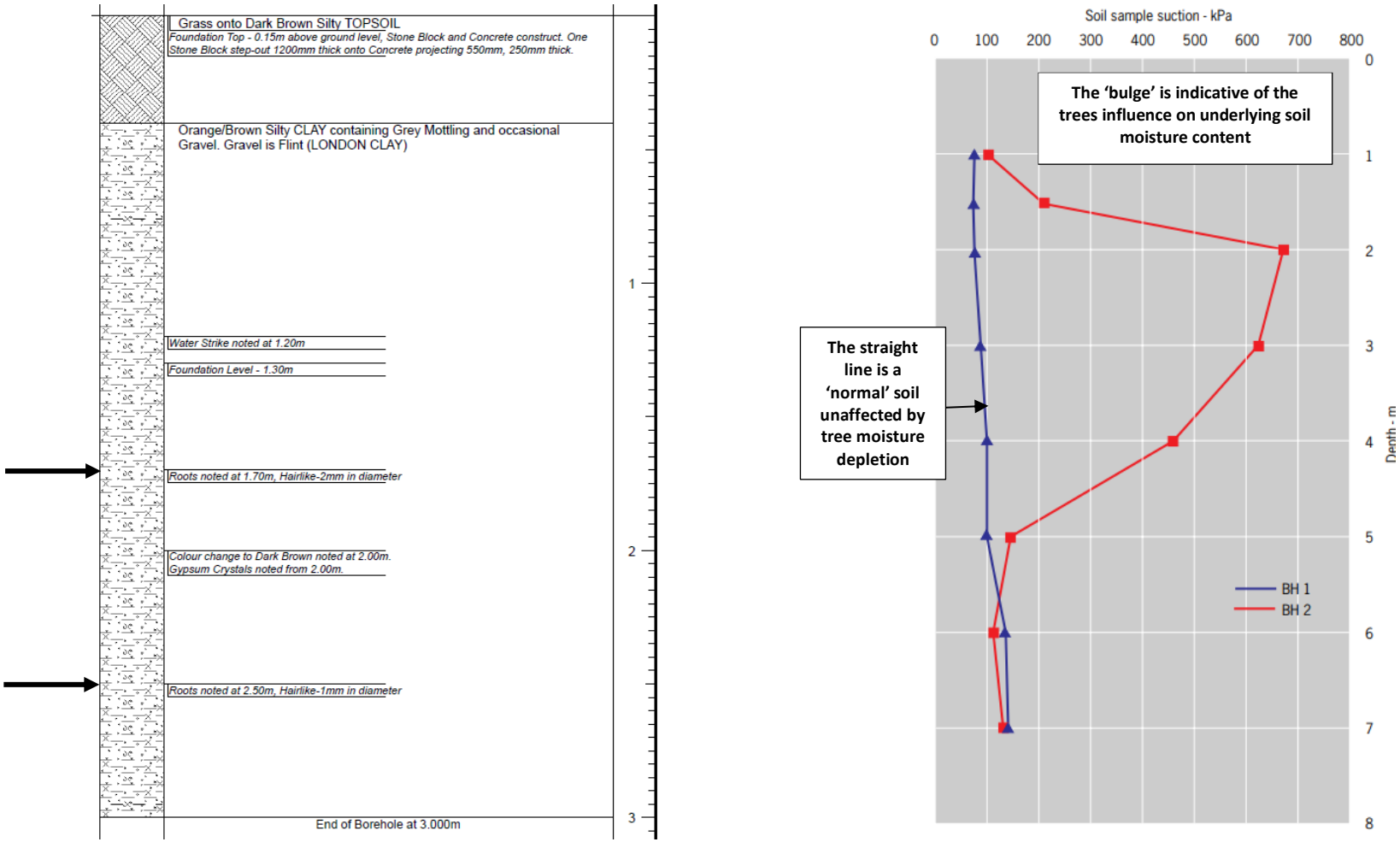


Fig 4 – Borehole log 10m from mature Oak tree on clay soil detailing fine roots to depths of 2.5m indicated with arrows (Source: Tamla Trees project) and annotated soil moisture depletion by trees showing a peak influence at 2m and extending to 5m (above right)

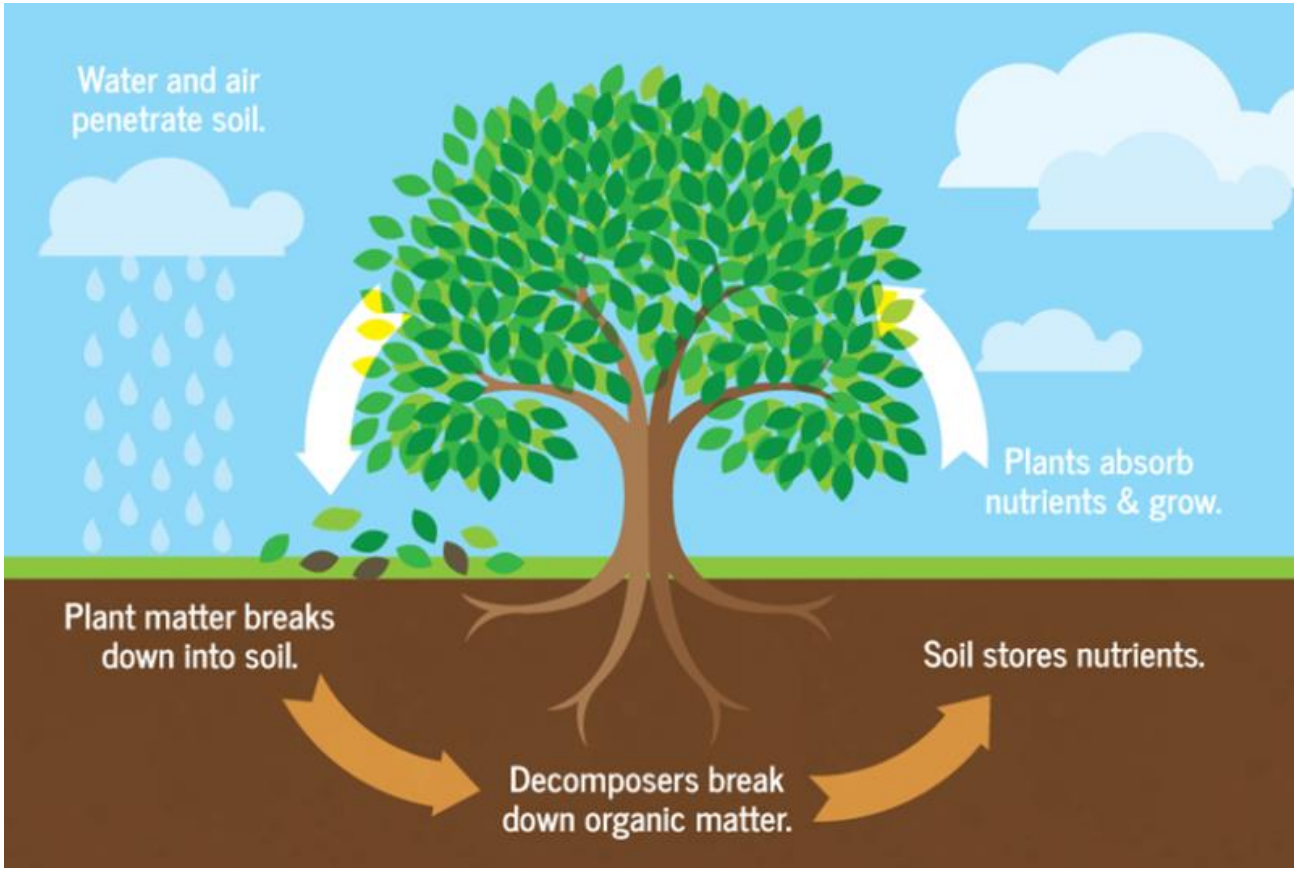
5.1.10 Against this backdrop rooting information seeking to manipulate RPA shapes to account for the presence of houses, garages etc outside of the immediate zone of structural rooting (3-4m) is not considered appropriate. Unless ground obstructions are present within the immediate structural rooting 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 ltd 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);*	• There are some precast concrete fence posts, lightweight garden shed and a single (further) garden room present. It is unlikely these structures have had anything other than a minimal impact on the underlying rooting of the trees.
4.6.3.(b)	*topography and drainage;*	• The site is general level and there is nothing to indicate adverse draining conditions (such as water pooling at the base of the tree). • Spoil soil advised as being spread around the basal area of T3, T5 & T6 within the site was noted. We are advised this occurred some years previously when the 3rd party undertook a garden room construction of their own.
4.6.4.(c)	*the soil type and structure;*	• Soil is indicated by the BGS data to be a London Clay. This elevates the risk of ground compaction and rutting, particularly in wet weather and as such the tree protection measures indicated within this report must be installed prior to any on site activity and retained for the duration of all site works.
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.*	• T4 & T7 (*Platanus* spp) are shown to be tolerant of root disturbance/ loss[4] The activities that have scope to impact roots are raking out of existing soil to the rear of the garden (in the event of root development in this area since soil levels were raised), the formation of support slab by way of being cast at ground level and hand digging service connection works to the main dwelling across the garden. • **The key to this (and any) scheme is effective and robust tree protection and measures that seek to retain and respect the immediate landscape below tree canopies/ within RPA's to maintain soil conditions and nutrient recycling.**

