BS5837 Arboricultural Impact Assessment & Method Statement

NCP Heathrow Flightpath, Bath Road, Heathrow, UB7 0DU

Client:	**Heathrow NCP Property Limited**
Job Reference:	03528R
Planning Ref:	N/A
Consultant:	Keiron Hart (BSc Hons, C.Env, F.Arbor.A, MICFor, MEWI)

July 2022

Tamla Trees
consulting arborists

Contents

1. Executive Summary

1.1 Tamla Trees ltd has been appointed by Heathrow NCP Property Limited to provide advice on the arboricultural issues relating to proposed development which can be described as: *"Demolition of existing car park and redevelopment for industrial (Use Class B2); storage or distribution (Use Class B8); and/or light industrial (Use Class E(g)(iii)) purposes, with ancillary office space, landscaping, car parking, servicing and access arrangements."*

1.2 We surveyed the site in May 2022. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations". T3 & T4 and part of TG1 will be removed to form the new access on the southern boundary. SG1, TG7 and TG8 will be cut back to the relevant boundary points as required and T6 (Sycamore) has been identified as a U Cat tree which is advised to be removed on the basis of its current condition.

1.3 The new buildings are located completely outside all the Root Protection Areas (RPA) of surveyed trees. Existing hard surfacing allows site access, storage and movements but will be replaced with new surfacing in places where there is an existing relationship. The levels of hard standing (existing v proposed) sees a significant reduction in the level of RPA currently covered. A system of tree protection (Herras fencing) and site hoarding will be used to ensure all remaining trees are adequately protected through the development process (see Appendix 6 – Tree Protection Plan). This can be supplemented with temporary ground protection if required. Site inspections ensure compliance with advised protection measures.

1.4 All protection measures will be installed prior to any site activity and retained for the duration of works. All site welfare/ storage etc will be located in areas outside of the designated tree protection and within the existing hard standing areas.

1.5 The tree issues can be summarised as: **Effective Tree Protection (demolition, excavation & construction)> Surface Replacement> Hand digging / installation of Service routes (if required)> Site operative knowledge of tree protection issues> Soft landscaping to make good.**

1.6 The site and 3rd party trees are not affected by a Tree Preservation Order or located within a designated Conservation Area. Subject to the working practices detailed within this report there should be no discernible impact on the surveyed trees. This report is based on the client plans ref: 5110-CA-00-00-DR-A-00060-PROPOSED SITE PLAN-P5

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?	No
Type of TPO	~~**Area**~~
	~~**Individual**~~
	~~**Group**~~
	~~**Woodland**~~
TPO Reference	NA
Date TPO Made	NA
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) Above information taken from London Borough of Hillingdon constraint plan July 2022.	

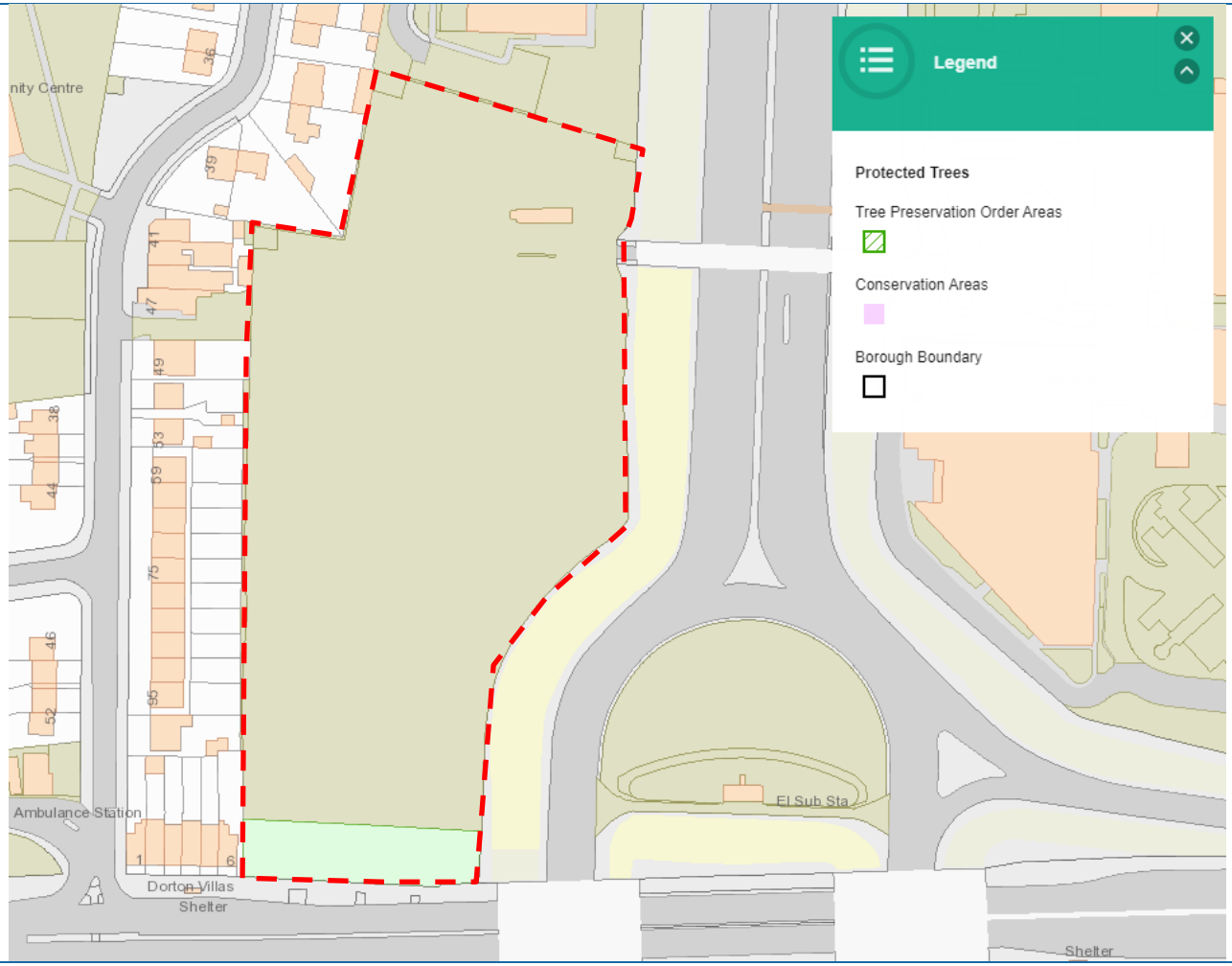


Fig 1 – The London Borough of Hillingdon website shows the proposal area is not located within a Conservation Area or affected by a Tree Preservaton Order.

3. Terms of Reference & Resource Information

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.hillingdon.gov.uk/article/3866/Carrying-out-work-on-protected-trees

4. The Trees

4.1 The trees can be summarised as follows:

BS 5837 Cat	A	B	C	U
Specific Trees	TG6	T1, T2, T3, T9, T10, T11 TG1, TG2, TG3, TG8	T4, T5, T7, T8 TG4, TG5, TG7 SG1	T6
Total Number	1 group	6 trees & 5 groups	4 trees & 3 groups	1 tree*

**Based on available access.*

4.2 The dominant surveyed age class was classified as mature and scope exists for elements of replacement planting to seek to diversify the age class creating a more sustainable tree population. Detailed comment on soft landscaping proposals is outside the scope of this report.

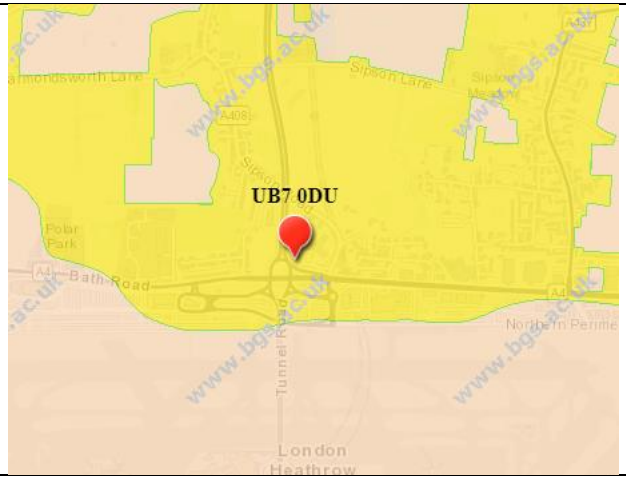
4.3 There were no hedgerows that qualify for consideration under the 1997 Hedgerow Regulations.

5.1 Site Specific Soils & Tree Rooting

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 what is defined as Langley Silt Member – *"Varies from silt to clay, commonly yellow-brown and massively bedded".* [Generic description].[1]



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 **Superficial Deposit: Langley Silt Member -** Clay And Silt. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by wind-blown deposits (U).

[1] https://mapapps.bgs.ac.uk/geologyofbritain/home.html?

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.

