BS5837 Arboricultural Impact Assessment & Method Statement

46 Sweetcroft, Lane, Uxbridge, UB10 9LE

Client:	**Mr G Grover**
Job Reference:	04075R
Planning Ref:	-
Consultant:	Keiron Hart (BSc Hons, C.Env, F.Arbor.A, MICFor, MEWI, AARC, APAEWE)

Tamla Trees
consulting arborists

Contents

1. Executive Summary

1.1 Tamla Trees ltd has been appointed by Mr G Grover to provide advice on the arboricultural issues relating to the advised development: *"Extensions to the existing property".*

1.2 We surveyed the site in October 2023. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations". SG1 (Juniper, Camellia, Cypress) will be removed to allow the proposal. T6 (*Prunus* spp) will be removed on the basis it is a U cat tree. None of these trees/ shrubs are of size or visual prominence.

1.3 In terms of the development works the main constraint trees are T1 (Yew) and T2 (Corsican Pine) to the front which could come under pressure from any new services or changes to the front garden area (extended parking for example). T12 (Cedar) is a 3rd party tree where the Root Protection Area (RPA) extends into the area of the extended property.

1.4 The proposed extension works encroach into the Root Protection Area (RPA) of T12 but at a peripheral distance and level where we would not envisage any issues in terms of the health or stability of this tree. This view is enhanced further by its location in a generally open soft landscaped front garden. A system of robust herras fencing will be used to protect the RPA of retained trees and supplemented with temporary ground protection where indicated.

1.5 The tree issues can be summarised as: **Tree/ Shrub removal> Effective Tree Protection> Service Connections> Site operative knowledge of tree protection issues> Soft landscaping to make good.**

1.6 The site is within the Hillingdon Council administrative area. The site is affected by a Tree Preservation Order (TPO) but not located within a designated Conservation Area. The TPO dates from 1975 suggesting that only trees present then (or before) are included within it.

1.7 Subject to adherence to the protection measures detailed within this report there should be no impact on T1 from the proposed works. This report is based on the client plans ref: 2023/121 -03 (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?	No
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?	Yes
Type of TPO	**Area**
	~~**Individual**~~
	~~**Group**~~
	~~**Woodland**~~
TPO Reference	TPO 166
Date TPO Made	23.6.1975
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) At the time of writing Hillingdon Council website site confirms the presence of a TPO but it appears to protect only trees present in 1975 (and before). (iii) The site is not located within a designated Conservation Area.	

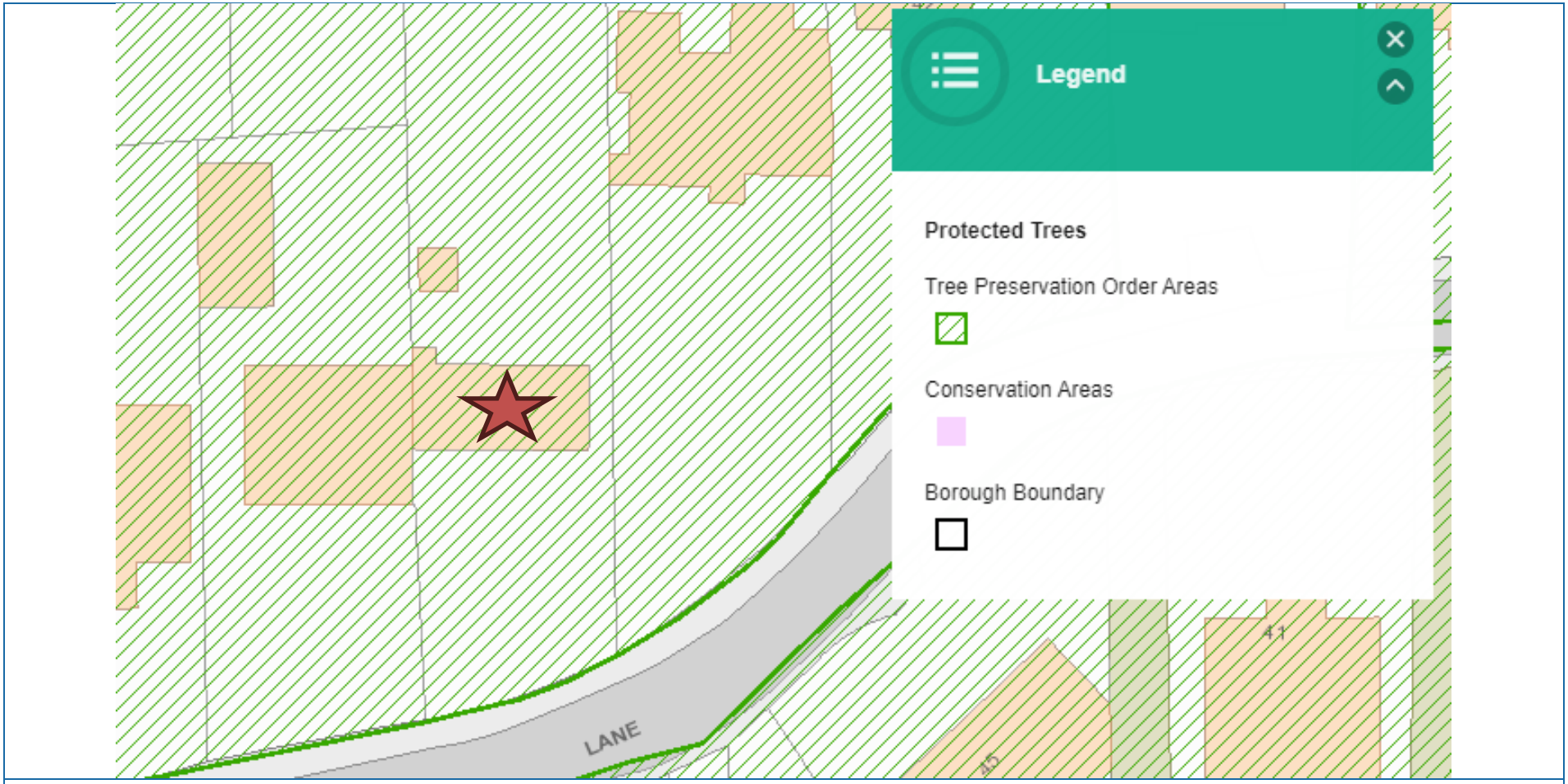


Fig 1 – The site is not located within a designated Conservation Area but is affected by a TPO. This dates from 1975 suggesting only trees present at that time are included within it.

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.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

3.17 https://www.hillingdon.gov.uk/protected-trees

4. The Trees

4.1 The trees can be summarised as follows:

BS 5837 Cat	A	B	C	U
Specific Trees	T1, T9, T12	T2, T4, T8	T3, T5, T7, T10, T11 H1, H2 SG1	T6
Total Number	3 trees	3 trees	5 trees, 2 hedges, 1 shrub group.	1 tree

*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 site is located within a London Clay.[1]

Soil Description
Bedrock Deposits: London Clay Formation - Clay, silt and sand. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period. **Superficial Deposit: 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 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.