[4] Matheny & Clark (1998) Trees and Development: A Technical Guide to Preservation of Trees During Land Development



- ***Development has the very real capacity to adversely impact existing trees.***
- ***Tree Protection Measures seek to maintain the integrity of the identified area (See Appendix 6)***
- ***This is a 'damage limitation exercise' as identified Root Protection Areas only identify part of the trees rooting area.***
- ***Retaining the integrity of the existing soil and ground conditions can help trees to be successfully retained within projects.***
- ***Where possible try and maintain areas below tree canopies as mulched or soft landscape (not mown grass) as this maximises the natural nutrient cycle helping retain healthy trees.***

Image source: https://sswm.info/

Fig 6 – The Tree Nutrient Cycle – Every effort should be made to retain this through the development cycle and ensure landscaping around the new garden room allows for natural leaf litter fall/ decomposition.

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	A	B	C	Summary
RPA Incursion	T4 & T7	-	-	**Ground Bearing Slab Foundations** – The proposal places the structure within the RPA area of the identified trees. The proposal will be supported on a ground bearing slab with no excavation other than raking out to form level ground. The impacts in terms of RPA area affected are tabulated on the following page. A membrane is laid on the ground to prevent concrete contamination and act as a DPC layer. The slab form is shuttered and concrete poured. The structure is then built up from this footing slab. Please note this is overview information and the final specification of the supporting slab will be developed by the structural engineer.
	T4 & T7		-	**Service**s – A service trench will be hand dug to connect to property. This trench tracks away from the structure and trees reducing potential impact (as opposed to tracking across a root plate). The sections within the RPA are hand dug and pipes or cables fed below retained roots >25mm in diameter. The route will be pre-marked on the ground and set to avoid the RPA of T1 & T2. **Landscaping** –Further to the proposal being completed there will be a need to 'make good'. BS3882 compliant topsoil will be spread/ raked out by hand to a depth no greater than 100mm and any localized shrub and tree planting completed. Areas below retained trees around the sides and the rear of the structure (as well as any void space below) are recommended for mulching with composted bark mulch where possible. Detailed further comment on landscaping proposals is outside the scope of this report.

5.2.2 The relative incursions into the RPA for the ground bearing slab/ building footprint are as follows.

Tree Number	RPA Total (Sqm)	Existing Incursion* (Sqm)	As % of trees RPA	Proposed Incursion (Sqm)	As % of trees RPA	Difference +/-
T4	290	0	0	36 b	12.4%	**12.4%**
T7	289	0	0	20 b	6.9%	**6.9%**
Increase in RPA covered		**Decrease in RPA covered**				

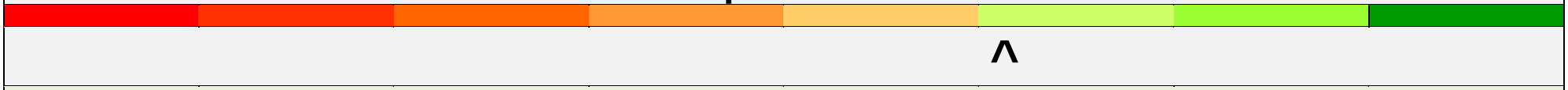
***excluding 3rd party garden structures. (b) = Building footprint**

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, contiguous with its RPA; b) propose a series of mitigation measure.*

5.2.4 On this project the remaining free draining soft surface garden areas where the trees root significantly limits the impact of the minor incursion detailed above. The proposal is supported on a ground bearing slab with no advised excavation other than raking out of ground to achieve level ground.

5.2.5 The assessed risk based on the likely impact to the health and safety of the trees on the basis that all the tree protection measures outlined within this report are implemented and maintained for the duration of all site works is summarised below:

Tree & Development Risk Indicator



- Our assessment has confirmed the presence of probable underlying LONDON CLAY soil
- This increases the risk of modifications to the underlying soil from construction activity.
- Ground protection and tree protective fencing secures the integrity of the underlying soil.
- Through property access only limiting movement to pedestrian only.
- The Tree & Development Risk Indicator (TDRI™) is therefore **LOW**.
- **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 CLAY subsoil.

5.3 Tree Loss

5.3.1 The removal of T3, T5 & T6 (Lime) provided by way of s211 Notification ref: 2024/5239/T and repeated here for completeness.

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat

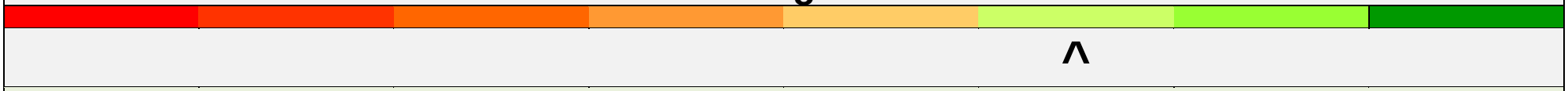
Proposed Removal

Tree No.	Species	Proposed Tree Works	BS Cat
T3	Lime	Remove	**C1**
T5	Lime	Remove	**C1**
T6	Lime	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



- Likely minimal pruning works required on the basis that T3, T5 & T6 will be removed.
- Camden Council retain control of the extent and frequency of this work by virtue of the Conservation Area.
- Please note this s211 notification process takes 6 weeks.
- **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.[5]

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. In places on this survey full access to the basal areas of trees was not possible given their ownership/ location/ extensive undergrowth. Further information on tree safety can be found here.[6]

[5] https://www.trees.org.uk/ARB-Approved-Contractor-Directory
[6] https://ntsgroup.org.uk/

5.4 Demolition, Construction & Foundations

5.4.1 No demolition is required other than dismantling an existing garden shed. The existing soil in part of the area has been raised and this will be raked out by hand retaining all roots >25mm (Note: It is considered unlikely there has been significant root establishment in this raised soil area)

Soil Levels & Shed	
	**Overview** • ***The visible and existing shed will be dismantled by hand.*** • ***Any garden debris in the area will be removed by hand.*** • ***The previously raised soil levels will be raked out to level where required, by hand.***
Threat Level to Retained Trees	**LOW**

5.4.2 The proposal is advised to be supported on a ground bearing slab with the tree protection process is summarised below:

Stage 1

- Garden shed removed by hand. Area raked out as required to level. Building marked out.
- Tree & Ground Protection measures installed.