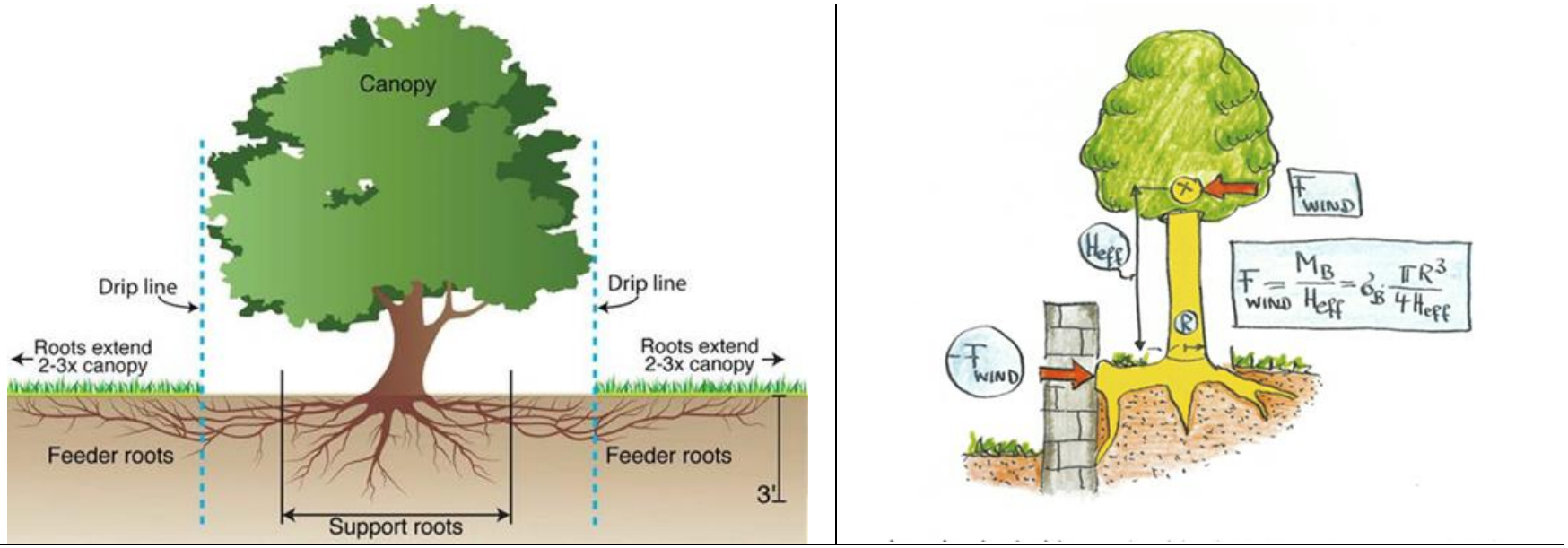


Fig 2 – Open grown trees or those with minimal obstructions close to their stems will have a network of structural roots supporting feeder/ fine root growth beyond (above left). In certain situations root morphology can be affected by structures close to the main stem (above right: Mattheck).

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).

[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.

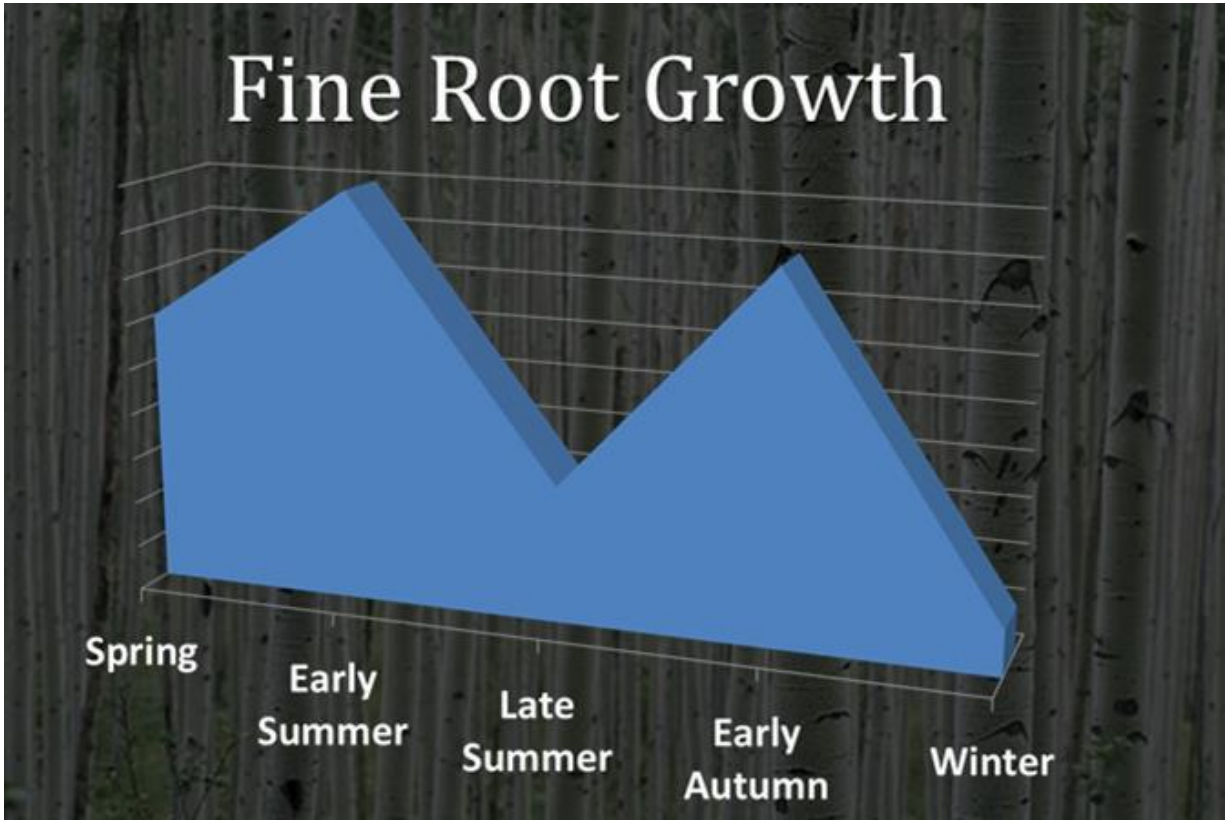


Fig 3 – Fine root growth is (generally) seasonal peaking in late spring and again in early autumn but dying back in winter dormant periods when photosynthetic production ceases. This is an important part of the soil nutrient cycle and demonstrates that a static RPA as calculated by BS5837 is a 'simplistic'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