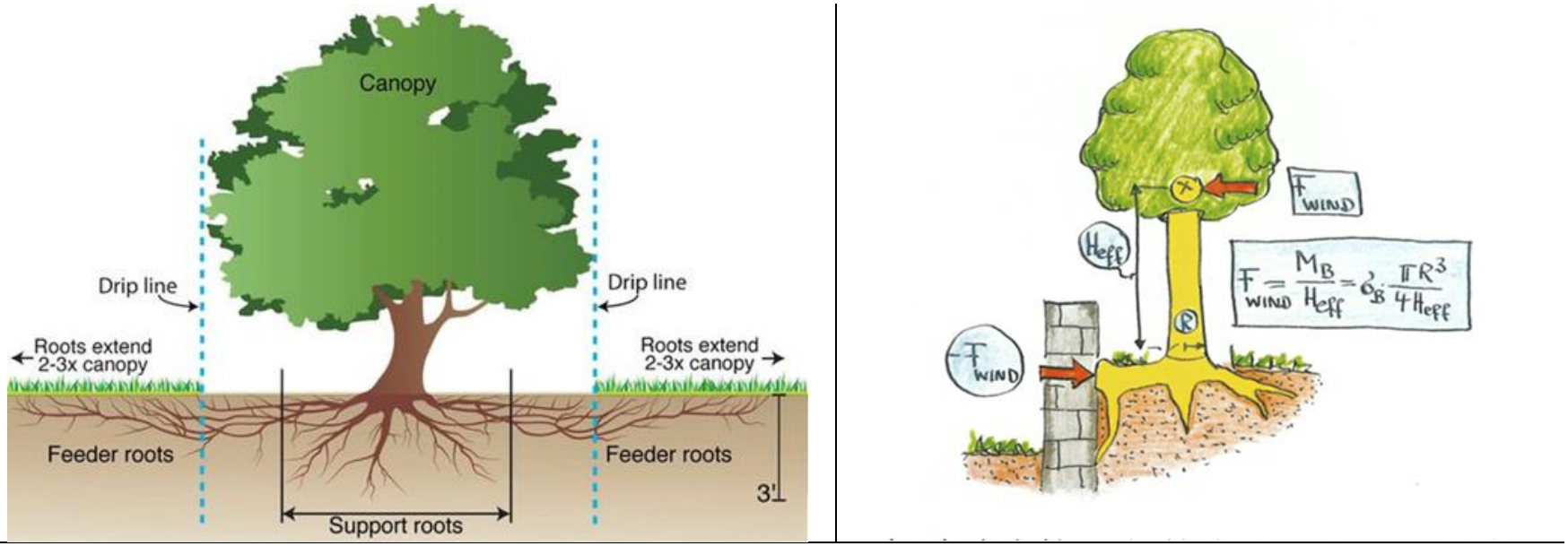


Fig 2 – Open grown trees or those with minimal obstructions close to their stems will have a network of structural roots supporting feeder/ fine root growth beyond (above left). In certain situations root morphology can be affected by structures close to the main stem (above right: Mattheck).

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.

[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.

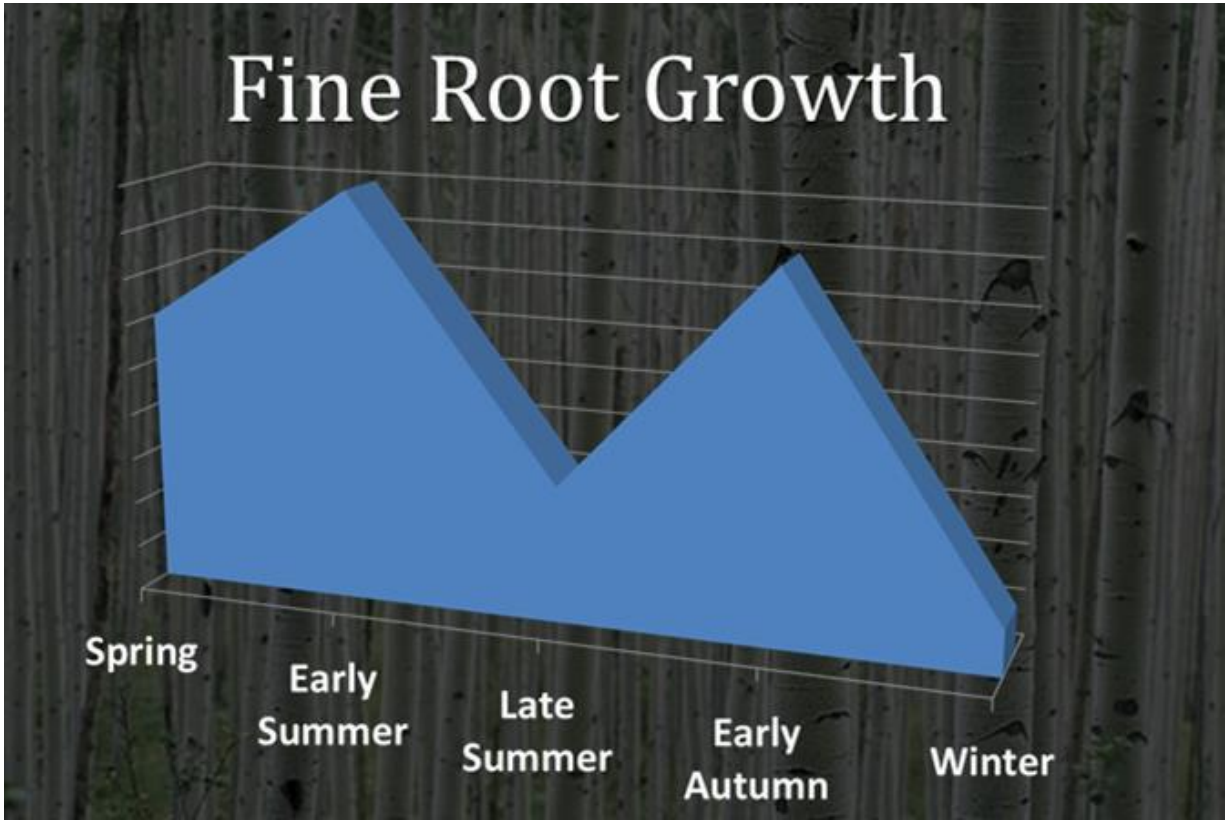


Fig 3 – Fine root growth is (generally) seasonal peaking in late spring and again in early autumn but dying back in winter dormant periods when photosynthetic production ceases. This is an important part of the soil nutrient cycle and demonstrates that a static RPA as calculated by BS5837 is a 'simplistic'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

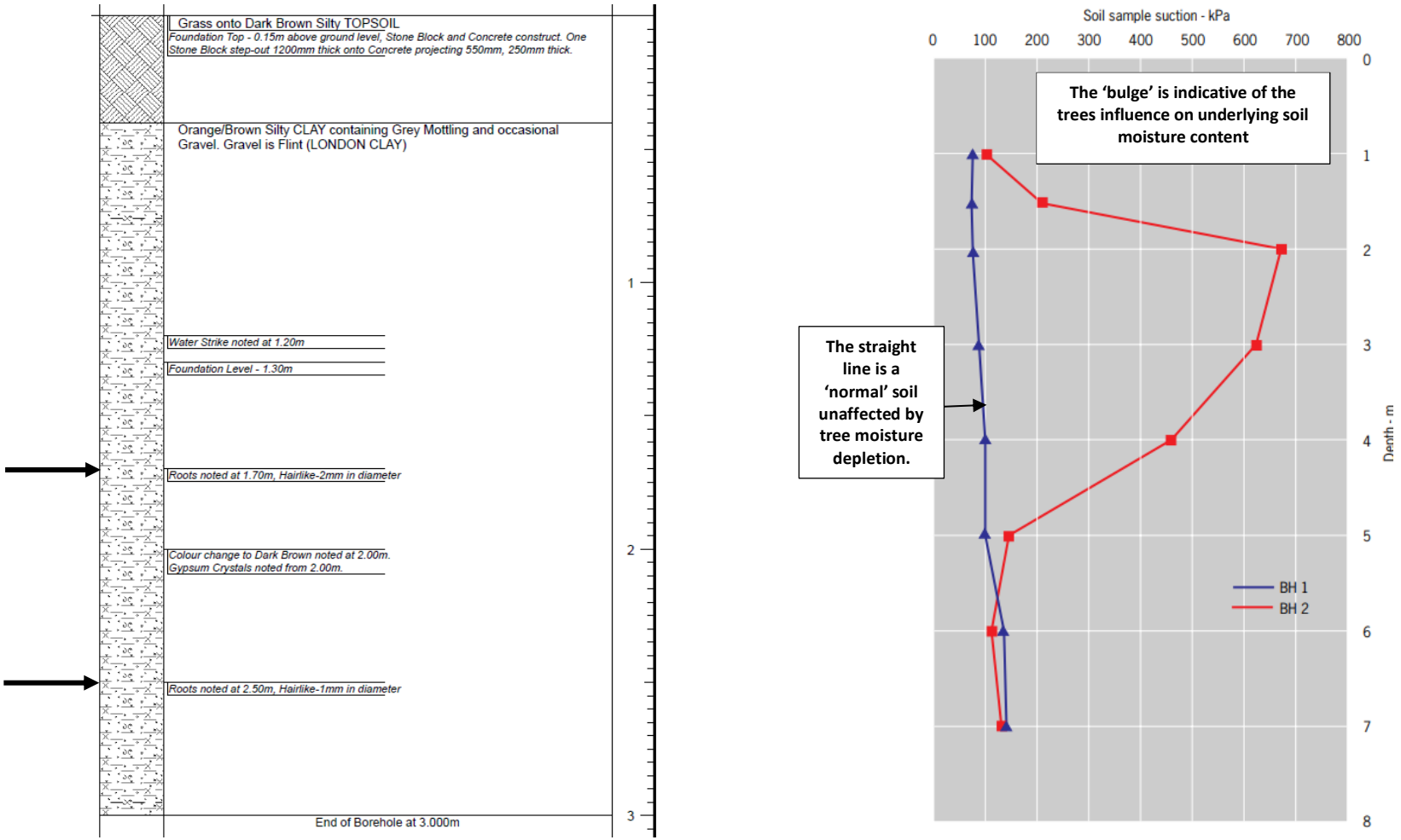


Fig 4 – Borehole log 10m from mature Oak tree on clay soil detailing fine roots to depths of 2.5m indicated with arrows (Source: Tamla Trees project) and annotated soil moisture depletion by trees showing a peak influence at 2m and extending to 5m (above right)