Stage 2

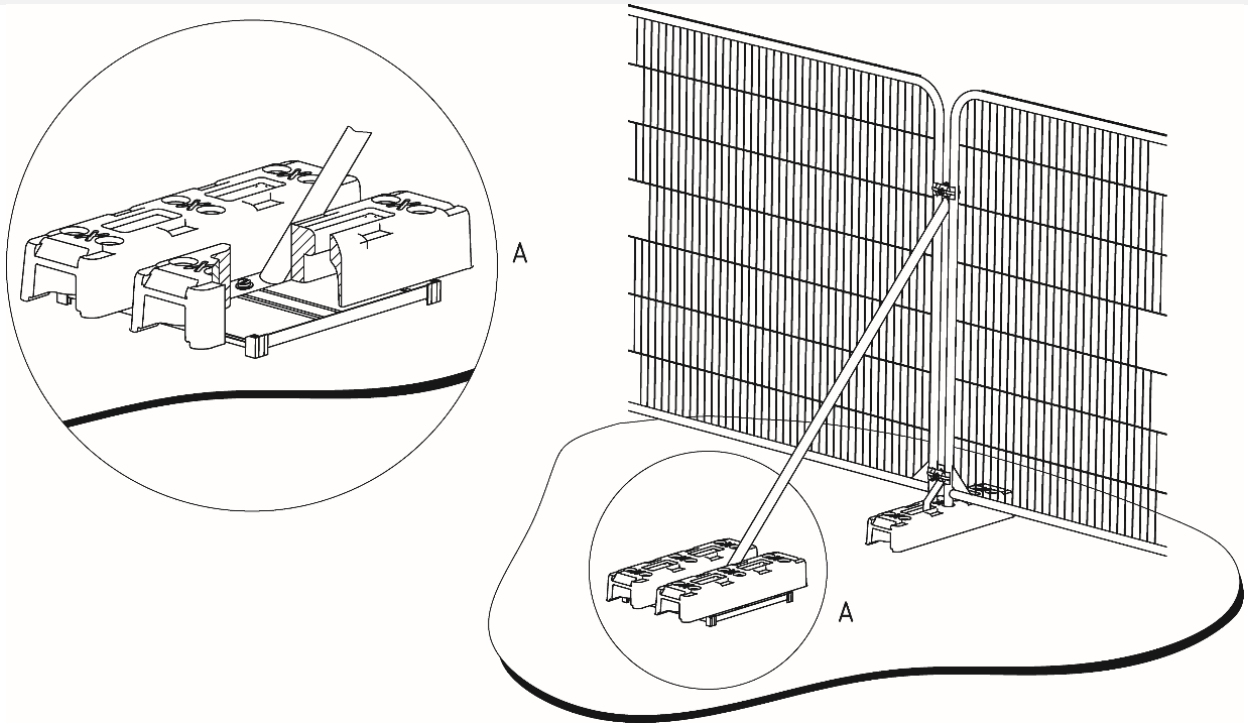
- Slab shuttering constructed.
- Slab cast (at ground level - no ground excavation).
- Garden room/ gym constructed.

Stage 3

- Service trenche hand dug as required retaining tree roots >25mm.
- Tree protection remains in place for duration of all works and is removed upon completion.

5.4.3 High quality BS5837 compliant tree protection will be installed prior to any on site works. Feet fencing (shown below) will be used to reflect the likely pressures on retained tree RPA's. Please refer to the plan at Appendix 5 for further information on locations.

Tree Protection



Overview

- ***Tree protection required internally to site.***
- ***Installed prior to any onsite works.***
- ***Note: To be marked with signs (inset) and purpose to be briefed to all ground workers.***
- ***Maintained for duration of the build.***
- ***Feet spec fencing combined with ground protection proposed.***

Threat Level to Retained Trees	LOW

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

Fig 7 – Professional grade weatherproof tree protection signs no smaller than 297 x 420 mm (A3) will be located at 5m intervals and all 'return' faces for tree protective fencing

5.4.5 Temporary ground protection is proposed to be realistic to site movement/ working areas. In addition, any further (unforeseen) movement areas must have ground protection laid prior to any tracking or material storage.

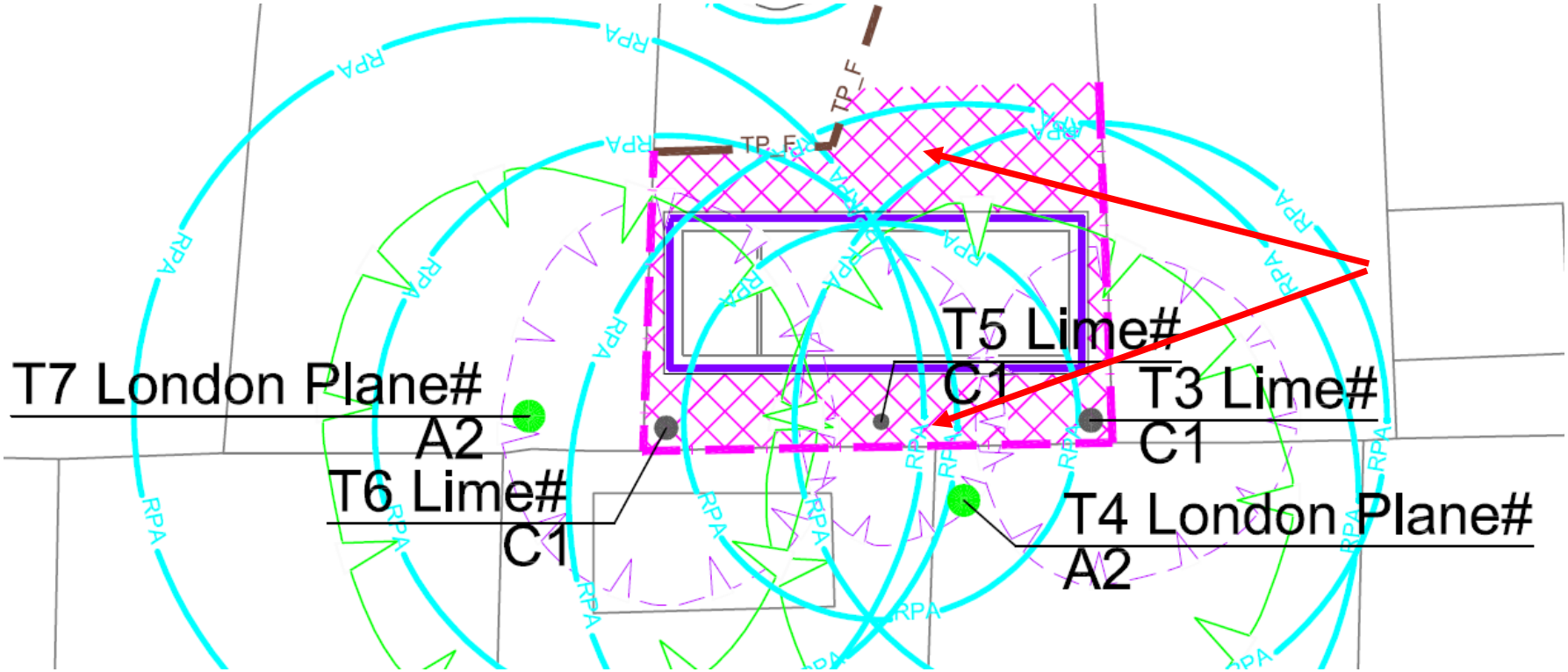


Fig 8 – Temporary ground protection areas to allow realistic site movements through the garden and around the structure during its construction.