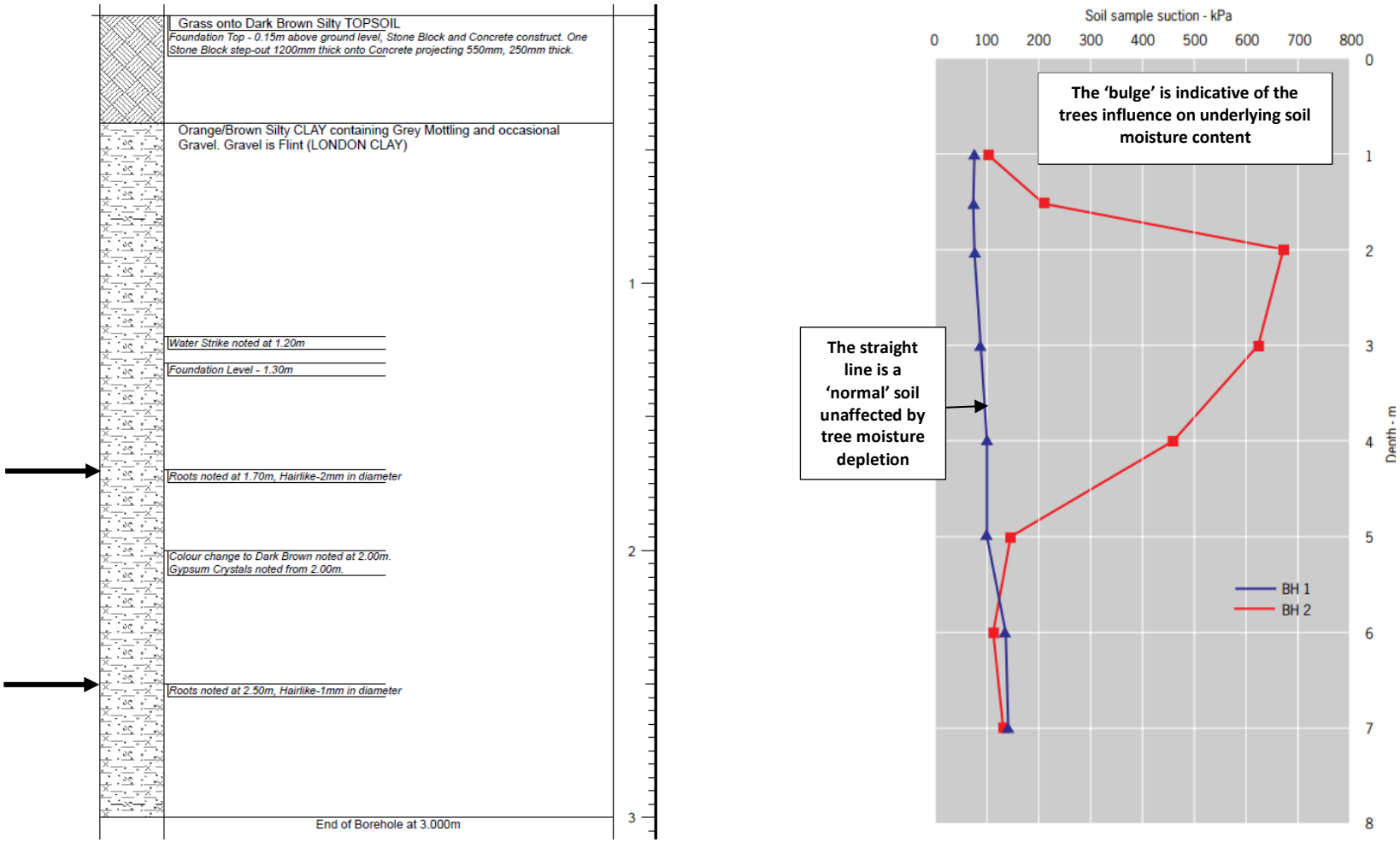


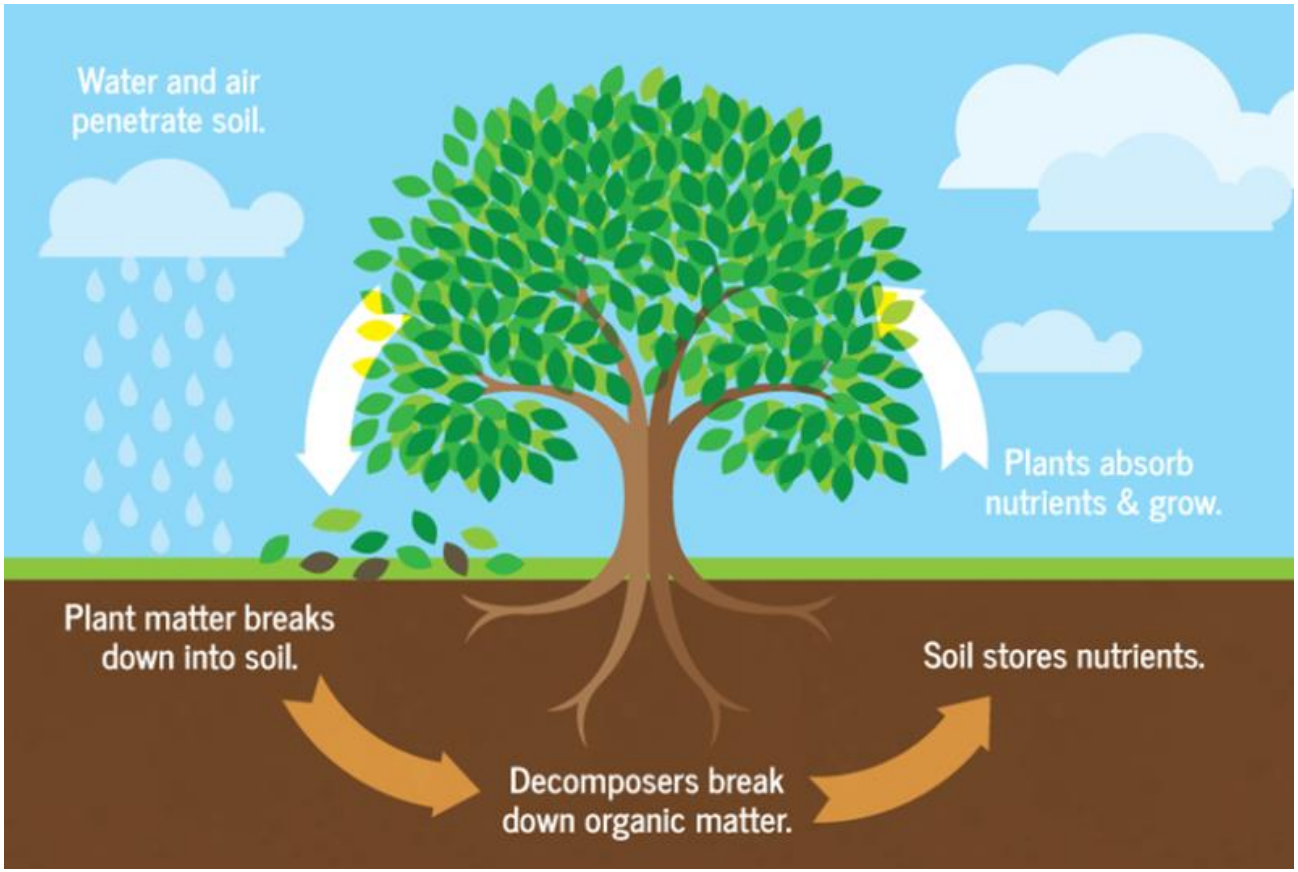
Fig 4 – Borehole log 10m from mature Oak tree on clay soil detailing fine roots to depths of 2.5m indicated with arrows (Source: Tamla Trees project) and annotated soil moisture depletion by trees showing a peak influence at 2m and extending to 5m (above right)

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 site currently has no buildings of note (other than temporary site office near access). The main surface of the site is currently tarmac parking and this will have had little impact on the overall rooting of the surveyed trees on the basis that it is not significant enough to directly impact roots close to the trees (as it is generally located outside the structural root plate areas) and fine root growth will easily extend below the surface.
4.6.3.(b)	*topography and drainage;*	• There was no evidence of intermittent flooding/ pooling of water on site within the identified RPA's. The site is generally level although there is a step change (down) to the eastern boundary and beyond.
4.6.4.(c)	*the soil type and structure;*	• Soil is indicated by the BGS as containing a clay. Where clay soils exist the risk from development related pressures is generally greater. This is due to reduced oxygen and moisture movement/ availability and greater risk of ground compaction (which is more prevalent on clay soils, particularly during wet periods when compression can increase upper surface bulk density and reduce oxygen availability) • **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.**
4.6.4.(d)	*the likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.*	• The RPA incursions are a reduction in all cases on what currently exists (tabulated at Section 5.2.2) • Care will be needed in removal of existing surfacing and detail on this is included within this report. In summary the areas are protected and all surfacing within the RPA's is broken out and removed by hand before it is levelled with BS3882 compliant topsoil imported and raked out in these areas by hand. The new surfacing is in all cases less than exists currently and no special measures are proposed as it replaces what is already there but in a reduced manner. • The key to this (and any scheme) is effective and robust tree protection and measures that seek to retain and respect the landscape below tree canopies/ within RPA's to maintain soil conditions and nutrient recycling. Most of the main tree RPA's on this project are located within 3rd party (given the boundary location of the trees) further enhancing their likely retained integrity.



- ***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. On this project there is an improvement on the basis of proposed hard surface removal from within the RPA of a number of trees.

5.2 Root Protection Area (RPA) Incursions

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

BS 5837 Cat	A	B	C	Summary
RPA Incursion	TG6	T10 & TG2	SG1	**Surface removal, landscaping and new surfacing** – All building footprint incursions are located outside the RPA of retained trees and the only works within the RPA's is the removal of existing surfacing and in places its replacement as detailed for the identified trees. Where there is no replacement surface the work is just to remove surfacing and deliver a positive improvement (by way of soft landscaping in areas where it is currently hard surface). All existing surfacing will be broken out by hand within the RPA's of retained trees ideally operating in a pullback manner (i.e., working away from the trees to track over the remaining surface). This work will be phased to limit the potential impact (undertaken when there is less development activity/ pressure on site). All works within the RPA's of retained trees is to be undertaken by hand. In the event that there is insufficient space **we must be consulted prior to any manipulations to fencing locations**. **Services** – No new services are proposed within the RPA of retained trees but overview hand digging guidance is contained within this report in the event there is any unforeseen need to excavate within the RPA. **There will be no mechanical ground excavation within the RPA of retained trees.** All service installation will be kept under review and any new installations will be undertaken by hand and in accordance with the working principles as defined within 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" if physical excavation becomes a requirement. **Contractors (demo & construction) must be made aware of this requirement.**

5.2.2 The relative incursions into the RPA are summarised as follows

Tree Number	RPA Total (Sqm)	Incursion (Sqm)	As % of trees RPA
T10	162	9 (ex)	5.5%
		3 (pr)	2%
TG2	630	170 (ex)	27%
		6 (pr)	1%
TG6	619	233 (ex)	38%
		127 (pr)	20%
SG1	71	32 (ex)	48%
		8 (pr)	11%

(ex) – existing surfacing, (pr) – proposed surfacing

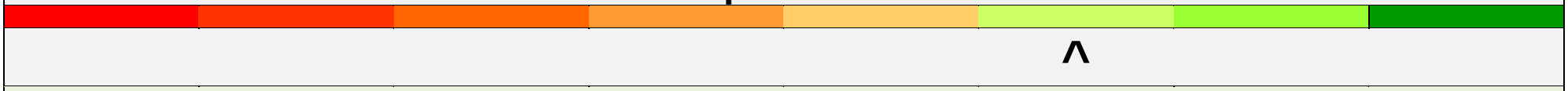
5.2.3 In addition to the above T5, T8, T11, TG3, TG4, TG7 & TG8 will have existing hard surfacing within the RPA removed completely delivering a positive change for these trees subject to the works being completed in a manner that does not damage underlying roots.

5.2.4 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.

5.2.5 It is considered in this instance that there is 'overriding justification' on the basis that the incursions are surfaces only and deliver an actual reduction on the current arrangement and introduce soft landscape areas where they currently do not exist close to the trees.

Tree & Development Risk Indicator



- Our assessment has confirmed the presence of CLAY soil
- Incursions in all cases are a reduction of existing and relate to surfacing only.
- The Tree & Development Risk Indicator (TDRI™) is therefore LOW on the basis that development pressures to the retained trees should be LOW**.**
- **Arboricultural oversight and competent ground workers will be key to the effective delivery of this project.**
- **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 and is advised on this project given the potential CLAY.

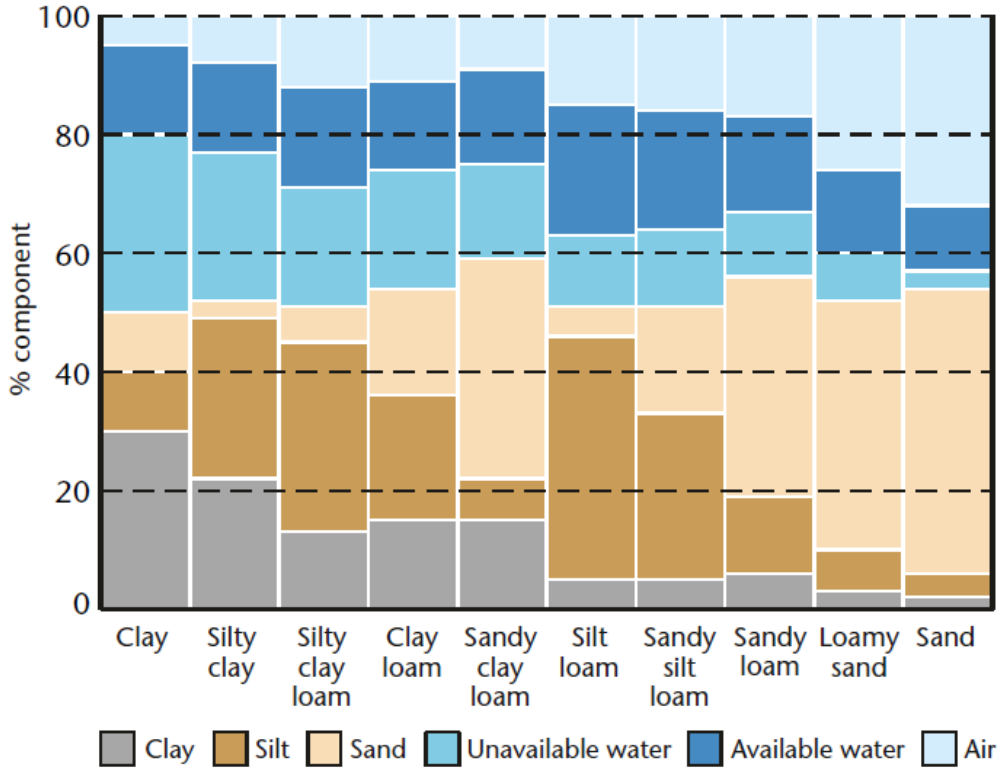


Fig 7 – Diagram showing the typical particulate composition and air/ water content at field capacity for mineral soil types[4] The variation in soil type has a direct bearing on the potential impact of adverse construction techniques (such as soil compaction) as well as overall root system morphology & 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. The immediate underlying soil is indicated as CLAY.