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 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);*	• The trees are within open (soft) garden areas. The only tree where construction work encroaches within the RPA is T12 (Cedar). Access was not available to this tree (as it is within a 3rd party garden) but there is nothing to suggest the existing morphology of the root system has been affected.
4.6.3.(b)	*topography and drainage;*	• The site is generally level. There is no evidence of adverse drainage or water pooling.
4.6.4.(c)	*the soil type and structure;*	• Soil is indicated by the BGS as a London Clay at depth. It is our experience that clay soils reduce aeration and increases potential risk associated with compaction. This risk is reduced by the protection measures detailed within this report, particularly the temporary ground protection measures. • **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.*	• There is a minor encroachment from the extended footprint into the RPA of T12 (Cedar). This equates to <1% of the trees overall RPA and is well within the tolerable level. *Cedrus* spp is known to show good tolerance to potential root loss.[4] • On the basis that the tree and ground 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.

[4] Costello & Jones (2003) Reducing Infrastructure Damage by Tree Roots

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:

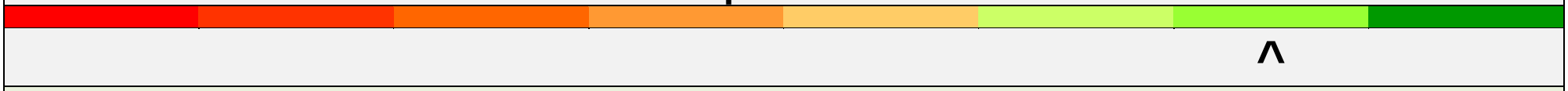
BS 5837 Cat	A	B	C	Summary
RPA Incursion	T1	T2	-	**Surface works –** No new surface works are proposed but the client is alerted to the RPA of these 2 trees to the front of the property. Any revisions to the driveway area must not encroach into the RPA of these trees unless it is a no dig surface. The existing mounding/ raised levels close to T1 (Yew) must be retained.
	T12			**Construction/ Footings –** The extended footprint is within the RPA of T12 but equates to <1% of the trees overall RPA and is not considered an issue. The tree benefits from existing open (garden) areas elsewhere within the RPA.
	T1	T2	T3 & T5	**Access/ Site Storage –** There is ample space on site for storage of materials outside the RPA of trees to the front of the site but for this to be effective they must be installed prior to any works and maintained for the duration of the construction.
				Services – The proposal is envisaged to tie into the service connections. Any new connections to the public highway area to the south of the site will be located in the area outside the 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 detail.

5.2.2 There is a minor encroachment into the RPA of T12 (Cedar):

Tree Number	RPA Total (Sqm)	Existing Incursion (Sqm)	As % of trees RPA	Proposed Incursion (Sqm)	As % of trees RPA	Difference +/-
T12	163	5.2	3.2%	1.3	0.8%	+0.8%
Increase in RPA covered		**Decrease in RPA covered**				

Note: Incursion from extended building footprint relative to T12.

Tree & Development Risk Indicator



- The incursion is 0.8% of the overall RPA of T12 and well within the tolerable zone (represented above)
- The greatest risk is likely to trees to the front of the site from access/ material storage/ operative parking (not represented above).
- **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.

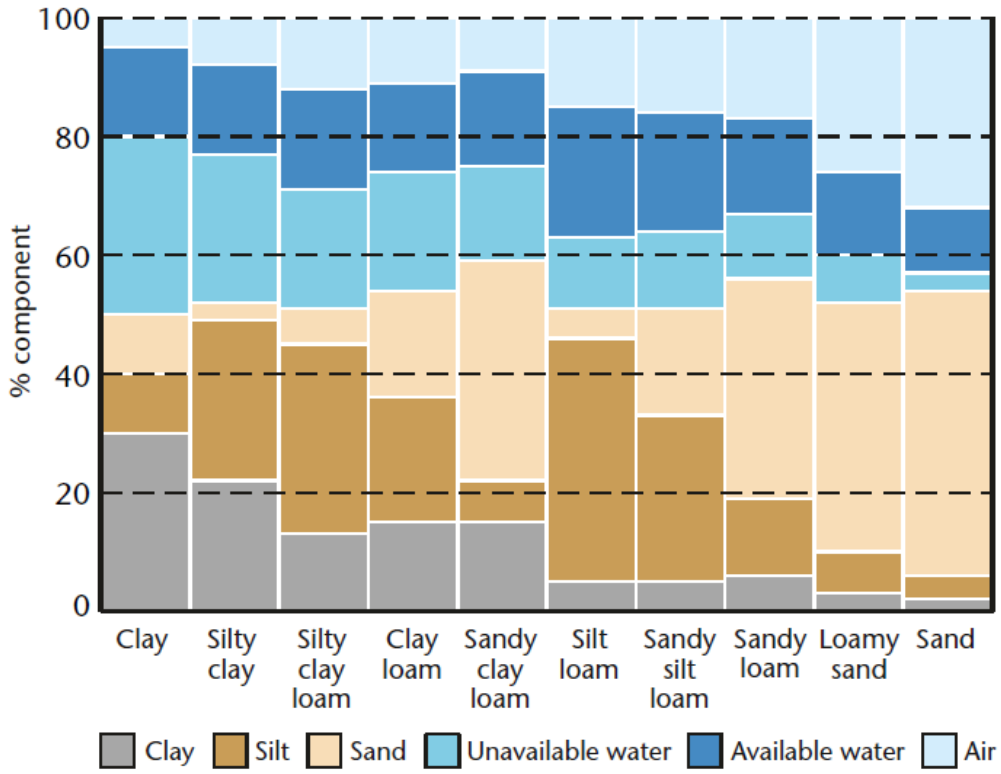


Fig 6 – Diagram showing the typical particulate composition and air/ water content at field capacity for mineral soil types[5] The variation in soil type has a direct bearing on the potential impact of adverse construction techniques (such as soil compaction) as well as overall root system morphology & 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 SG1 (Mixed Species Shrubs/ Ornamental conifers) will be removed to facilitate the extended footprint. T6 (Prunus spp) is a U Cat tree also advised for removal. None of these trees or shrubs are of local or wider significance.

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat

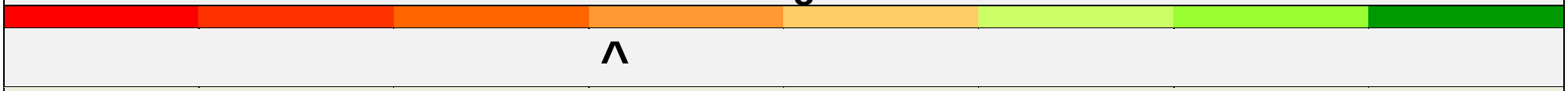
Proposed Removal

Tree No.	Species	Proposed Tree Works	BS Cat
SG1	Juniper, Camellia, Cypress	Remove	**Cat C**
T6	*Prunus* spp	Remove	**Cat U**

5.3.2 **Birds -** In the event future tree works are required to be completed between 1st March & the 31st 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



- T12 has a canopy extending towards and over the existing footprint and it seems likely that incoming occupants may wish, in time, to tip branches back away from the roofline.
- **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]

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. The clients attention is specifically drawn to T2 which is showing some signs of minor canopy stress and should be monitored closely. In addition the 2 Oak trees to the rear (T8 & T9) are of unknown ownership and basal areas are obscured. A health and safety assessment could not be made.

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

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 SG1 & T6.
- Install all proposed BS Fencing and Temporary Ground Protection.
- Brief Contractors on purpose.