5.4.6 The specification of ground protection should reflect the movements across it. An overview of this is provided below:

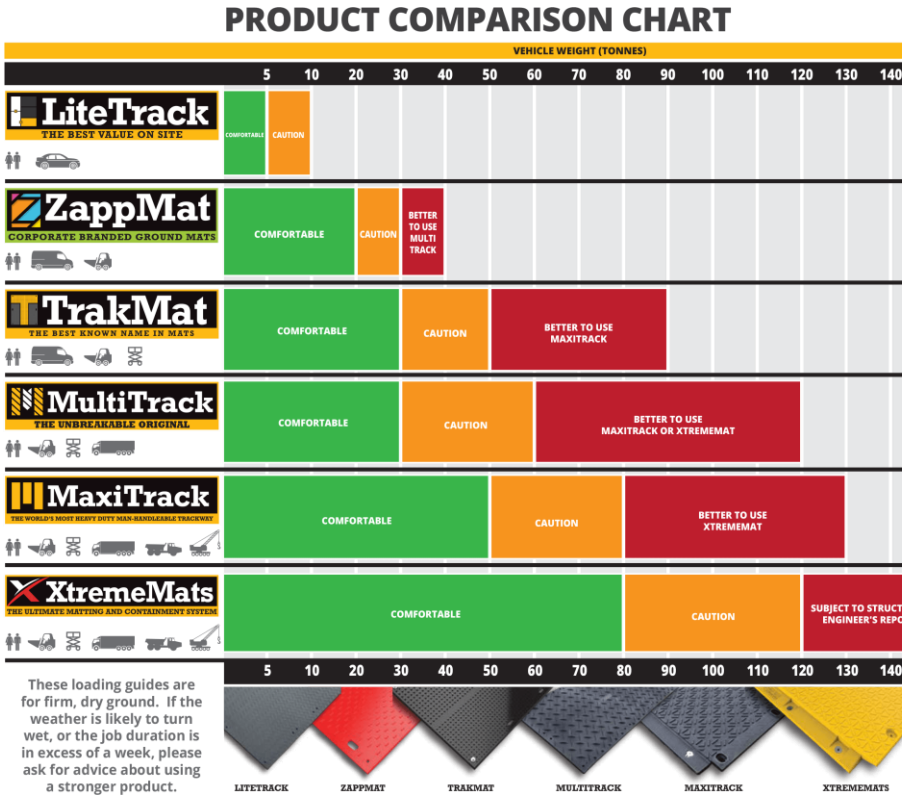


Fig 9 – Overview of ground protection. The contractor must ensure the specification is suitable for the works (overview of this above right). To be installed where hard surfacing is not already in place prior to any on site construction activity within RPA's –shown on the TPP (Appendix 6) but to be kept under review and installed as required.

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*)

5.4.7 **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	
Rectification Actions (insert notes)				
Site Manager Signature:				
Print Name:				
Arboricultural Consultant Signature:				
Print Name:				

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

5.4.8 A ground bearing slab will be formed to support the structure.

- ***Ground raked flat.***
- ***Membrane laid/ shuttering formed.***
- ***Slab poured.***
- ***Room constructed on set slab.***
- ***In summary at this level and in this location, we believe there will be no discernible impact on the health or stability of retained trees.***
- ***Note: Detail and design to be confirmed by structural engineer.***

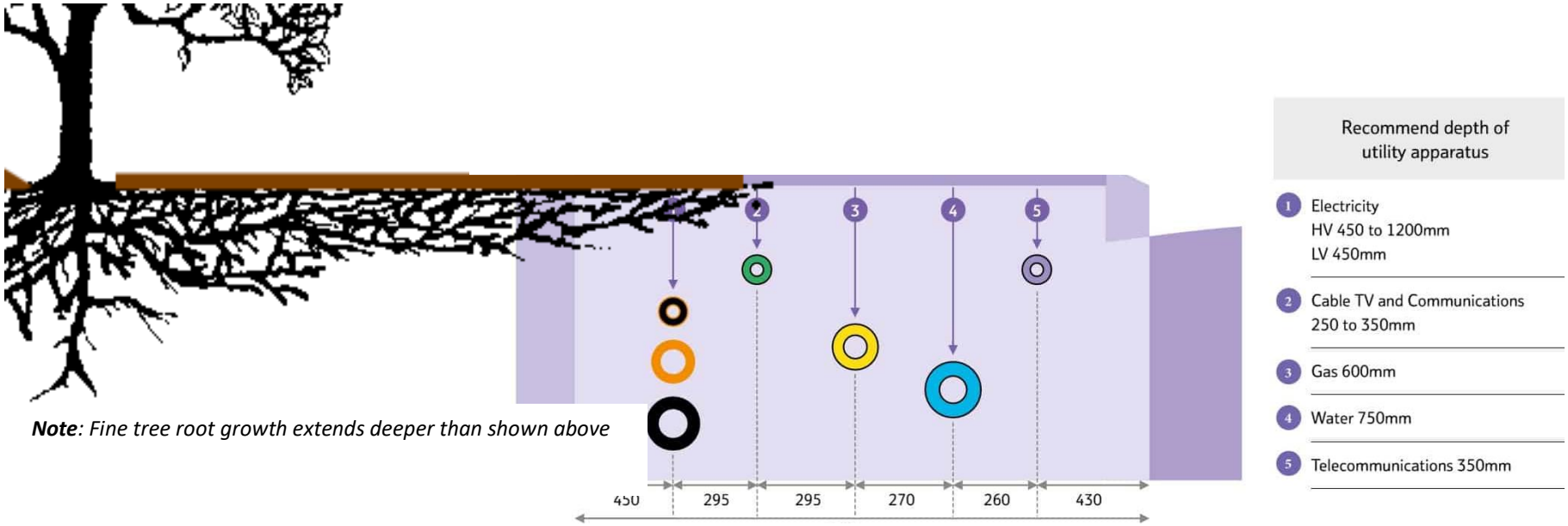
Fig 11 – Foundation overview. Note: Full specification and form of slab to be confirmed by structural engineer.

5.5 Surfaces near Trees

5.5.1 No new surfaces are proposed.

5.6 Site Service Provision

5.6.1 The new garden room requires a service connection to the main property. These will be hand dug and located to avoid the RPA of T1 and T2 completely.



***Note**: Fine tree root growth extends deeper than shown above*

Fig 12 – 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.**

5.6.2 The new service trench and soakaway connection will be hand dug utilising the hand digging principles detailed elsewhere in this report where it is within the RPA of retained trees. All roots >25mm in diameter will be retained with service fed below them where relevant.