[4] Forestry Commission (2005) The Influence of Soils and Species on Tree Root Depth

5.3 Tree Removal and Pruning Works

5.3.1 The following tree surgery/ removal works have been identified. In all cases the works should accord with BS3998 Tree Works.

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat
TG7	Sycamore, Hawthorn Ash, Elder	Cut back branches to suitable side growth points, works to accord with BS3998.	**C1**
TG8	Sycamore, Cherry, Ash, Hawthorn, Poplar	Cut back branches to suitable side growth points, works to accord with BS3998.	**B2**
SG1	Hawthorn, Cypress, Elder, Laurel ,Ivy	Cut back branches to suitable side growth points, works to accord with BS3998.	**C1**

Proposed Removal

Tree No.	Species	Proposed Tree Works	BS Cat
T3	Maple (Norway)	Remove. All works to accord with BS3998 Tree Works.	**B2**
T4	Plane (London)	Remove. All works to accord with BS3998 Tree Works.	**C1**
T6	Sycamore	Remove on health and safety grounds.	**U**
TG1	Mixed Species tree group	Remove section to allow provision of access road. Works to be undertaken to suitable tree or trees with symmetry to form new east and west 'edge' within the group. All works to accord with BS3998 Tree Works.	**B2**

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

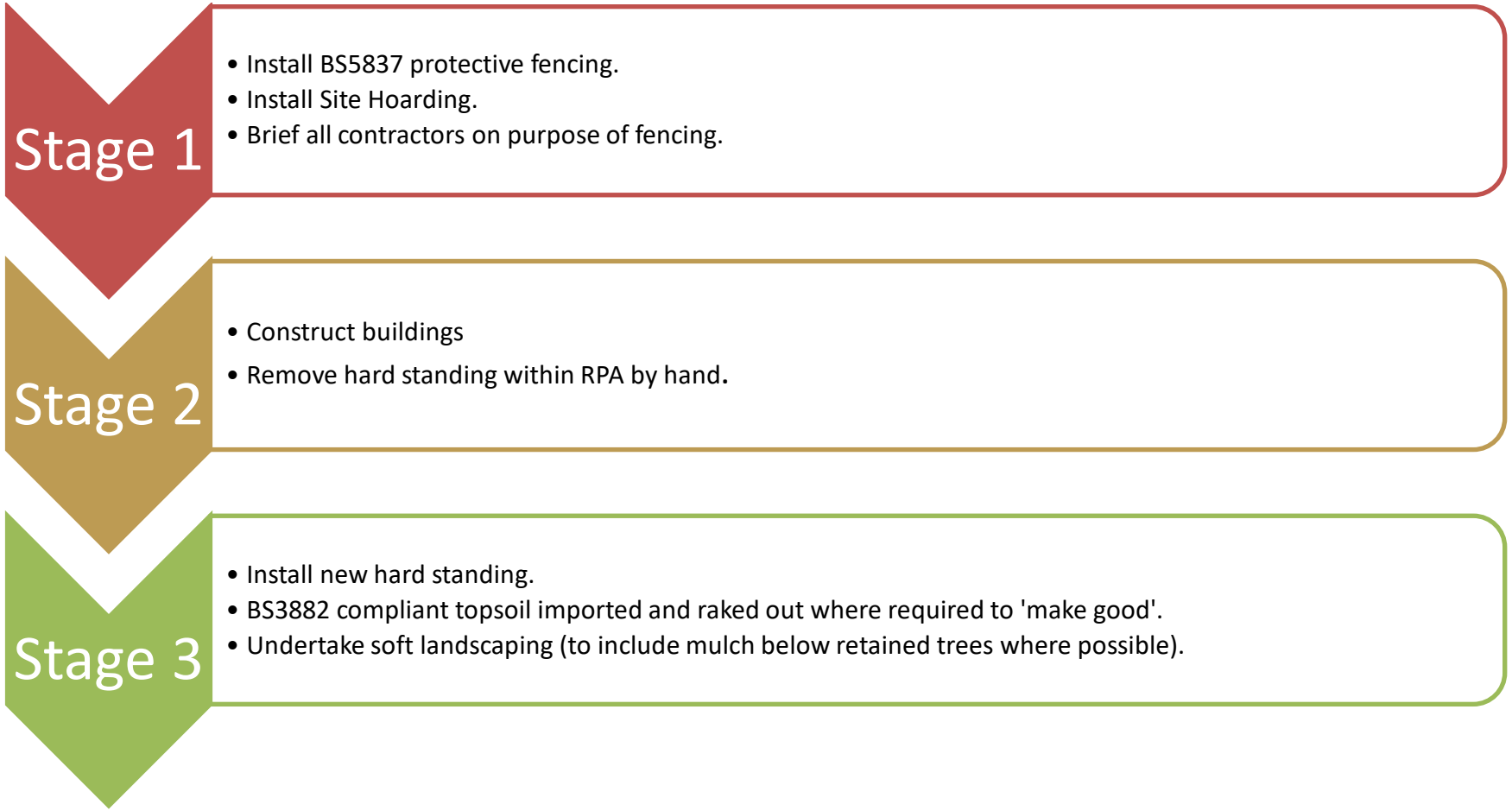
- Existing clearance levels from trees to building are good and as such any pruning pressures from granting permission would appear minimal.
- T10, TG2, SG1 and part of TG6 likely to require intermittent repeat pruning.
- **Note:** This is an indicative assessment. All and any future works should be 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 many 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/guidance-publications/

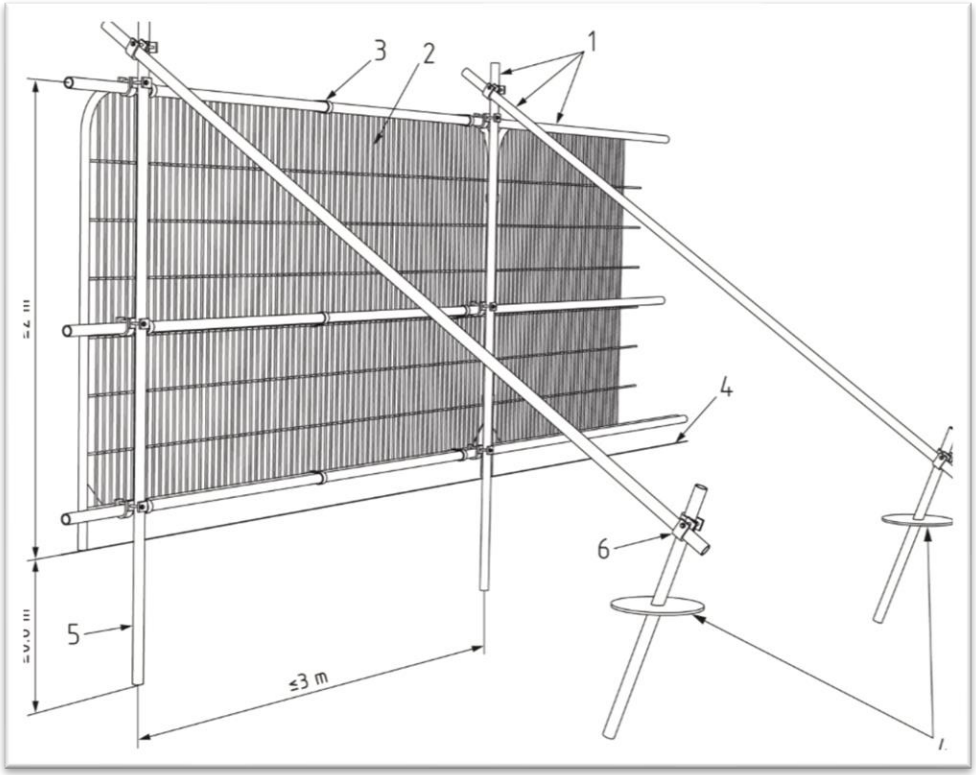
5.4 Demolition & Foundations

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:



5.4.2 High quality BS5837 compliant tree protection will then be installed prior to any further on-site works:

Tree Protection



Overview

- ***Tree protection required internally to site.***
- ***Installed prior to any on site works.***
- ***Full spec shown left, posts driven through existing hard standing.***
- ***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

Tree Protection

Overview

- ***Tree protection required internally to site.***
- ***Installed prior to any on site works.***
- ***If hoarding within RPA's support on counter weighted blocks (left).***
- ***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 8 – 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. *Note:* *High quality jpg/ png image available upon request*

5.4.4 Temporary Ground Protection is not currently indicated **but must be used in all cases where surface is removed within RPA's and movement required.** 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. To be kept under review as part of site inspection process.