Stage 2

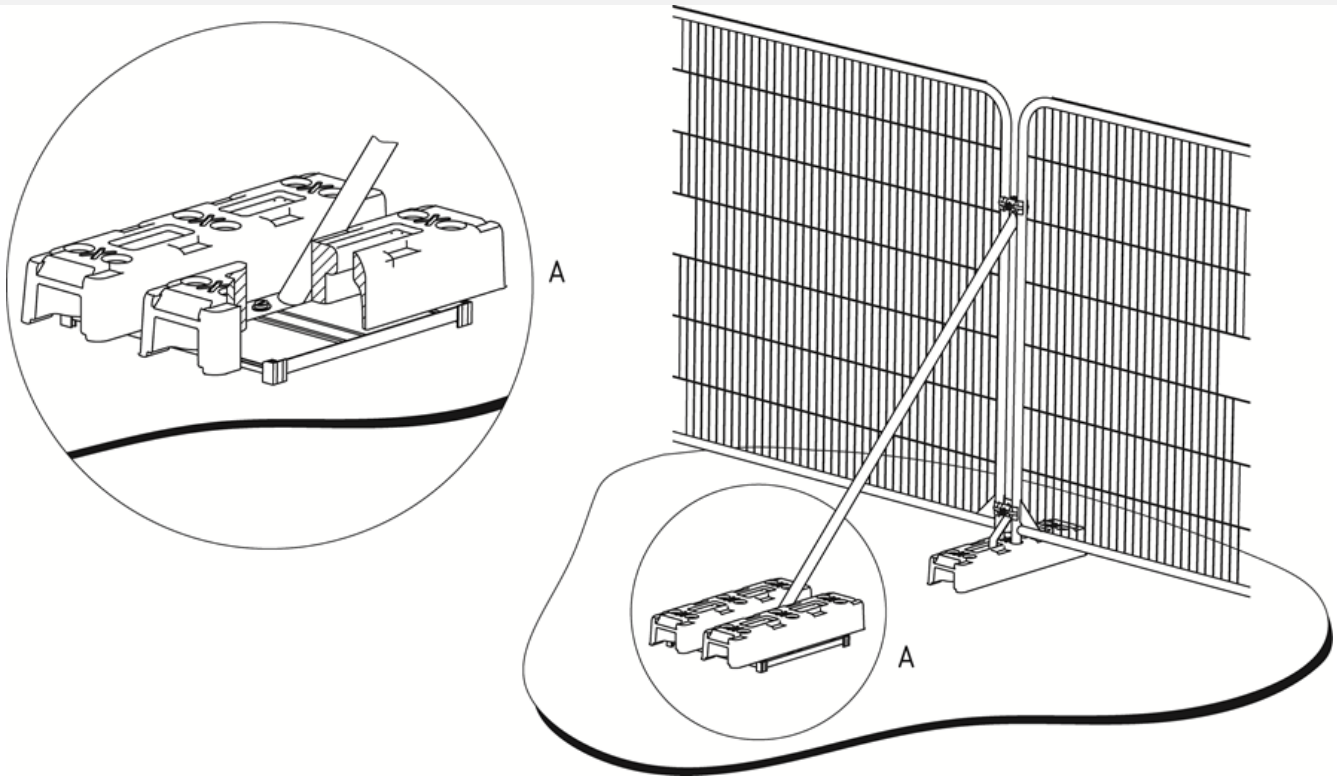
- Complete construction.
- Ensure front garden area protection remains intact throughout.

Stage 3

- Fencing and ground protection remains in place.
- Finalise service connections outside RPA's (as required).
- Remove tree protection and impliment soft landscaping.
- Mulch below T1 and T2.

5.4.2 High quality BS5837 compliant fencing will be installed prior to on-site works.

Tree Protection



Overview

- ***Braced feet fence spec (left).***
- ***Note: To be marked with signs (inset) and purpose to be briefed to all ground workers.***
- ***Maintained for duration of the build.***

Threat Level to Retained Trees	LOW

5.4.3 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) should be placed on basal shuttering.

5.4.4 Temporary Ground Protection is required to allow safe movement around the site during the construction phase without compromising the underlying soil within identified RPA's.

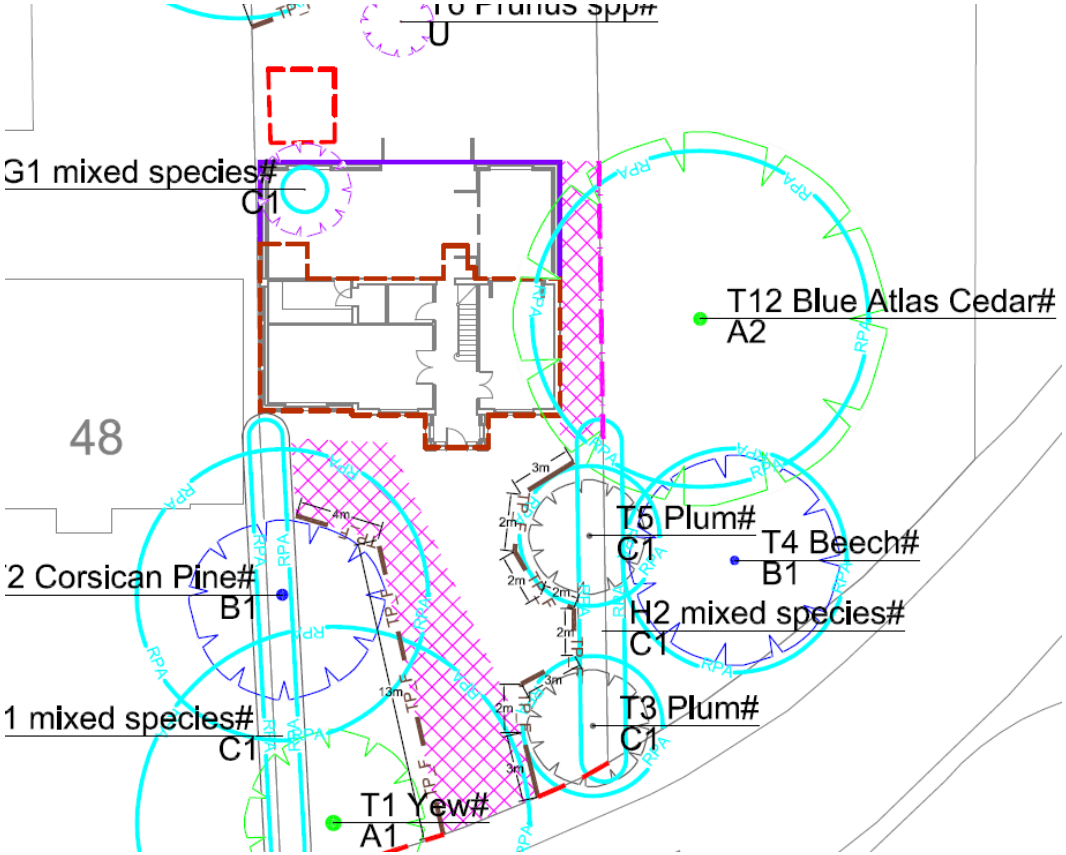


Fig 8 – Temporary Ground Protection allows operative parking/ material storage and movement around the eastern end of the building.

5.4.5 Temporary ground protection should be laid prior to any on site activity and be to a suitable specification relative to the access requirements/ machinery/ personnel movements.