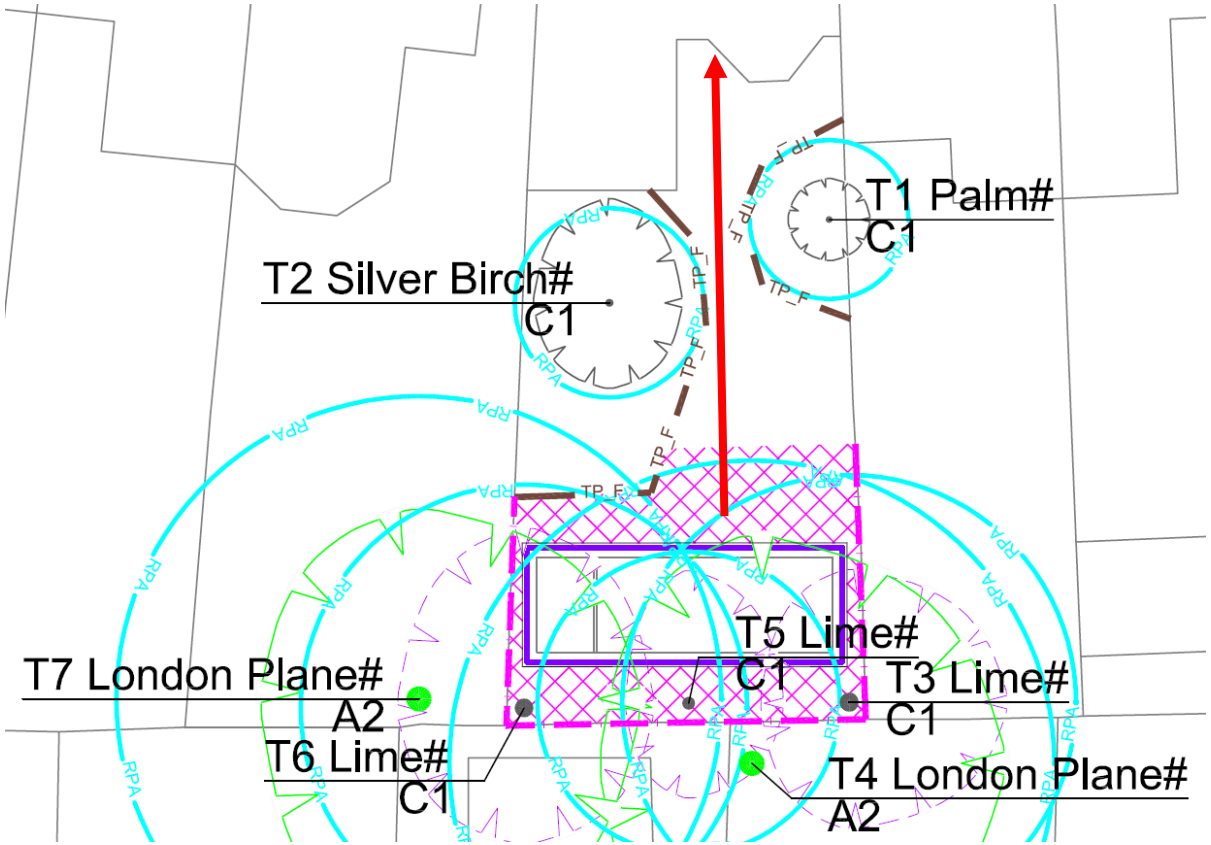


Fig 13 –The services will connect to the property spatially distant from retained trees and avoiding the RPA of T1 & T2.

5.6.3 **Services -** Any activity to excavate within the RPA has the capacity to cause root damage and should be hand dug in accordance with the principles detailed elsewhere within this report.

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

5.6.4 **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.

				
Narrow Face Spade & Hand Trowel	**Stiff Hand Brush**	**Hi Vis Paint (for spot marking roots)**	**Hessian (to wrap exposed roots)**	**Duct Tape (to secure hessian)**

Fig 14 – 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.

5.6.7 **WARNING:** Breaking the ground has the potential to uncover services/ destabilise adjacent structures etc. Some general advice from the HSE can be found here.

5.6.8 **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.

Root Wrapping	
  	**Overview** • **Any exposed roots >25mm should be wrapped in hessian (example left) if exposed overnight or for any 4-hour period.** • **Spot marking with spray paint to highlight locations also advised.** • **Alternatively, roots can be covered over with topsoil to maintain moisture retention.** • **Example Tamla Trees project on London Plane (left).**
Threat Level to Retained Trees	**LOW**

5.6.9 To limit maintenance impact to the garden room from leaf drop given the proximity/ overhang of trees it is proposed that gutter guards be installed.

Fig 15 - Suitable gutter guards (2 types shown above) should be fitted to ensure that leaf drop from adjacent trees does not block new guttering leading to potential pressure for tree works.

5.7 Ground Level Changes

5.7.1 No ground level changes within the RPA areas of retained trees are proposed other than raking out of raised soil and the installation of the ground bearing slab detailed elsewhere. Following completion of the project any '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. We encourage the use of composted bark mulch below tree canopies where possible to aid water retention and increase soil microbial activity.

Fig 16 – In the event of 'making good' topsoil will be BS3882 compliant and raked out by hand to no greater depth than 100mm.

5.7.2 We recommend the use of composted bark mulch where possible within the retained tree RPA's. As well as aiding water retention and increase soil microbial activity it can design out issues associated with leaf and needle drop or lawns not establishing close to mature 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**

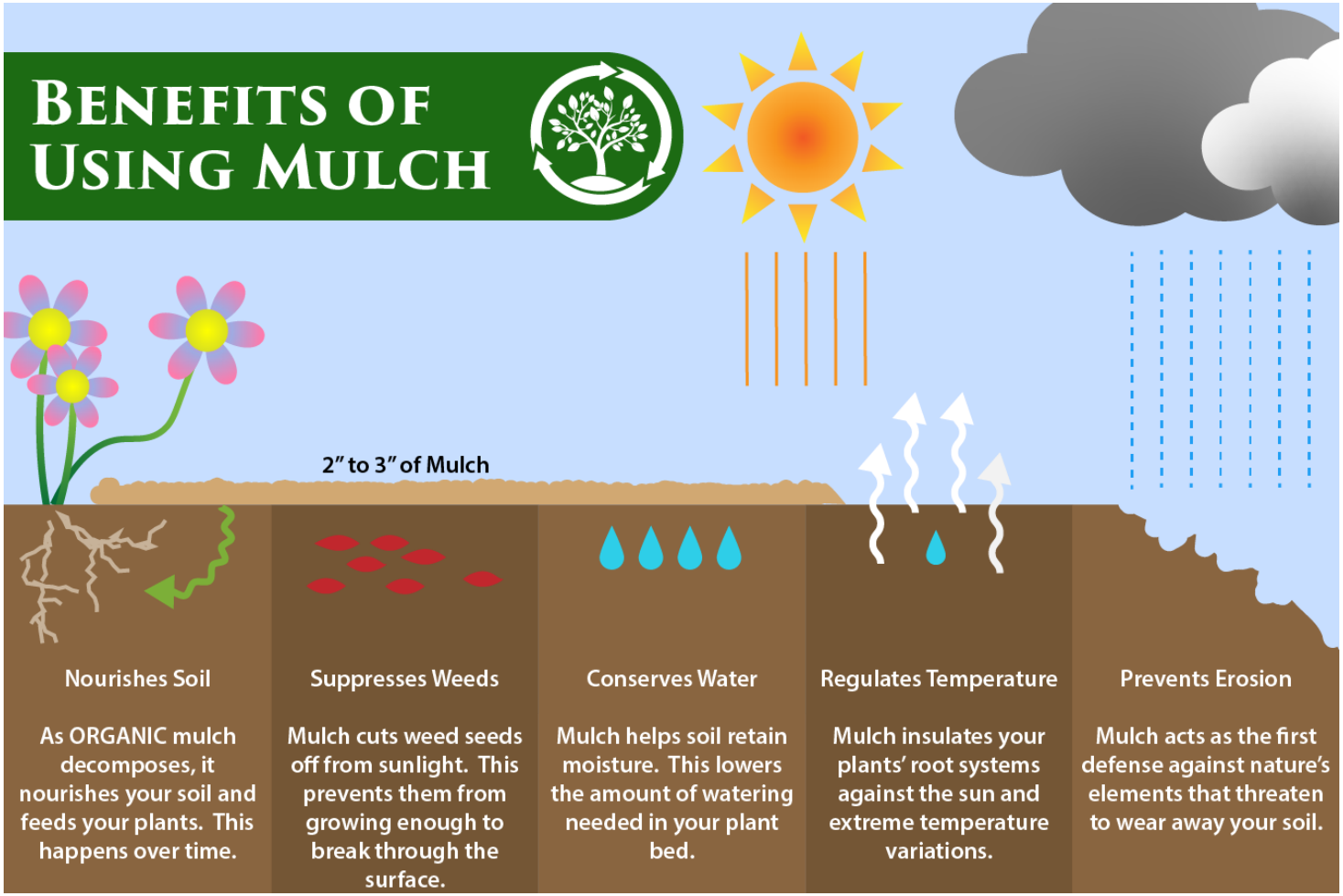


Fig 17 – Benefits of Mulch (Image Source 1st Stop Landscape Supply (US)

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.