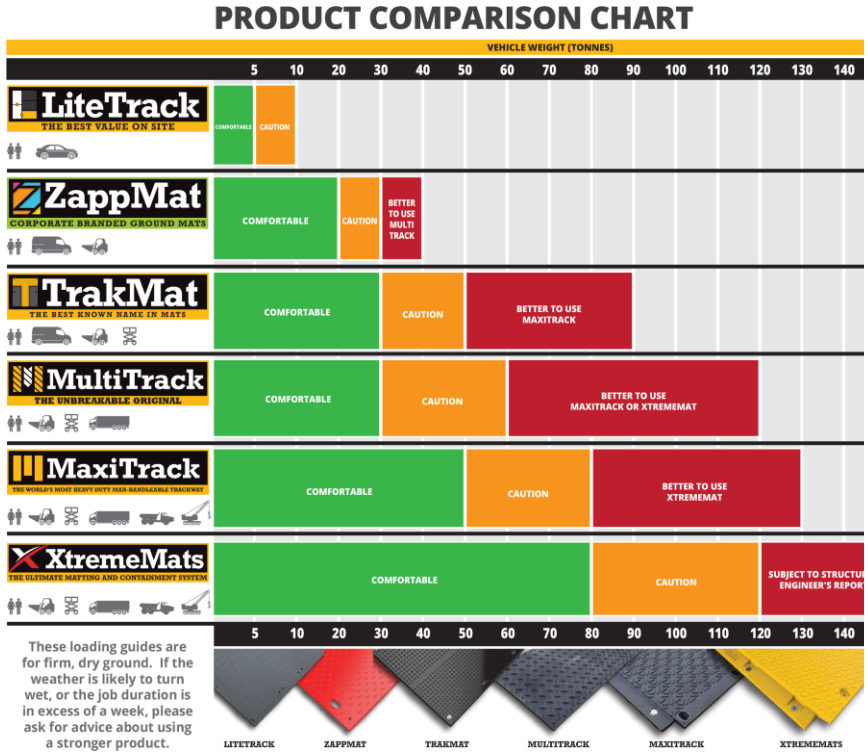


Fig 9 –The construction firm/ contractors must ensure that any areas where fencing may be moved (temporary or otherwise) leads to exposed ground being covered with suitable temporary ground protection. This approach maximises the integrity of retained tree RPA's.

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*)

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

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

SITE TREES ARE NOW ADEQUATELY PROTECTED AND CONSTRUCTION ACTIVITY CAN COMMENCE

5.5 Surfaces near Trees

5.5.1 The proposal moves from existing hard standing to a revised layout where this is reduced. The risk is in transitioning from existing to proposed:

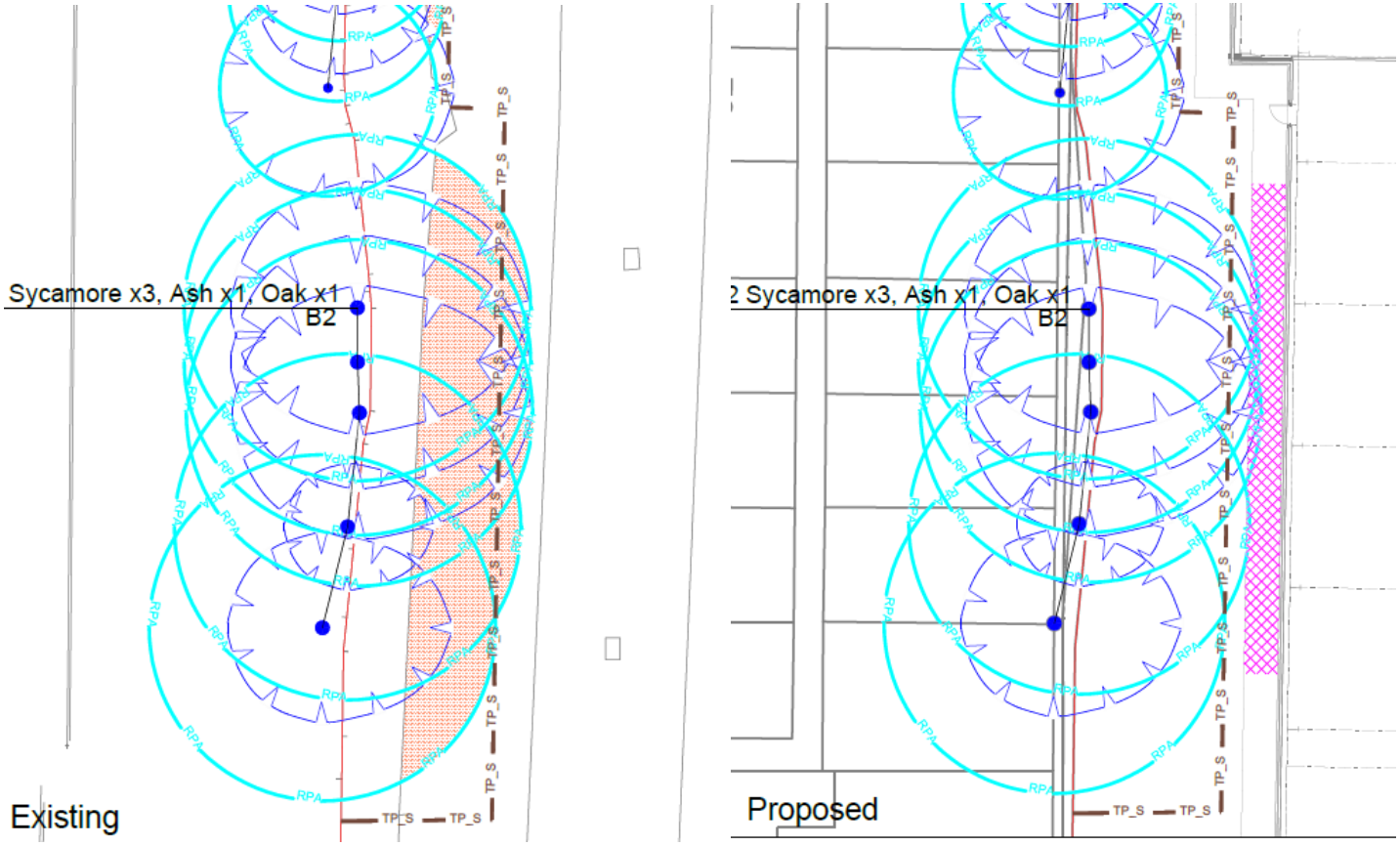
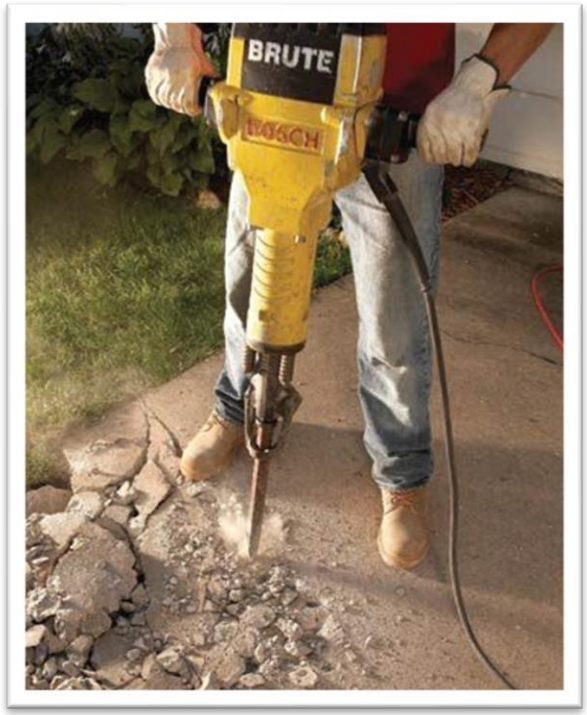


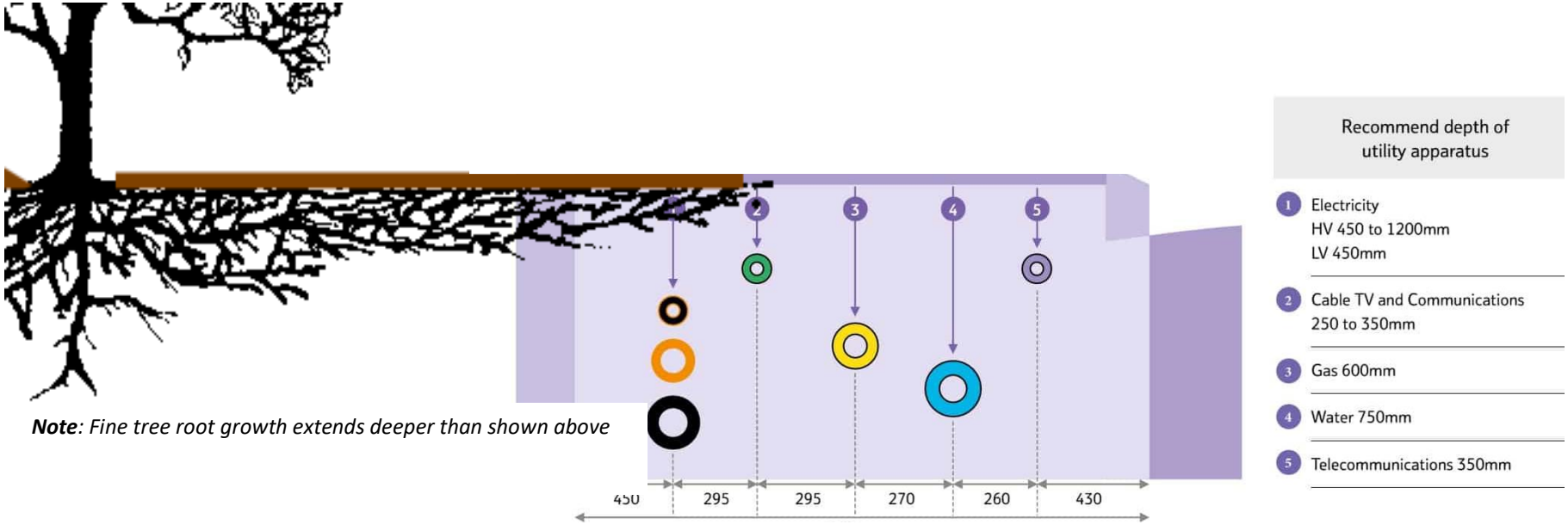
Fig 11 – Existing hard surface will be removed (left) and replaced with a smaller level of surface (right)

5.5.2 All surface removal works will be undertaken by hand and topsoil then raked out once this has been removed. All new surfacing will not extend to depths (by way of subbase) below existing subbase depths. Given the significant reduction based on the current arrangement no special (no dig surfaces) are proposed:

Surface Removal	
	**Overview** • *Toolbox talk* • *Removed by hand (left)* • *Working back over existing surface (left)* • *Topsoil then imported and raked out.*
Threat Level to Retained Trees	**MODERATE**

5.6 Site Service Provision

5.6.1 It is envisaged that the proposal ties into the existing site service connections. Any further or unforeseen service excavations within RPA's will be hand dug (where initial exploratory dig work confirms roots to be present) with the route seeking to maximise spatial distance from retained trees and avoid incursions into RPA's where possible. On this project currently none are advised and this information is an advisory overview.