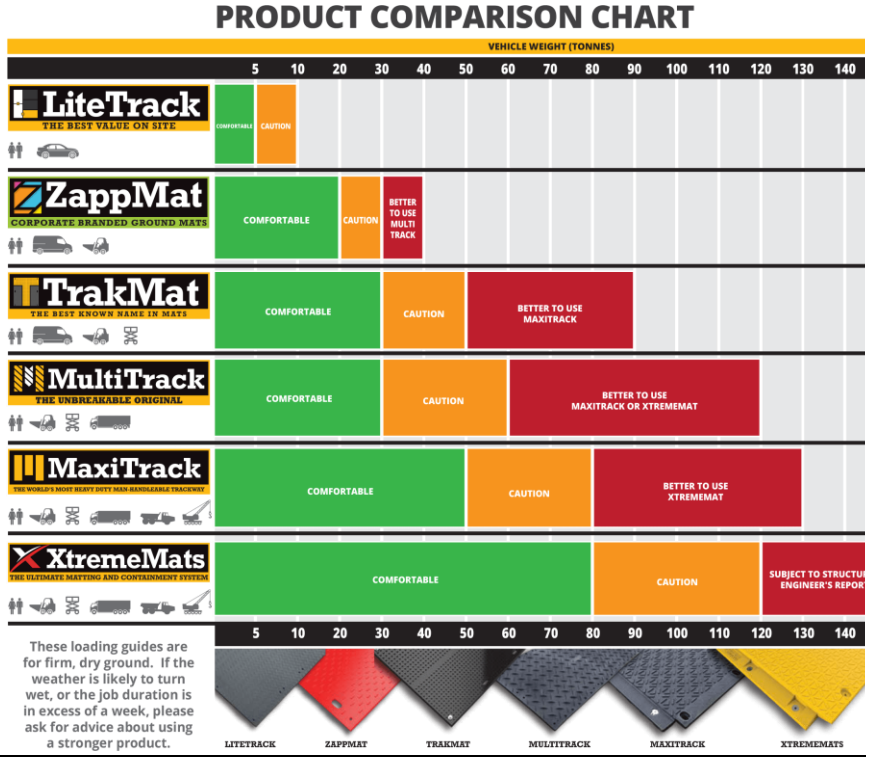


Fig 9 –The construction firm/ contractors must ensure that any areas where fencing may be moved (temporary) leads to exposed ground being covered with suitable temporary ground protection. This approach maximises the integrity of retained tree RPA's.

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*)

5.4.6 **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:				

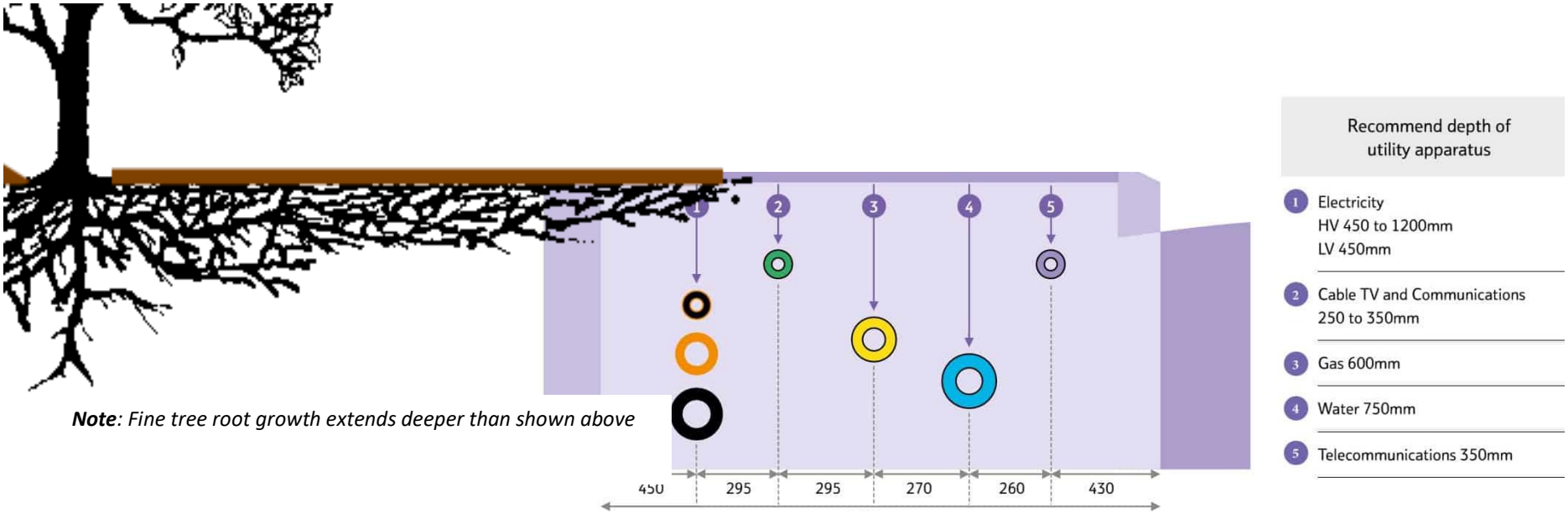
SITE TREES ARE NOW ADEQUATELY PROTECTED AND DEMOLITION/ CONSTRUCTION ACTIVITY CAN COMMENCE

5.5 Surfaces near Trees

5.5.1 No new surfacing near trees is 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.



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

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 with ample space for installations outside the RPA.**

5.6.2 **Services -** In the event of a need to undertake works close to any retained trees excavations 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

5.6.3 **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.

				
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 12 – Advised tools/ materials which should be available for any required hand digging.

5.6.4 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.**

5.6.5 **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.

5.6.6 **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**

5.7 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 outside the scope of this report.

Fig 13 – 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. This is specifically recommended for T1 & T2 to the front of the site.

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

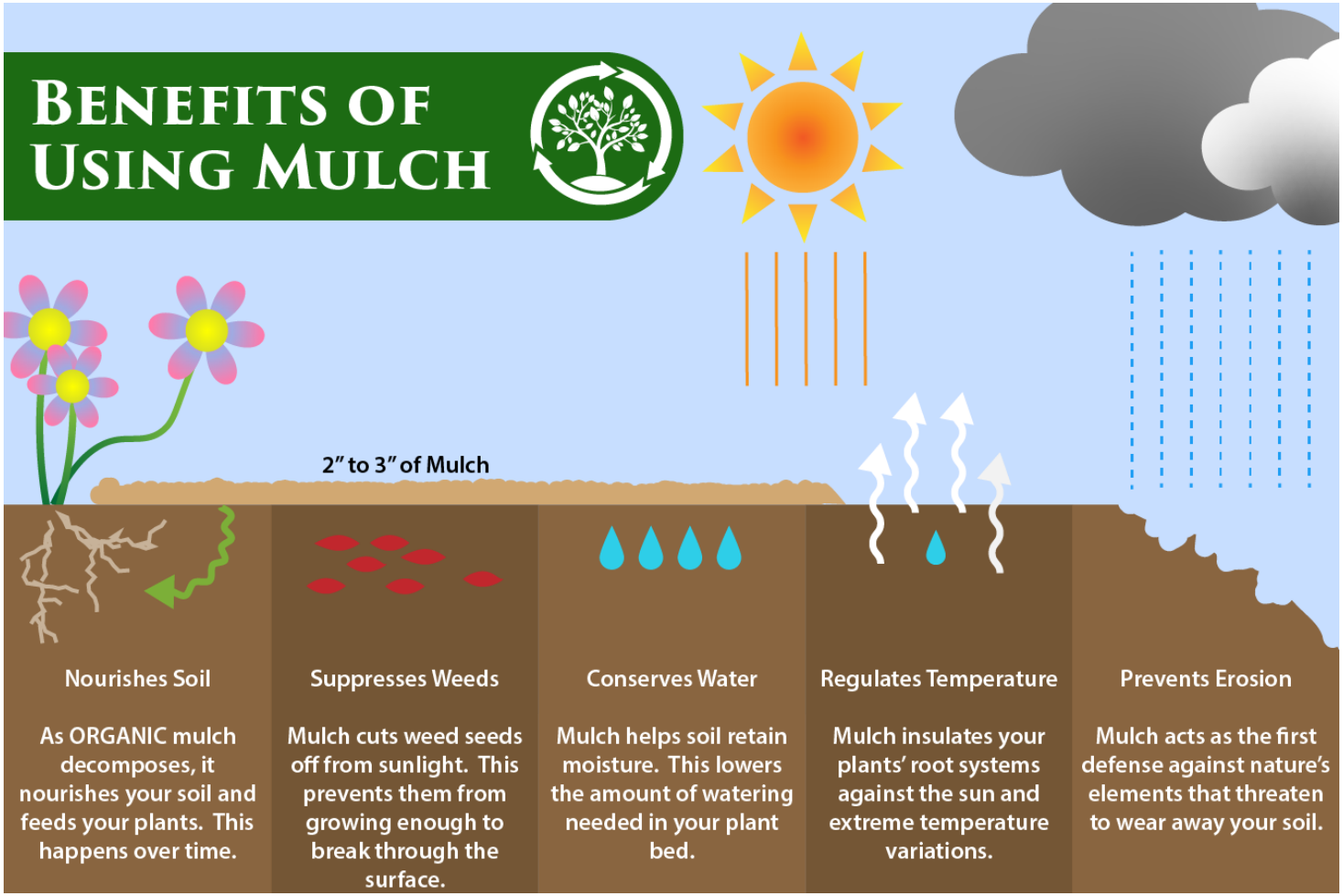


Fig 14 – Benefits of Mulch (Image Source 1st Stop Landscape Supply (US)