Plug and Pot Planting	
	**Overview** • **Within 1.5m of retained trees planting should be with plug stock (left)** • **Small plant pot sizes <3l utilised for new planting in further areas.** • **Hand dug planting holes.** • **Top dressed in compacted bark mulch/ soil as appropriate.** • **Watered weekly May – September during season 1 & 2**
Threat Level to Retained Trees	**LOW**

5.8 Tree Shading of Proposal

5.8.1 The nature of the design is such that it benefits from large, glazed areas maximizing light penetration. It is also not a permanently occupied structure (being a garden room/ gym) and as such we do not consider there to be issues of shading. The Council further retain control over tree management on the basis of the Conservation Area.

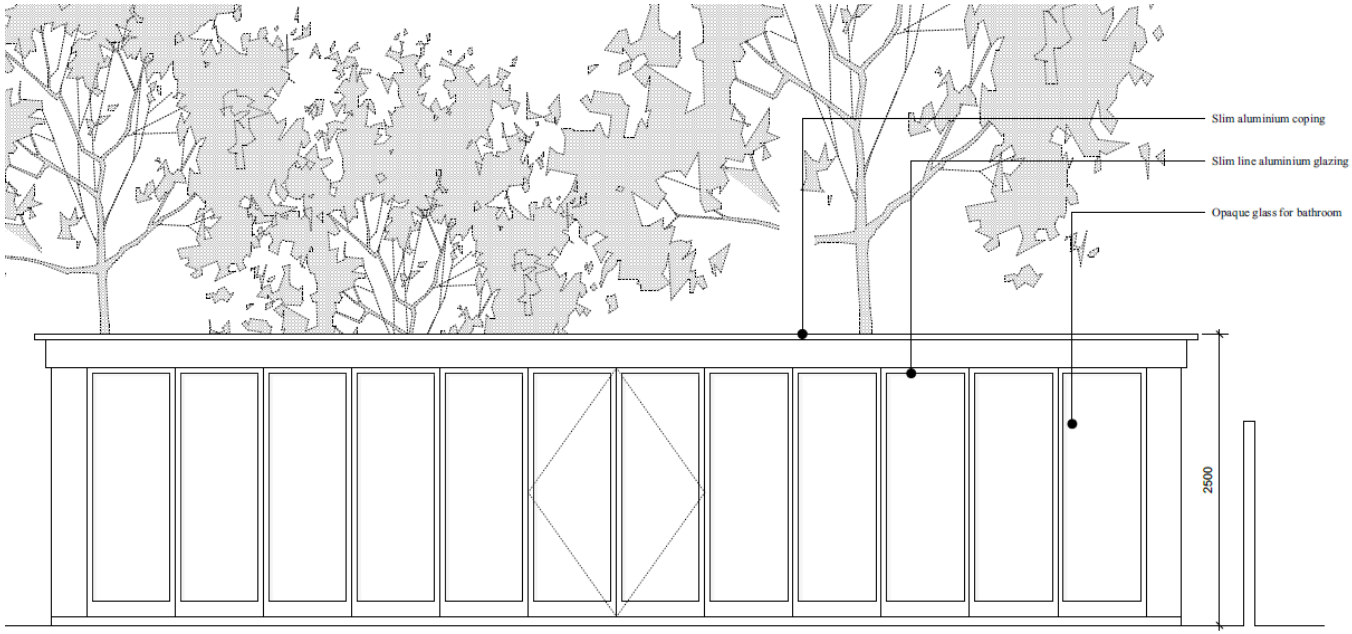


Fig 18 – Advised glazed elevation orientated away from the main site trees.

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. The nature and duration of the proposed garden room installation is such that we advise the following regime:

Visit Detail	Date	Status
Site Inspection Attend site once tree & ground protection is in place but prior to any construction works. Toolbox talk with site operatives. Discuss service excavation work. Update local authority and project team on findings.	**TBC**	**Incomplete**

Appendix 1 – BS5837 Survey Key

BS 5837 Cat	Description
A	Those of high quality and value: in such a condition as to be able to make a substantial contribution (> 40 years)
B	Those trees of moderate quality and value: those in such a condition as to make a significant contribution (> 20 years)
C	Those trees of low quality and value: currently in an adequate condition to remain until new planting could be established (> 10 years)
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 forms @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)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, 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 • 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 *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
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	E	S	W							
T1	Palm	0.21	1	4	1.3	1.3	1.3	1.3	C1	Mature	20 to 40	2.1	Ornamental Palm close to existing patio.	No works	2.5
T2	Birch (Silver)	0.25	1	10	3.3	2.3	2.7	2.4	C1	Mature	10 to 20	3.5	Appears to have been previously topped. Some decay visible around wound.	No works	3
T3	Lime	0.6	1	14	4.2	5	4	2.8	C1	Mature	20 to 40	2.8	Large stem but previously topped. Decay evident at wounds. Repollarding advised. Lower stem not fully visible.	Removal detailed within s211 notification Ref: 2024/5239/T	7.2
T4	Plane (London)	0.8	1	17	7.2	8	7	4.8	A2	Mature	> 40	3	3rd party tree. No access to inspect. Stem sweeps away from boundary fence to south. Appears good tree and species generally robust.	No works	9.6

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	E	S	W							
T5	Lime	0.4	1	9	4.2	3	3	2	C1	Mature	20 to 40	4	Previously topped. Decay evident at wounds. Suppressed, basal decay evident. Mycelial activity indicates fungal progression.	Removal detailed within s211 notification Ref: 2024/5239/T	4.8
T6	Lime	0.59	1	14	5.7	4.1	4.3	4	C1	Mature	20 to 40	2.8	Large stem but previously topped. Decay evident at wounds. Some decay wounds at stem base. Repollarding advised. Lower stem not fully visible.	Removal detailed within s211 notification Ref: 2024/5239/T	7.1
T7	Plane (London)	0.8	1	17	6	7	8	5	A2	Mature	> 40	3	3rd party tree. No access to inspect. Appears good tree and species generally robust.	No works	9.6