***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 **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. All excavation should, where possible be avoided and this information provides an overview of the process in the event it becomes necessary.

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

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.

5.6.6 **WARNING:** Breaking the ground has the potential to uncover services/ destabilise adjacent structures etc. Some general advice from the HSE can be found here. The site-specific assessment of this project is such that we do not consider there to be a risk of significant root damage from either a strip or pile and beam footing.

5.6.7 **Root Wrapping/ Protection:** In the event the footing works expose any roots >25mm in diameter these must be wrapped or protected with a covering of soil if left exposed overnight or for longer than any single 4-hour period before backfilling following service install.

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**

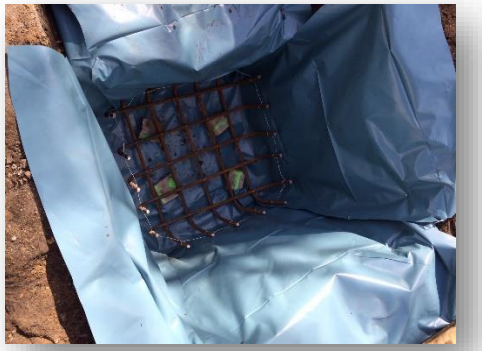
5.7 Landscaping & Tree Planting

5.7.1 Ground levels remain unchanged other than removal and replacement of existing surfacing. 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. Further comment on landscaping is outside the scope of this report.

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

5.7.2 Any new boundary fencing should be coordinated to maximize the post hole locations from the stems of retained trees. Post holes will be hand dug retaining roots >25mm and lined prior to any wet concrete pour to support the posts.

Site Boundary Fencing within RPA's



Overview

- ***Post set out to maximise distance from tree stems.***
- ***Hand dug (left)***
- ***Roots >25mm retained.***
- ***Post hole lined before any concrete pour (inset)***

Threat Level to Retained Trees	LOW / MODERATE

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

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

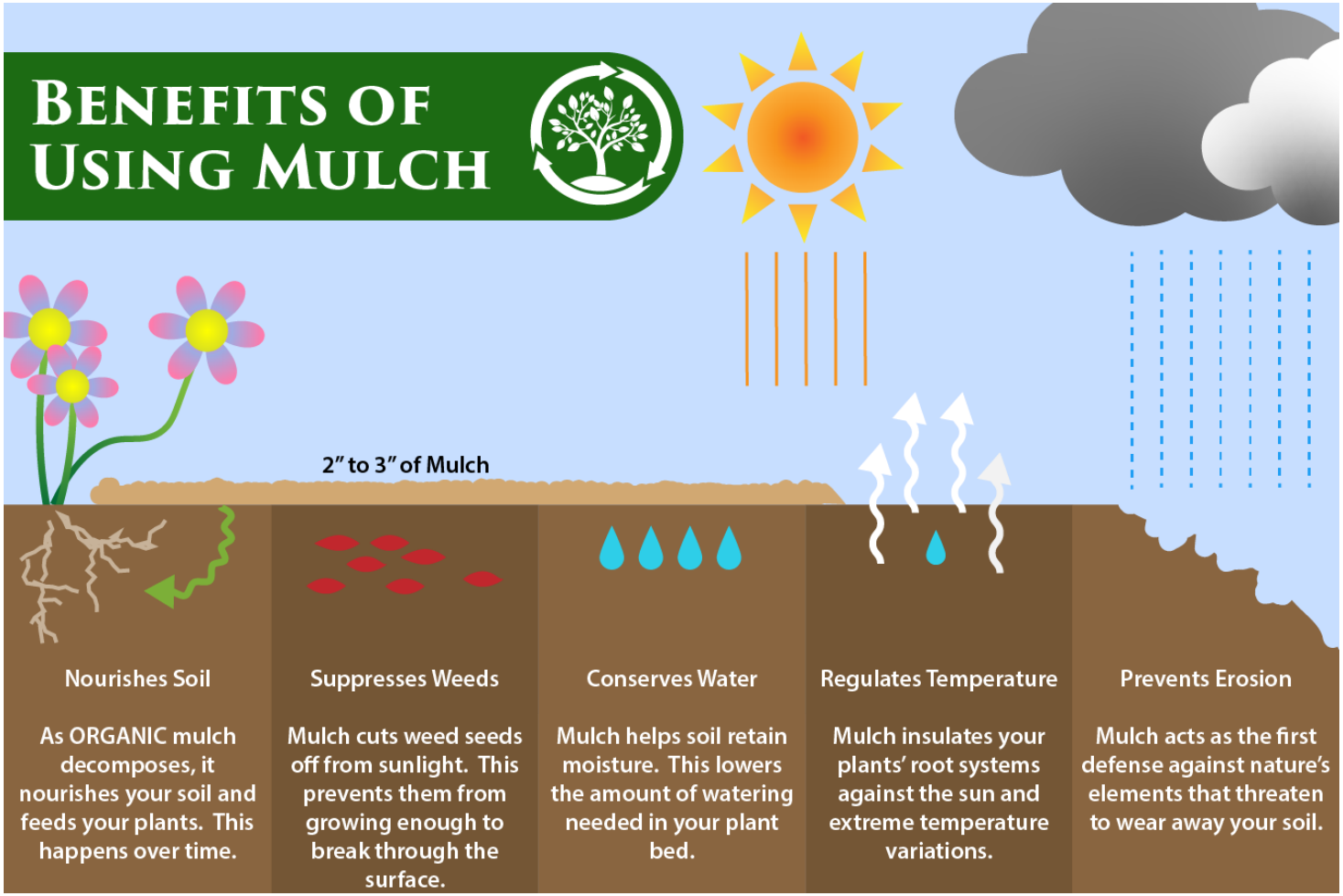


Fig 15 – Benefits of Mulch (Image Source 1st Stop Landscape Supply (US)

5.7.4 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**

5.7.5 New tree planting is encouraged as this will diversify the age class of trees and delivers a more sustainable development process.

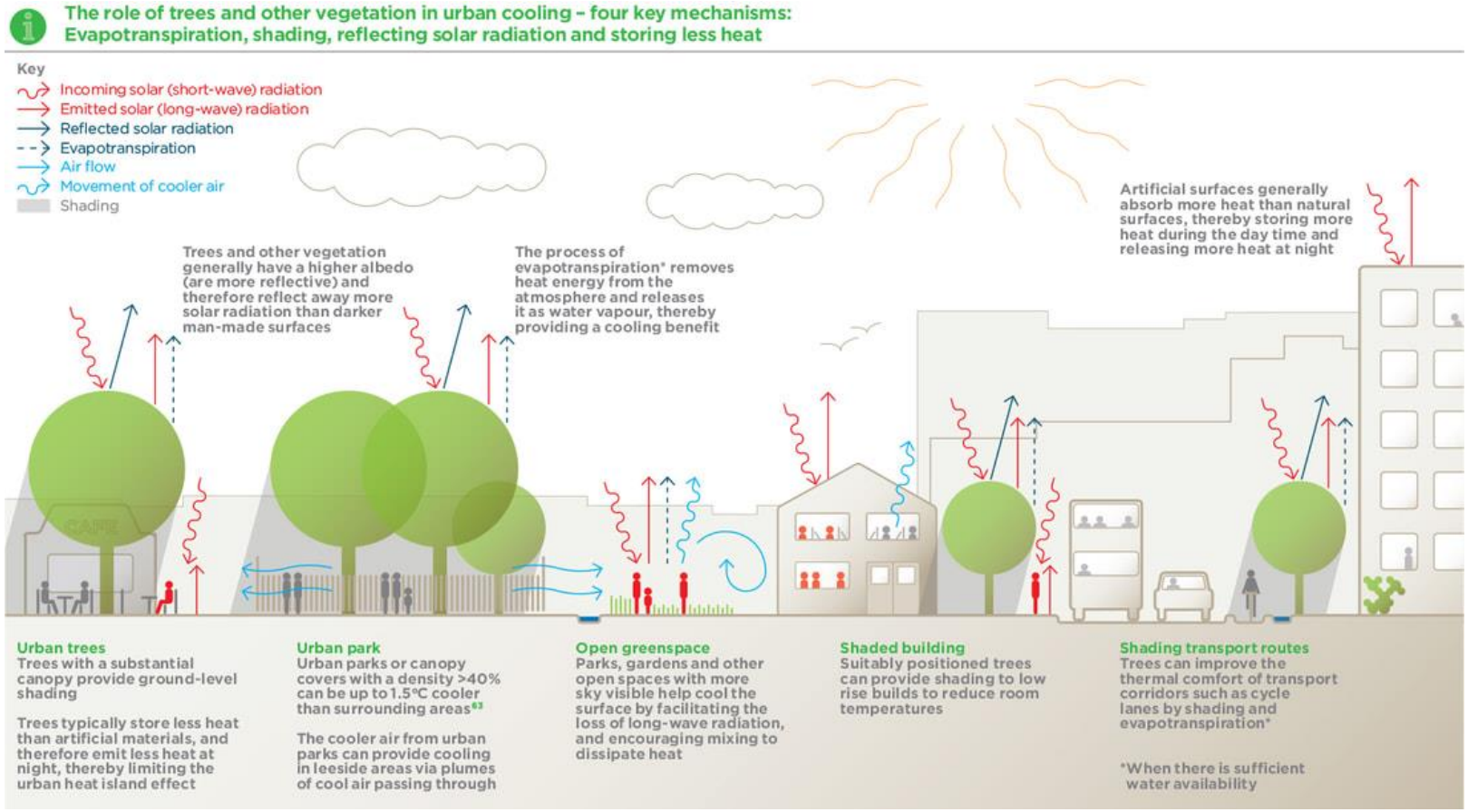


Fig 16 – Trees (both retained and planted) offer significant benefits in a world of changing climate dynamics. Development presents opportunities for tree planting. (Image source: https://www.tdag.org.uk/) **Further advice on tree planting is available upon request.**

5.8 Tree Shading of Proposal

5.8.1 The proposal is an industrial unit and issues of potential shading from trees are not considered relevant to the project.