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 property aspect remains unchanged and tree shading 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 to inspect tree protection measures have been installed prior to any on site works. Update local authority.	**TBC**	**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.	**TBC**	**Incomplete**

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

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 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)			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	Yew	0.7	2	7	4	3.9	3.7	3.8	A1	Mature	> 40	0.2	Ivy. Visible in street scene. Long retention value. In raised area which should not be dug out.	No works	8.4
T2	Pine (Corsican)	0.52	1	17	3.2	4.4	4.5	4	B1	Mature	20 to 40	6	Some minor signs of canopy stress. Monitor closely.	No works	6.2
T3	Plum	0.25	M/S	5	2.4	2.4	2.6	2.8	C1	Early-mature	20 to 40	1.8	Small ivy-covered boundary tree.	No works	3
T4	Beech	0.4	1	7.5	4.5	4.5	4.5	4.5	B1	Early-mature	> 40	1.8	3rd party tree with no access to inspect. Appears good form.	No works	4.8
T5	Plum	0.25	M/S	4	2.4	2.4	2.5	2.6	C1	Early-mature	20 to 40	1.8	Small boundary tree.	No works	3

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							
T6	*Prunus* spp	0.08	1	2.4	1.2	1.4	1.5	1.7	U	Semi-mature	<10	0.3	Dying.	Remove	1
T7	Plum (Purple)	0.28	M/S	5.8	2	2.6	3	2	C1	Early-mature	20 to 40	1.6	Tight v unions. Suppressed.	No works	3.4
T8	Oak	0.6	2	8	5.3	4.9	4.5	4.5	B2	Early-mature	> 40	1.5	Boundary/ 3rd party ivy covered tree. Previously reduced.	No works	7.2
T9	Oak	0.65	2	12	6.7	6.5	5.4	6	A2	Early-mature	> 40	1.5	Boundary/ 3rd party ivy covered tree. Previously reduced.	No works	7.8
T10	Box Elder	0.5	1	3.2	2	1	2	1	C1	Mature	20 to 40	2	Low quality tree. Topped.	No works	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							
T11	Plum	0.2	1	3.5	3.5	2.4	2.5	3.9	C1	Early-mature	20 to 40	1.8	Small boundary tree. Shooting from base.	No works	2.4
T12	Cedar (Blue Atlas)	0.6	1	17	8	8	8	8	A2	Mature	> 40	2.5	Large 3rd party tree with no access to inspect. Lower stem pruning wounds. Needles a little stunted. Monitor closely.	No works	7.2
H1	Cypress, Privet, Acer, Laurel	0.06	M/S	2.2	1	1	1	1	C1	Mature	> 40	0	Managed mixed species hedge offering screening between properties.	No works	0.7
H2	Laurel, Bay Laurel, Hawthorn.	0.08	M/S	2.4	1	1	1	1	C1	Mature	> 40	0	Managed mixed species hedge offering screening between properties.	No works	1
SG1	Juniper, Camellia, Cypress	0.08	M/S	3	2	2	2	2	C1	Mature	10 to 20	0	Close grown low quality ornamental dwarf trees and shrubs.	Remove	1

Appendix 4 – Tree Works Schedule

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat

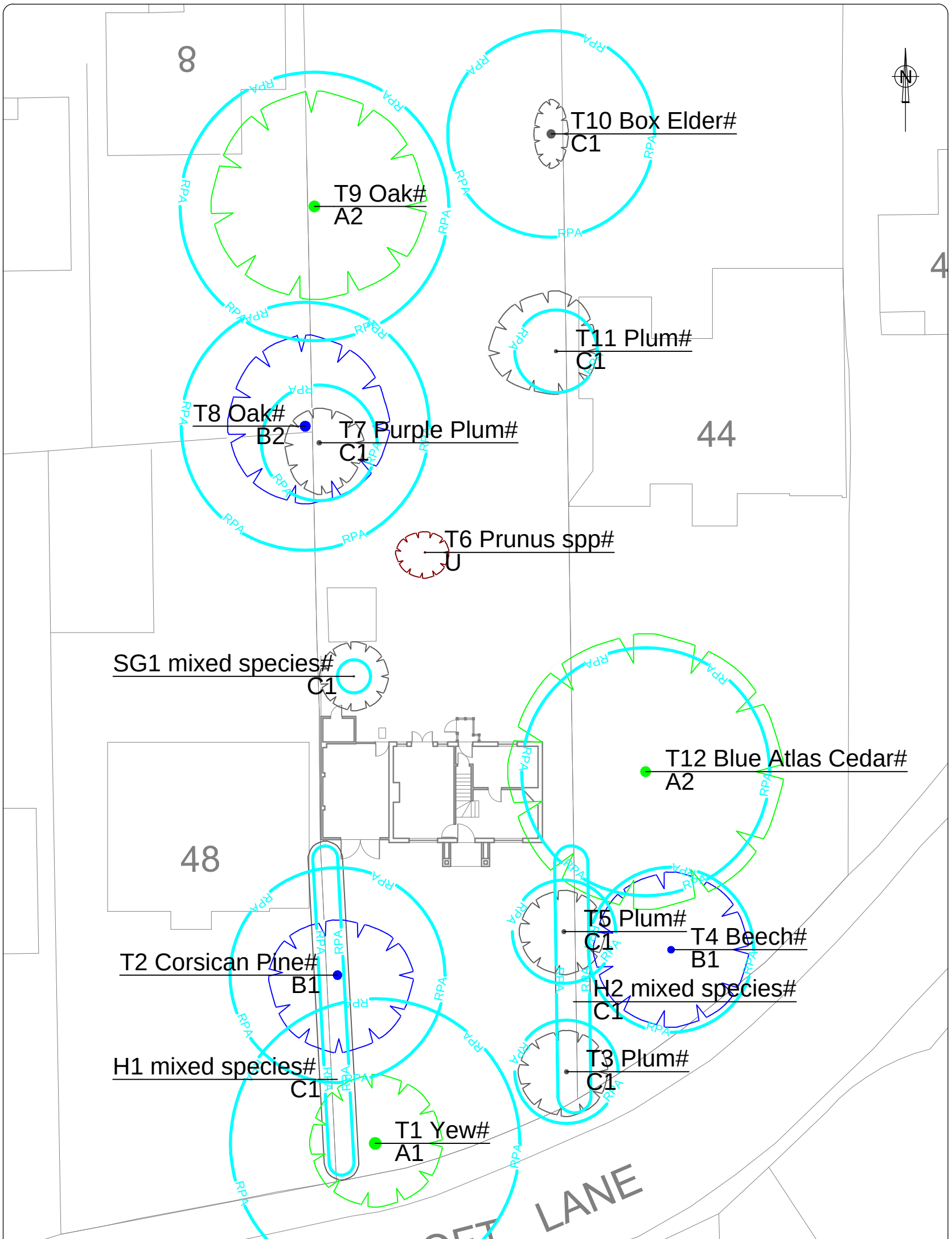
Proposed Removal

Tree No.	Species	Proposed Tree Works	BS Cat
SG1	Juniper, Camellia, Cypress	Remove	**Cat C**
T6	*Prunus* spp	Remove	**Cat U**

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

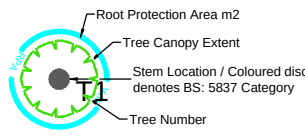
NOTE: We recommend using Arboricultural Association approved contractors who can be sourced here