Appendix 4 – Tree Works Schedule

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

Tree Surgery

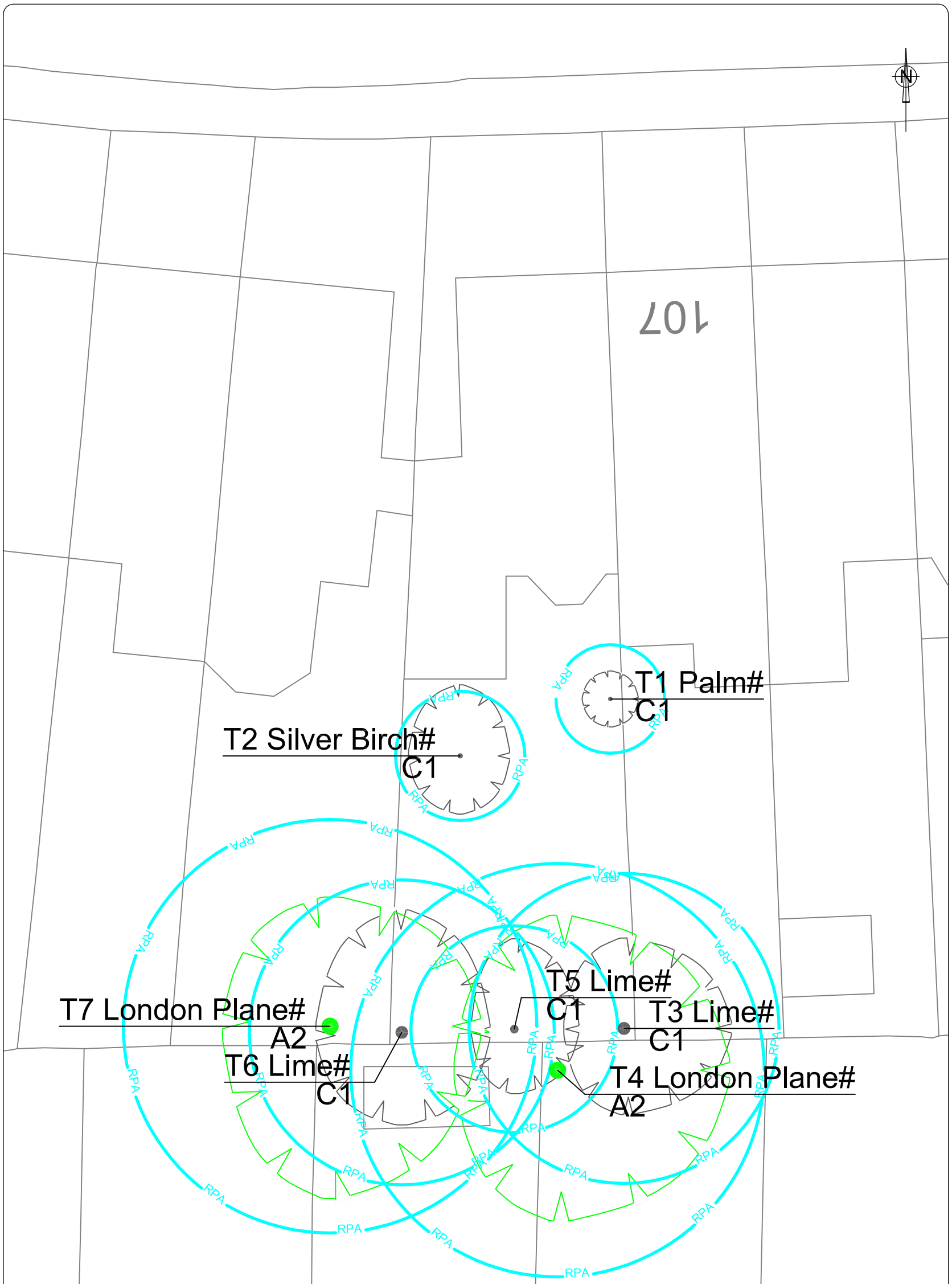
Tree No.	Species	Proposed Tree Works	BS Cat

Proposed Removal

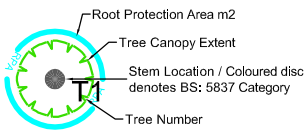
Tree No.	Species	Proposed Tree Works	BS Cat
T3	Lime	Remove	**C1**
T5	Lime	Remove	**C1**
T6	Lime	Remove	**C1**

Note: Removal detailed within s211 notification Ref: 2024/5239/T (no Council objection/ new TPO received).

Appendix 5 - Tree Constraints Plan



Tree Survey Drawing Key



See Tamla Trees, Tree Survey for Individual Tree Details

KEY

Please refer to Tamla Trees report for details

- Category A - Trees of high quality
- Category B - moderate quality
- Category C - low quality
- Category U - Dead, Dying or Defect trees with <10 years retention value

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

Tree No	Species	DBH	Height	Age Class	Life Exp	Observations	BS Cat	RPR
T1	Palm	0.21	4	Mature	20 to 40	Ornamental Palm close to existing patio.	C1	2.5
T2	Birch (Silver)	0.25	10	Mature	10 to 20	Appears to have been previously topped. Some decay visible around wound.	C1	3.0
T3	Lime	0.6	14	Mature	20 to 40	Large stem but previously topped. Decay evident at wounds. Repollarding advised. Lower stem not fully visible.	C1	7.2
T4	Plane (London)	0.8	17	Mature	> 40	3rd party tree. No access to inspect. Stem sweeps away from boundary fence to south. Appears good tree and species generally robust.	A2	9.6
T5	Lime	0.4	9	Mature	20 to 40	Previously topped. Decay evident at wounds. Suppressed, basal decay evident. Mycelial activity indicates fungal progression.	C1	4.8
T6	Lime	0.59	14	Mature	20 to 40	Large stem but previously topped. Decay evident at wounds. Some decay wounds at stem base. Repollarding advised. Lower stem not fully visible.	C1	7.1
T7	Plane (London)	0.8	17	Mature	> 40	3rd party tree. No access to inspect. Appears good tree and species generally robust.	A2	9.6

NOTE # Tree positions indicatively mapped due to lack of detailed topographical plan

REV AMENDMENTS DRAWN DATE AUTH'D

PROJECT
109 Greencroft Gardens.
South Hampstead
NW6 3PE

CLIENT
P Martin

TITLE
Tree Constraint Plan (TCP)

Job	Scale	DRG NO	Revision
05252R	1:200 @ A3	05252P_TCP_01	-
Date: 09/12/2024	Type: a		

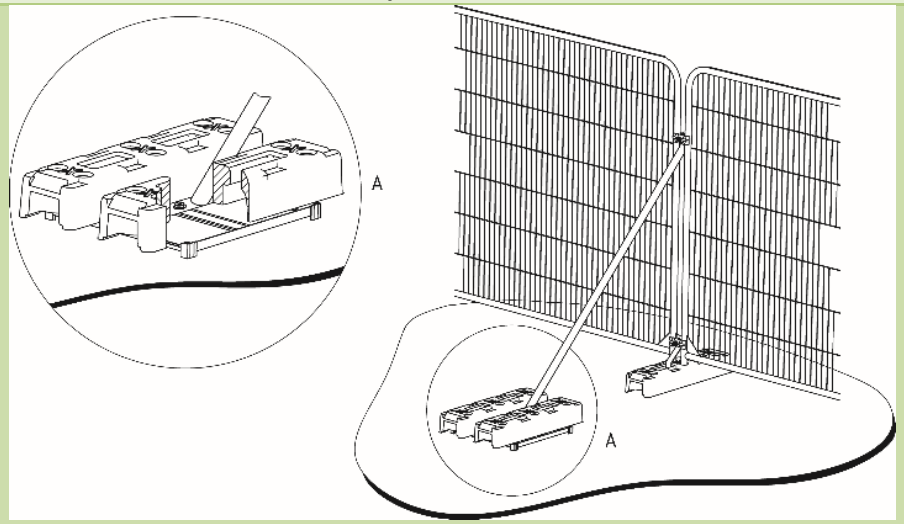
Tel: 01252 811 233
Email: info@tamlatrees.com
Web: www.tamlatrees.com
Tamla Trees
consulting arborists