5.9 Arboricultural Project Supervision

5.9.1 Most damage to trees on developments sites is caused inadvertently and to ensure continued protection during development a system of site monitoring is normal.

5.9.2 Basic checks will be undertaken as the construction phase progresses to ensure that protective fencing remains intact and ensure the proposed works close to trees are completed in accordance with this report. Any unforeseen issues can be identified and discussed with the consulting arboriculturalist before any damage to trees occurs.

5.9.3 This approach allows a strong working relationship with the site manager/ construction staff to identify issues that may affect retained trees and ensure they are addressed before they escalate.

5.9.4 After each site inspection is completed, a formal record will be sent to the local authority. On this basis we would advise the following inspection regime:

Visit Detail	Date	Status
1st Site Inspection Attend site once tree protection is in place. Inspect/ Toolbox talk with site operatives regarding tree protection measures. Update local authority on findings.	**TBC**	**Incomplete**
Undertake announced & unannounced site inspections at 8-week intervals for the duration of the build.		
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	Maple (Norway)	0.22	1	7	3.7	2.7	3	3.6	B2	Early mature	20 to 40	2.5	Established tree but reduced growth given poor growing conditions.	No works	2.6
T2	Maple (Norway)	0.17	1	8	2.2	2.4	2.2	3	B2	Early mature	20 to 40	2.5	Established tree but reduced growth given poor growing conditions.	No works	2
T3	Maple (Norway)	0.23	1	8	3.1	3	3.3	2.7	B2	Early mature	20 to 40	2.5	Established tree but reduced growth given poor growing conditions.	Remove. All works to accord with BS3998 Tree Works.	2.8
T4	Plane (London)	0.14	1	8	2.7	3	2.8	2.8	C1	Early mature	20 to 40	2.5	Establishing tree.	Remove. All works to accord with BS3998 Tree Works.	1.7
T5	Sycamore	0.18	1	6	3	3.7	2.2	3	C1	Young	20 to 40	1.8	Small self-set 3rd party tree.	No works	2.2

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	Sycamore	0.6	1	16	6.1	5.8	6	6	U	Mature	<10	2	Nearly dead. Will not recover. 3rd party tree requires removal on h & s grounds.	Remove on health and safety grounds.	7.2
T7	Sycamore	0.24	1	7	2.9	3.8	3.6	3	C1	Semi-mature	20 to 40	1	Low quality self-set tree.	No works	2.9
T8	Elder	0.4	M/S	4	4	2.9	2.8	2.8	C1	Mature	20 to 40	1.6	Large for species. Ivy establishing. Low wider amenity given small size.	No works	4.8
T9	Sycamore	0.4	1	13	5	5.5	5.5	5	B2	Mature	> 40	1.8	3rd party tree with no access to inspect. Appears good form.	No works	4.8
T10	Pine (Scots)	0.6	M/S	7	6	7	7	6.8	B2	Mature	> 40	1.5	3rd party trees with no access to inspect. Not without character. Low branches over site boundary. Hawthorn below.	No works	7.2

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	Sycamore	0.4	1	13	6.3	6	5.5	5	B2	Mature	> 40	1.4	3rd party tree with no access to inspect. Appears good form.	No works	4.8
TG 1	Mixed Species tree group	0.25	1	14	4	4	4	4	B2	Early mature	>40	1	Sycamore & Cotoneaster dominate but other species present. Appears to be planted screening group. No access to inspect. Area is collecting excessive fly tipping/ rubbish.	Remove section to allow provision of access road. Works to be undertaken to suitable tree or trees with symmetry to form new east and west 'edge' within the group. All works to accord with BS3998 Tree Works.	3
TG 2	Sycamore x 3, Ash x 1, Oak x 1	0.8	1	21	7	9.5	7	7	B2	Mature	20 to 40	2	Mature 3rd party trees with no access to inspect. Some localised removal of overhanging branches. Ash may succumb to Ash Dieback, minor decay evident.	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							
TG 3	Sycamore x 8	0.5	1	19	6	7	6	6	B2	Mature	> 40	1.5	Established 3rd party trees with no access to inspect. Offers in leaf screening between site and residential properties.	No works	6
TG 4	Sycamore x 4	0.24	M/S	8	4	4.4	4	4	C1	Semi-mature	20 to 40	1	Low quality self-set trees within site boundary.	No works	2.9
TG 5	Sycamore x 5	0.3	M/S	9	4	3	4	3	C1	Early mature	20 to 40	1	Ownership unclear. Localised screening in leaf but low-level amenity trees.	No works	3.6
TG 6	Lime x 5	0.65	1	14	7	7	7.5	7	A2	Mature	> 40	1.8	3rd party trees with no access to inspect. Strong visual feature. In leaf screening.	No works	7.8
TG 7	Sycamore, Hawthorn Ash, Elder	0.14	M/S	4	1.5	1.5	1.5	1.5	C1	Semi-mature	20 to 40	0	Low level close grown scrub.	Cut back branches to suitable side growth points, works to accord with BS3998.	1.7

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							
TG 8	Sycamore, Cherry, Ash, Hawthorn, Poplar	0.3	1	13	4.5	4.5	4.5	4.5	B2	Early mature	> 40	1	Linear site edge landscape planting which has grown out. Appears possible hedge between larger individuals and could be brought back under management to offer established landscape feature. Hedge laid/ pruned between the individual trees. Ash present so chance of decline given prevalence of Ash Dieback.	Cut back branches to suitable side growth points, works to accord with BS3998.	3.6
SG 1	Hawthorn, Cypress, Elder, Laurel ,Ivy	0.08	1	3	1.5	1.5	1.5	1.5	C1	Mature	20 to 40	1.4	Low level shrubs/ mall trees in undefined ivy-covered boundary.	Cut back branches to suitable side growth points, works to accord with BS3998.	1

Appendix 4 – Tree Works Schedule

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat
TG7	Sycamore, Hawthorn Ash, Elder	Cut back branches to suitable side growth points, works to accord with BS3998.	**C1**
TG8	Sycamore, Cherry, Ash, Hawthorn, Poplar	Cut back branches to suitable side growth points, works to accord with BS3998.	**B2**
SG1	Hawthorn, Cypress, Elder, Laurel ,Ivy	Cut back branches to suitable side growth points, works to accord with BS3998.	**C1**