Appendix 5 - Tree Constraints Plan



Tree No	Species	DBH	Height	Age Class	Life Exp	Observations	BS Cat	RPR
T1	Yew	0.7	7	Mature	> 40	Ivy. Visible in street scene. Long retention value. In raised area which should not be dug out.	A1	8.4
T2	Pine (Corsican)	0.52	17	Mature	20 to 40	Some minor signs of canopy stress. Monitor closely.	B1	6.2
T3	Plum	0.25	5	Early-mature	20 to 40	Small ivy covered boundary tree.	C1	3.0
T4	Beech	0.4	7.5	Early-mature	> 40	3rd party tree with no access to inspect. Appears good form.	B1	4.8
T5	Plum	0.25	4	Early-mature	20 to 40	Small boundary tree.	C1	3.0
T6	Prunus spp	0.08	2.4	Semi-mature	<10	Dying.	U	1.0
T7	Plum (Purple)	0.28	5.8	Early-mature	20 to 40	Tight v unions. Suppressed.	C1	3.4
T8	Oak	0.6	8	Early-mature	> 40	Boundary/ 3rd party ivy covered tree. Previously reduced.	B2	7.2
T9	Oak	0.65	12	Early-mature	> 40	Boundary/ 3rd party ivy covered tree. Previously reduced.	A2	7.8
T10	Box Elder	0.5	3.2	Mature	20 to 40	Low quality tree. Topped.	C1	6.0
T11	Plum	0.2	3.5	Early-mature	20 to 40	Small boundary tree. Shooting from base.	C1	2.4
T12	Cedar (Blue Atlas)	0.6	17	Mature	> 40	Large 3rd party tree with no access to inspect. Lower stem pruning wounds. Needles a little stunted. Monitor closely.	A2	7.2
H1	Cypress, Privet, Acer, Laurel	0.06	2.2	Mature	> 40	Managed mixed species hedge offering screening between properties.	C1	0.7
H2	Laurel, Bay Laurel, Hawthorn.	0.08	2.4	Mature	> 40	Managed mixed species hedge offering screening between properties.	C1	1.0
SG1	Juniper, Camellia, Cypress	0.08	3	Mature	10 to 20	Close grown low quality ornamental dwarf trees and shrubs.	C1	1.0

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

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

REV AMENDMENTS DRAWN DATE AUTH'D

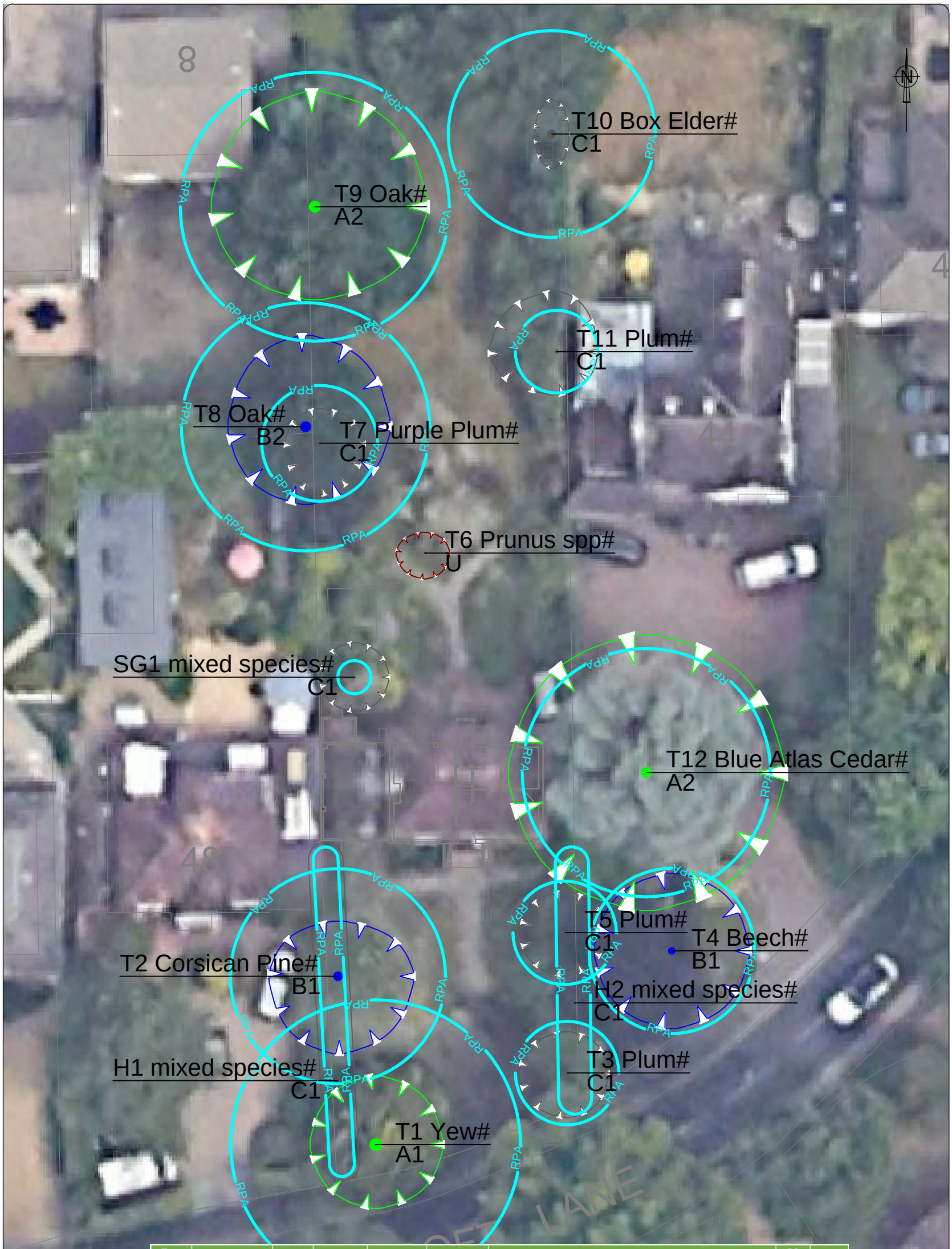
PROJECT
46 Sweetcroft Lane,
Uxbridge,
UB10 9LE

CLIENT
Mr G Grover

TITLE
Tree Constraint Plan (TCP)

Job	Scale	DRG NO	Revision
04075R	1:250 @ A3	04075P_TCP_01	-
Date: 02/10/2023	Type: a		

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



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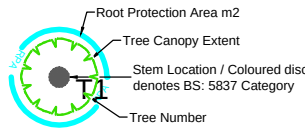
H1	Cypress, Privet, Acer, Laurel	0.06	2.2	Mature	> 40	Managed mixed species hedge offering screening between properties.	C1	0.7
H2	Laurel, Bay Laurel, Hawthorn.	0.08	2.4	Mature	> 40	Managed mixed species hedge offering screening between properties.	C1	1.0
SG1	Juniper, Camellia, Cypress	0.08	3	Mature	10 to 20	Close grown low quality ornamental dwarf trees and shrubs.	C1	1.0

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

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

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Date 02/10/2023	Type a		

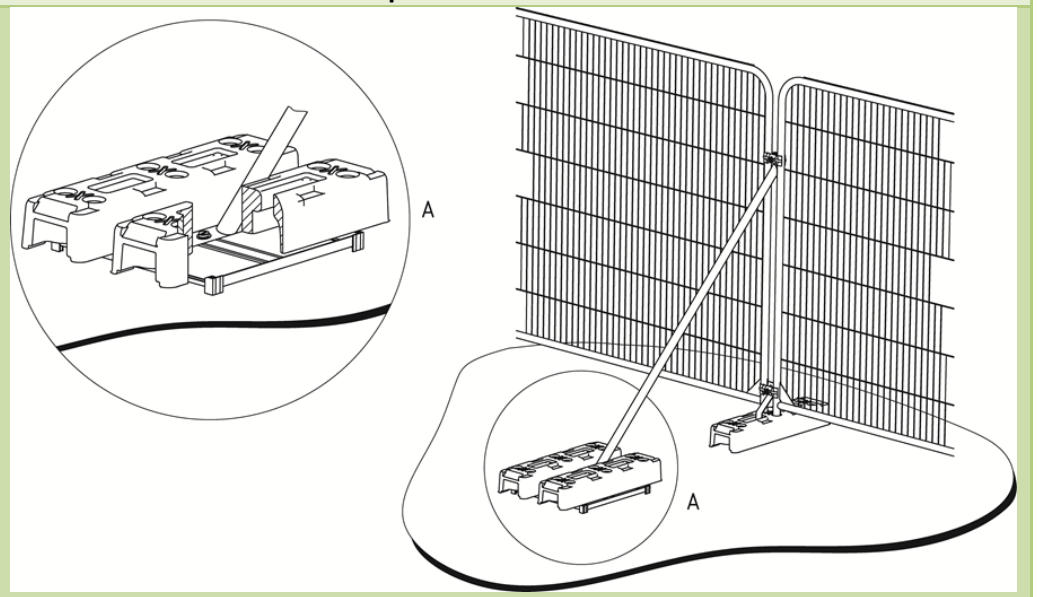
Tel: 01252 811 233
Email: info@tamlatrees.com
Web: www.tamlatrees.com
Tamla Trees consulting arborists