Appendix 6 - Tree Protection Plan

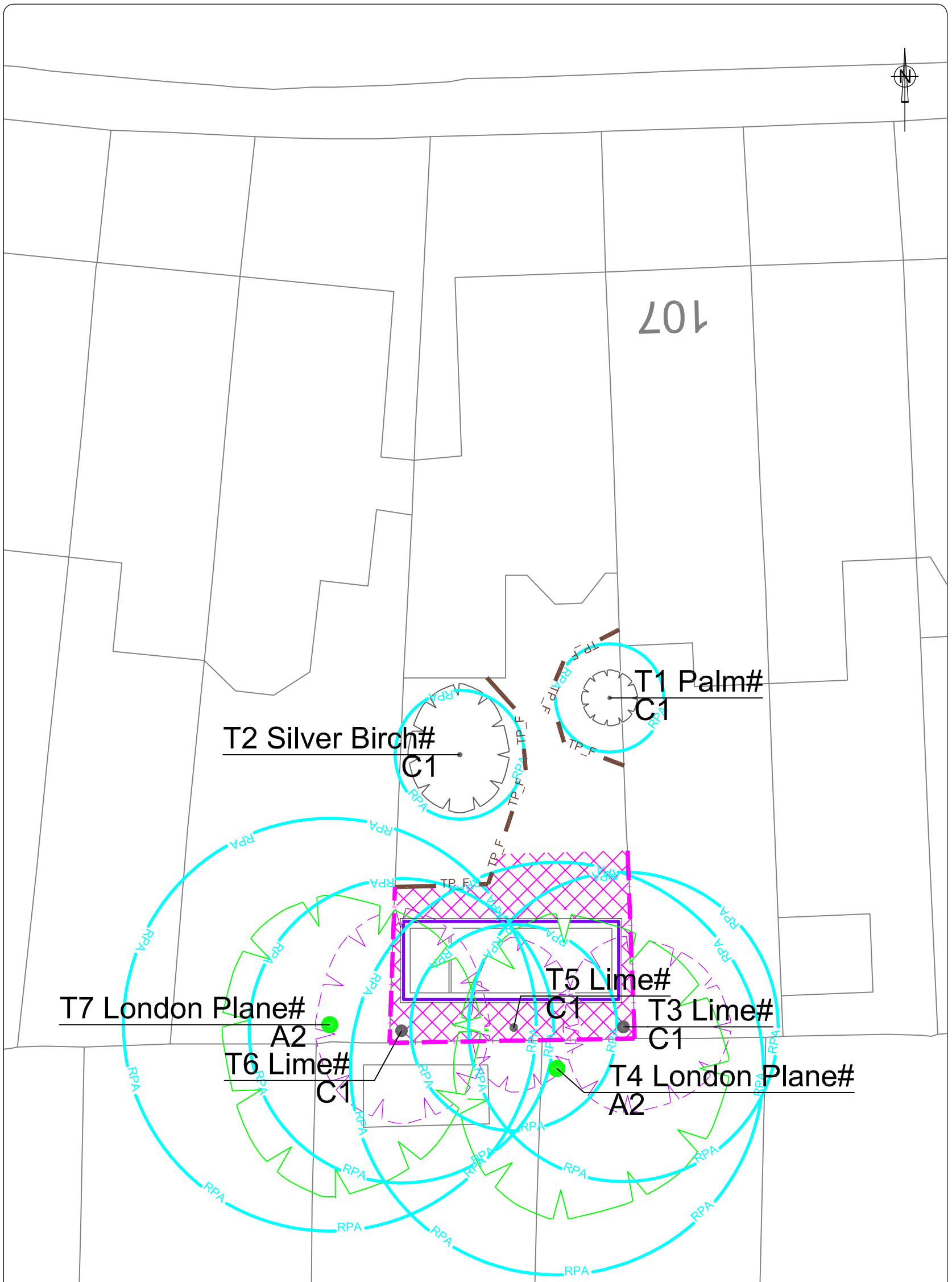
Tree protection is essential to successfully integrate the proposal into the surrounding trees. It is designed to manage the impact on the underlying soil and rooting environment. It must therefore be installed prior to any further site activity. Even apparently minimal tracking of the soil near trees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

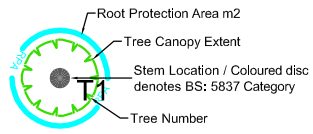
- **All tree protection must be in place prior to any site activities. It is recommended that this fencing is installed prior to any site works (including demolition).**
- **To be effective Tree Protection must remain in place for the duration of the development and form part of the site induction process.**
- **Site operatives to be briefed on ground protection prior to work commencing.**
- **To be combined with feet fencing (shown right) installed prior to any on site works and maintained for duration of the project.**




At Start
TPP Fencing
For Duration
TPP Signage in Place?
For Duration
TPP Remains
For Duration
Tree Protection Part of Induction Process
For Duration
Evidence of regular review?
TREE PROTECTION AREA
If you require access contact Site Manager
Keep out
THESE TREES ARE PROTECTED BY PLANNING CONDITIONS AND/OR IS THE SUBJECT OF A TREE PRESERVATION ORDER
GROUND COMPACTION KILLS TREE ROOTS - BREACHING A TPO IS A CRIMINAL OFFENCE - HELP RETAIN HEALTHY TREES BY RESPECTING THIS FENCING



Tree Survey Drawing Key



See Tamla Trees, Tree Survey for Individual Tree Details

KEY

Please refer to Tamla Trees report for details

- Category A - Trees of high quality
- Category B - moderate quality
- Category C - low quality
- Category U - Dead, Dying or Defect trees with <10 years retention value

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

Proposed removal of T3, T5 & T6 (Lime) provided by way of s211 Notification ref: 2024/5239/T

Location of protective fencing - BS 5837 Feet Fence (or similar)

Existing boundary acting as protective fencing

Temporary ground protection

Ground bearing slab cast at ground level

NOTE # Tree positions indicatively mapped due to lack of detailed topographical plan

REV AMENDMENTS DRAWN DATE AUTH'D

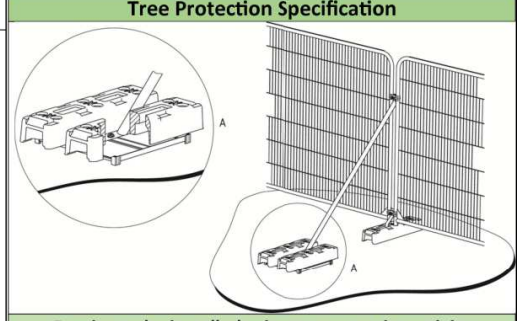
Temporary Ground Protection Specification

To be installed prior to any on site activity (demolition or construction)

- *Retain existing on site hard standing if present for as long as possible.*
- *If indicated new temporary ground protection should be installed as part of the tree protection measures prior to work starting on site.*
- *For exposed unmade ground within Root Protection Area.*
- *To be laid on non-permeable membrane*
- *We recommend 3m x 1m x 20mm matts manufactured from recycled HMPE plastic, with carrying handles and an engraved grid pattern with minimum 150mm overlap to join together.*

To cover all exposed unmade ground for tree Root Protection Area outside of Tree Protective Fencing

Tree Protection Specification



Fencing to be installed prior to any on site activity (demolition or construction)

- *Warning signs to be located every 5m and to be minimum A3 in size (i.e. 42cm x 29.7cm)*
- *To be checked and replaced as necessary.*

Deviations from the advised tree protection compromises tree roots and should be avoided. The purpose of tree protection measures should be briefed to all on site staff.

PROJECT
109 Greencroft Gardens.
South Hampstead
NW6 3PE

CLIENT
P Martin

TITLE
Tree Protection Plan (TPP)

Job	Scale	DRG NO	Revision
05252R	1:200 @ A3	05252P_TPP_01	A
Date 06/01/2025	Type a		

Tel: 01252 811 233
Email: info@tamlatrees.com
Web: www.tamlatrees.com
Tamla Trees consulting arborists

Appendix 7 – Site Photographs

Image 1 – Proposal area and existing ground conditions

Image 2 – Looking towards the property with the stem of T2 (Silver Birch) visible

Image 3 –T6 (Lime) with stem of T7 visible beyond.

Appendix 8 – Limitations

Full Legal Disclaimer

This report was prepared as a report of work instructed by client (as specified). Neither Tamla Trees ltd nor any associated company, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the report and its findings. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favouring by Tamla Trees ltd or any associated company. The views and opinions of authors expressed herein do not necessarily state or reflect those of Tamla Trees ltd or any associated company.

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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 guidance. Tamla Trees ltd 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 ltd 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.