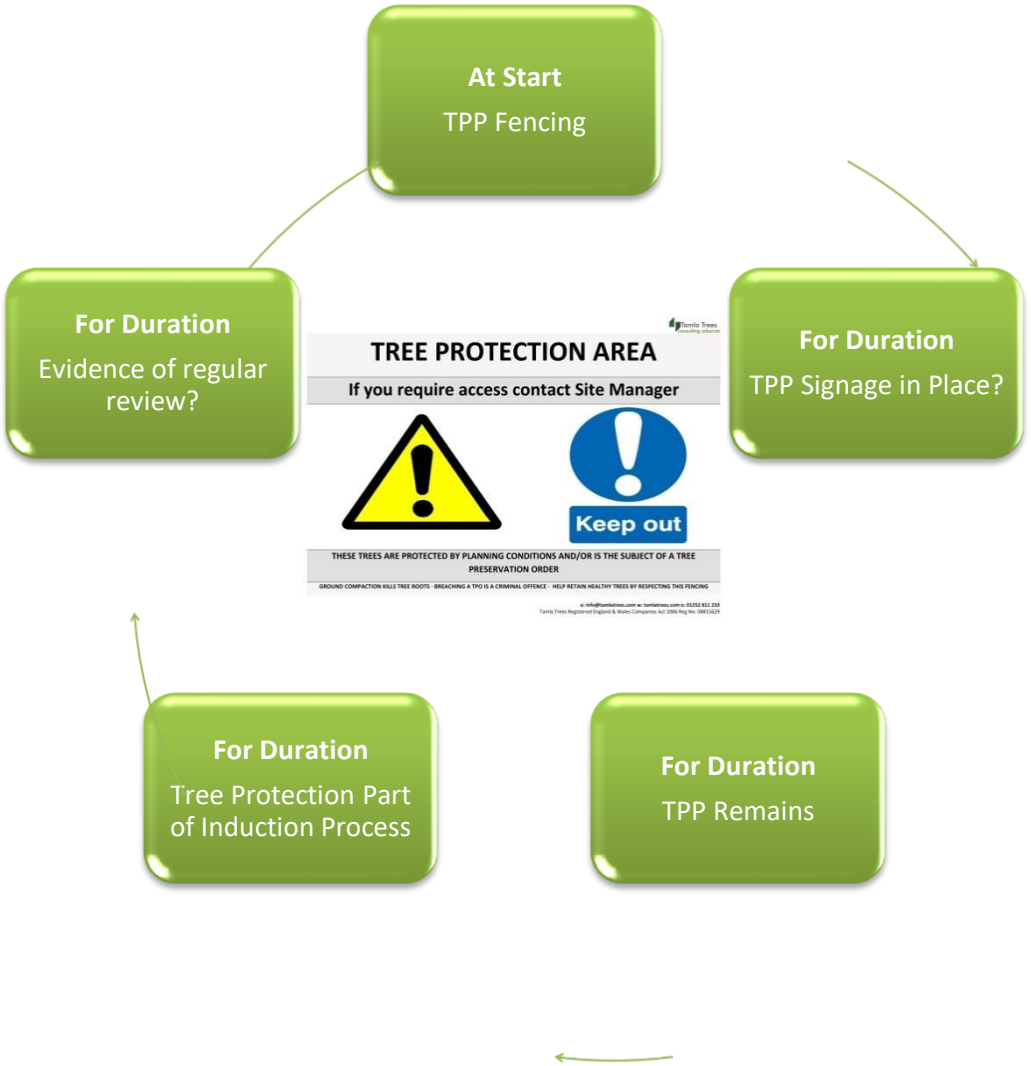
Appendix 6 - Tree Protection Plan

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.

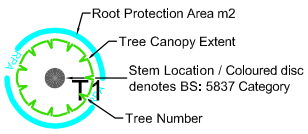
All our fencing specifications accord with advice and guidance within BS 5837. Modifications to fence types are possible but should be discussed prior to implementation. In all other instances the form detailed below should be shown. This offers the best protection to retained trees.

- **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.**
- **Fencing spec (right) to be installed prior to any on site works.**
- **To be combined with Temporary Ground Protection (not shown).**




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

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 - to facilitate Development

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

Existing boundary acting as protective fencing

Temporary ground protection

Site hoarding

Existing building

Existing building to be demolished

Proposed extension

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

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UB10 9LE

CLIENT
Mr G Grover

TITLE
Tree Protection Plan (TPP)

Job	Scale	DRG NO	Revision
04075R	1:250 @ A3	04075P_TPP_01	-
Date 02/10/2023	Type a		

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

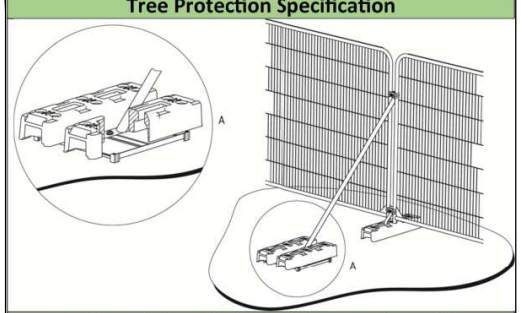
Temporary Ground Protection Specification

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)

TREE PROTECTION AREA

If you require access contact Site Manager

THESE TREES ARE PROTECTED BY PLANNING CONDITIONS AND/OR IS THE SUBJECT OF A TREE PRESERVATION ORDER

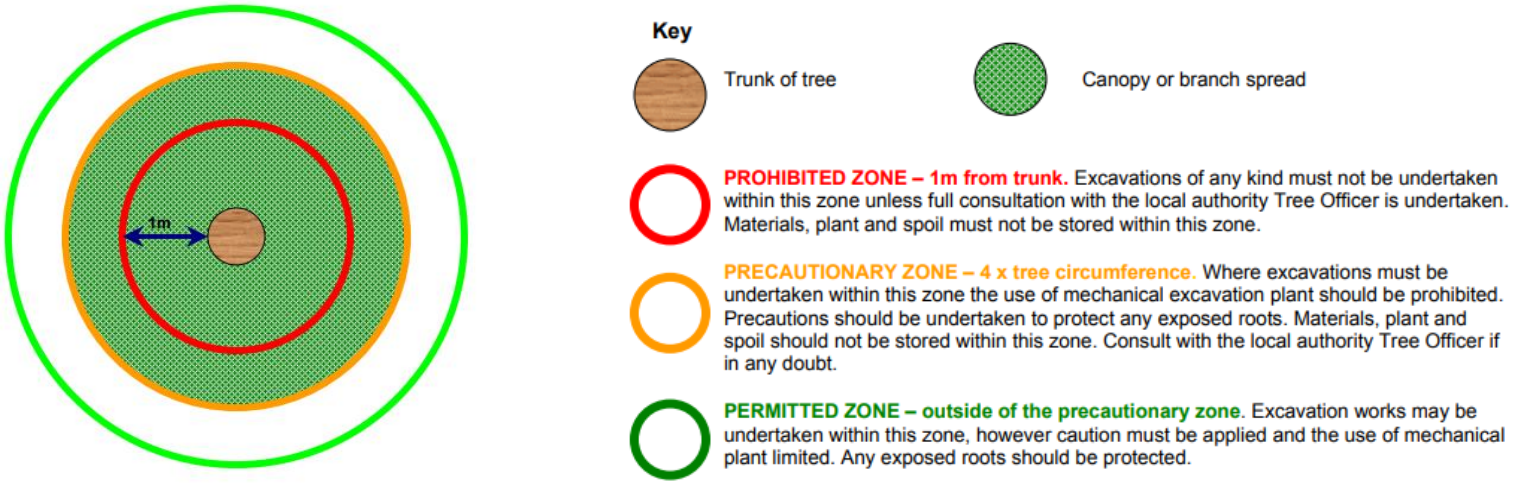
GROUND COMPACTION KILLS TREE ROOTS - BREACHING A TPO IS A CRIMINAL OFFENCE - HELP RETAIN HEALTHY TREES BY RESPECTING THIS FENCING

- *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.

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 not considered an issue on this project given ample space outside RPA's for any connection works.

Appendix 8 – Site Photographs

Image 1 – Looking towards T1 – the mounding in this area must not be removed.

Image 2 – T12 (Cedar) viewed from the rear with the property visible (right)

Image 3 –T2 (Corsican Pine) Oct 2023 – Monitor this tree closely

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 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.