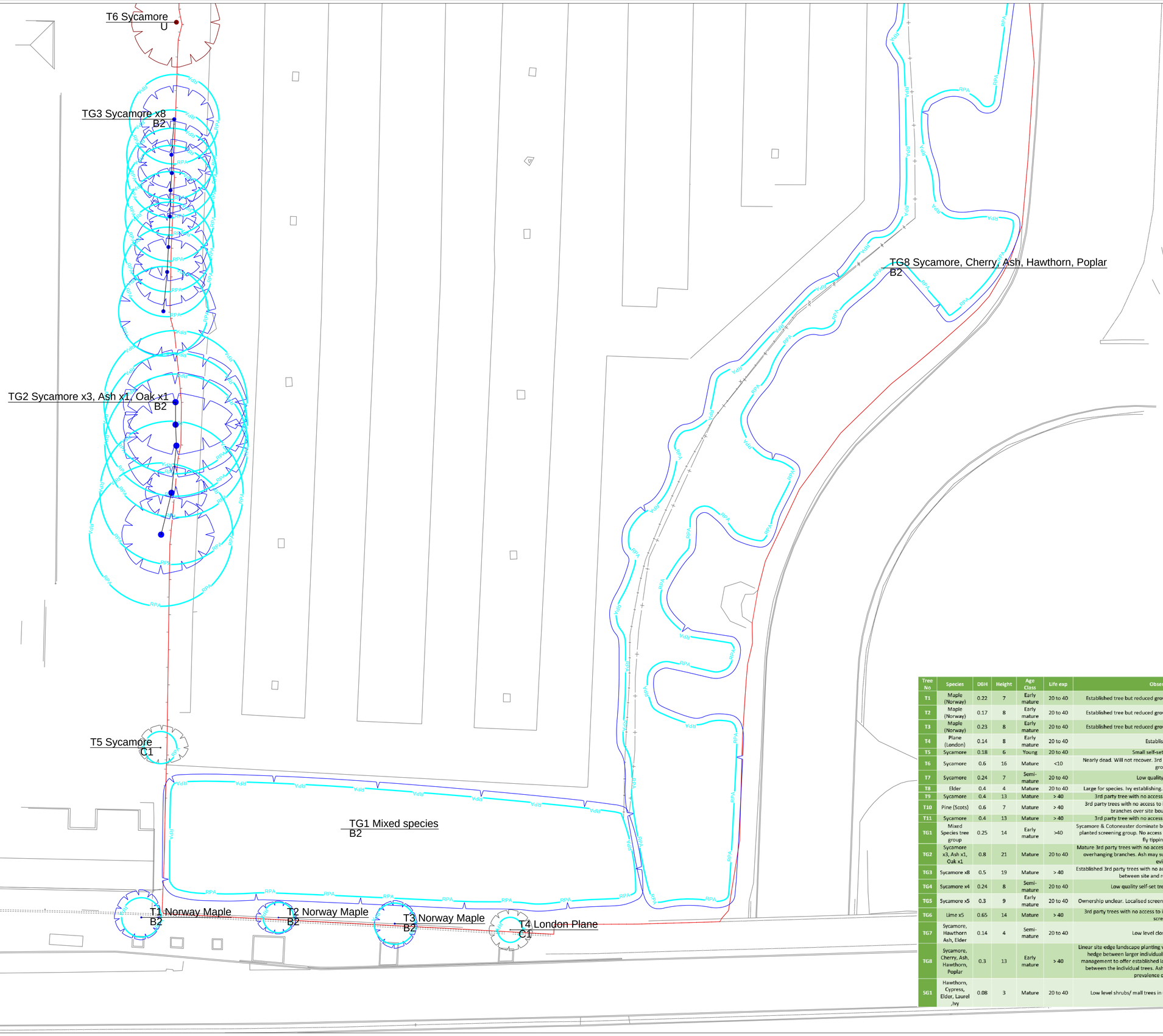
Proposed Removal

Tree No.	Species	Proposed Tree Works	BS Cat
T3	Maple (Norway)	Remove. All works to accord with BS3998 Tree Works.	**B2**
T4	Plane (London)	Remove. All works to accord with BS3998 Tree Works.	**C1**
T6	Sycamore	Remove on health and safety grounds.	**U**
TG1	Mixed Species tree group	Remove section to allow provision of access road. Works to be undertaken to suitable tree or trees with symmetry to form new east and west 'edge' within the group. All works to accord with BS3998 Tree Works.	**B2**

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 Survey Drawing Key

Root Protection Area m2
Tree Canopy Extent
Stem Location / Coloured disc denotes BS: 5837 Category
T1 Tree Number

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	Maple (Norway)	0.22	7	Early mature	20 to 40	Established tree but reduced growth given poor growing conditions.	B2	2.6
T2	Maple (Norway)	0.17	8	Early mature	20 to 40	Established tree but reduced growth given poor growing conditions.	B2	2.0
T3	Maple (Norway)	0.23	8	Early mature	20 to 40	Established tree but reduced growth given poor growing conditions.	B2	2.8
T4	Plane (London)	0.14	8	Early mature	20 to 40	Establishing tree.	C1	1.7
T5	Sycamore	0.18	6	Young	20 to 40	Small self-set 3rd party tree.	C1	2.2
T6	Sycamore	0.6	16	Mature	<10	Nearly dead. Will not recover. 3rd party tree requires removal on h & s grounds.	U	7.2
T7	Sycamore	0.24	7	Semi-mature	20 to 40	Low quality self-set tree.	C1	2.9
T8	Elder	0.4	4	Mature	20 to 40	Large for species. Ivy establishing. Low wider amenity given small size.	C1	4.8
T9	Sycamore	0.4	13	Mature	> 40	3rd party tree with no access to inspect. Appears good form.	B2	4.8
T10	Pine (Scots)	0.6	7	Mature	> 40	3rd party trees with no access to inspect. Not without character. Low branches over site boundary. Hawthorn below.	B2	7.2
T11	Sycamore	0.4	13	Mature	> 40	3rd party tree with no access to inspect. Appears good form.	B2	4.8
TG1	Mixed Species tree group	0.25	14	Early mature	>40	Sycamore & Cotoneaster dominate but other species present. Appears to be planted screening group. No access to inspect. Area is collecting excessive fly tipping/ rubbish.	B2	3.0
TG2	Sycamore x3, Ash x1, Oak x1	0.8	21	Mature	20 to 40	Mature 3rd party trees with no access to inspect. Some localised removal of overhanging branches. Ash may succumb to Ash Dieback, minor decay evident.	B2	9.6
TG3	Sycamore x8	0.5	19	Mature	> 40	Established 3rd party trees with no access to inspect. Offers in leaf screening between site and residential properties.	B2	6.0
TG4	Sycamore x4	0.24	8	Semi-mature	20 to 40	Low quality self-set trees within site boundary.	C1	2.9
TG5	Sycamore x5	0.3	9	Early mature	20 to 40	Ownership unclear. Localised screening in leaf but low-level amenity trees.	C1	3.6
TG6	Lime x5	0.65	14	Mature	> 40	3rd party trees with no access to inspect. Strong visual feature. In leaf screening.	A2	7.8
TG7	Sycamore, Hawthorn Ash, Elder	0.14	4	Semi-mature	20 to 40	Low level close grown scrub.	C1	1.7
TG8	Sycamore, Cherry, Ash, Hawthorn, Poplar	0.3	13	Early mature	> 40	Linear site edge landscape planting which has grown out. Appears possible hedge between larger individuals and could be brought back under management to offer established landscape feature. Hedge laid/ pruned between the individual trees. Ash present so chance of decline given prevalence of Ash Dieback.	B2	3.6
SG1	Hawthorn, Cypress, Elder, Laurel ,Ivy	0.08	3	Mature	20 to 40	Low level shrubs/ mall trees in undefined ivy-covered boundary.	C1	1.0

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

REV	AMENDMENTS	DRAWN	DATE	AUTH'D

PROJECT
Terminals 2-3 Heathrow
Heathrow Flightpath,
West Drayton UB7 0DU

CLIENT
Aprirose Real Estate Investment

TITLE
Tree Constraint Plan (TCP)

JOB	Scale	DRG NO	Revision
03528R	1:250 @ A1	03528P_TCP_03	-
DATE 17/05/2022	Type a		

Tel: 01252 811 233
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Tamla Trees consulting arborists

SG1 Hawthorn, Cypress, Elder, Laurel ,Ivy
C1

TG6 Lime x5
A2

T11 Sycamore
B2

T9 Sycamore
B2

TG5 Sycamore x5
C1

T10 Scots Pine
B2

TG7 Sycamore, Hawthorn Ash, Elder
C1

T8 Elder
C1

T7 Sycamore
C1

TG4 Sycamore x4
C1

T6 Sycamore
U

TG3 Sycamore x8
B2

TG8 Sycamore, Cherry, Ash, Hawthorn, Poplar
B2

Tree No.	Species	DBH	Height	Age Class	Life exp	Observations	BS Cat	RPR
T1	Maple (Norway)	0.22	7	Early mature	20 to 40	Established tree but reduced growth given poor growing conditions.	B2	2.6
T2	Maple (Norway)	0.17	8	Early mature	20 to 40	Established tree but reduced growth given poor growing conditions.	B2	2.0
T3	Maple (Norway)	0.23	8	Early mature	20 to 40	Established tree but reduced growth given poor growing conditions.	B2	2.8
T4	Plane (London)	0.14	8	Early mature	20 to 40	Establishing tree.	C1	1.7
T5	Sycamore	0.18	6	Young	20 to 40	Small self-set 3rd party tree.	C1	2.2
T6	Sycamore	0.6	16	Mature	<10	Nearly dead. Will not recover. 3rd party tree requires removal on h & s grounds.	U	7.2
T7	Sycamore	0.24	7	Semi-mature	20 to 40	Low quality self-set tree.	C1	2.9
T8	Elder	0.4	4	Mature	20 to 40	Large for species. Ivy establishing. Low wider amenity given small size.	C1	4.8
T9	Sycamore	0.4	13	Mature	> 40	3rd party tree with no access to inspect. Appears good form.	B2	4.8
T10	Pine (Scots)	0.6	7	Mature	> 40	3rd party trees with no access to inspect. Not without character. Low branches over site boundary. Hawthorn below.	B2	7.2
T11	Sycamore	0.4	13	Mature	> 40	3rd party tree with no access to inspect. Appears good form.	B2	4.8
TG1	Mixed Species tree group	0.25	14	Early mature	>40	Sycamore & Cotoneaster dominate but other species present. Appears to be planted screening group. No access to inspect. Area is collecting excessive fly tipping/ rubbish.	B2	3.0
TG2	Sycamore x3, Ash x1, Oak x1	0.8	21	Mature	20 to 40	Mature 3rd party trees with no access to inspect. Some localised removal of overhanging branches. Ash may succumb to Ash Dieback, minor decay evident.	B2	9.6
TG3	Sycamore x8	0.5	19	Mature	> 40	Established 3rd party trees with no access to inspect. Offers in leaf screening between site and residential properties.	B2	6.0
TG4	Sycamore x4	0.24	8	Semi-mature	20 to 40	Low quality self-set trees within site boundary.	C1	2.9
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TG6	Lime x5	0.65	14	Mature	> 40	3rd party trees with no access to inspect. Strong visual feature. In leaf screening.	A2	7.8
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SG1	Hawthorn, Cypress, Elder, Laurel ,Ivy	0.08	3	Mature	20 to 40	Low level shrubs/ mall trees in undefined ivy-covered boundary.	C1	1.0

Tree Survey Drawing Key

Root Protection Area m2
Tree Canopy Extent
Stem Location / Coloured disc denotes BS: 5837 Category
T1
Tree Number

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
Terminals 2-3 Heathrow
Heathrow Flightpath,
West Drayton UB7 0DU

CLIENT
Aprirose Real Estate Investment

TITLE
Tree Constraint Plan (TCP)

JOB	Scale	DRG NO	Revision
03528R	1:250 @ A1	03528P_TCP_04	-
DATE 17/05/2022	Type a		

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Tamla Trees consulting arborists

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Root Protection Area m2
Tree Canopy Extent
Stem Location / Coloured disc denotes BS: 5837 Category
Tree Number
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REV	AMENDMENTS	DRAWN	DATE	AUTH'D

PROJECT
Terminals 2-3 Heathrow
Heathrow Flightpath,
West Drayton UB7 0DU

CLIENT
Aprirose Real Estate Investment

TITLE
Tree Constraint Plan (TCP)

JOB	03528R	SCALE	1:250 @ A1	DRG NO	03528P_TCP_03	Revision
DATE	17/05/2022	TYPE	a			-

Tel: 01252 811 233
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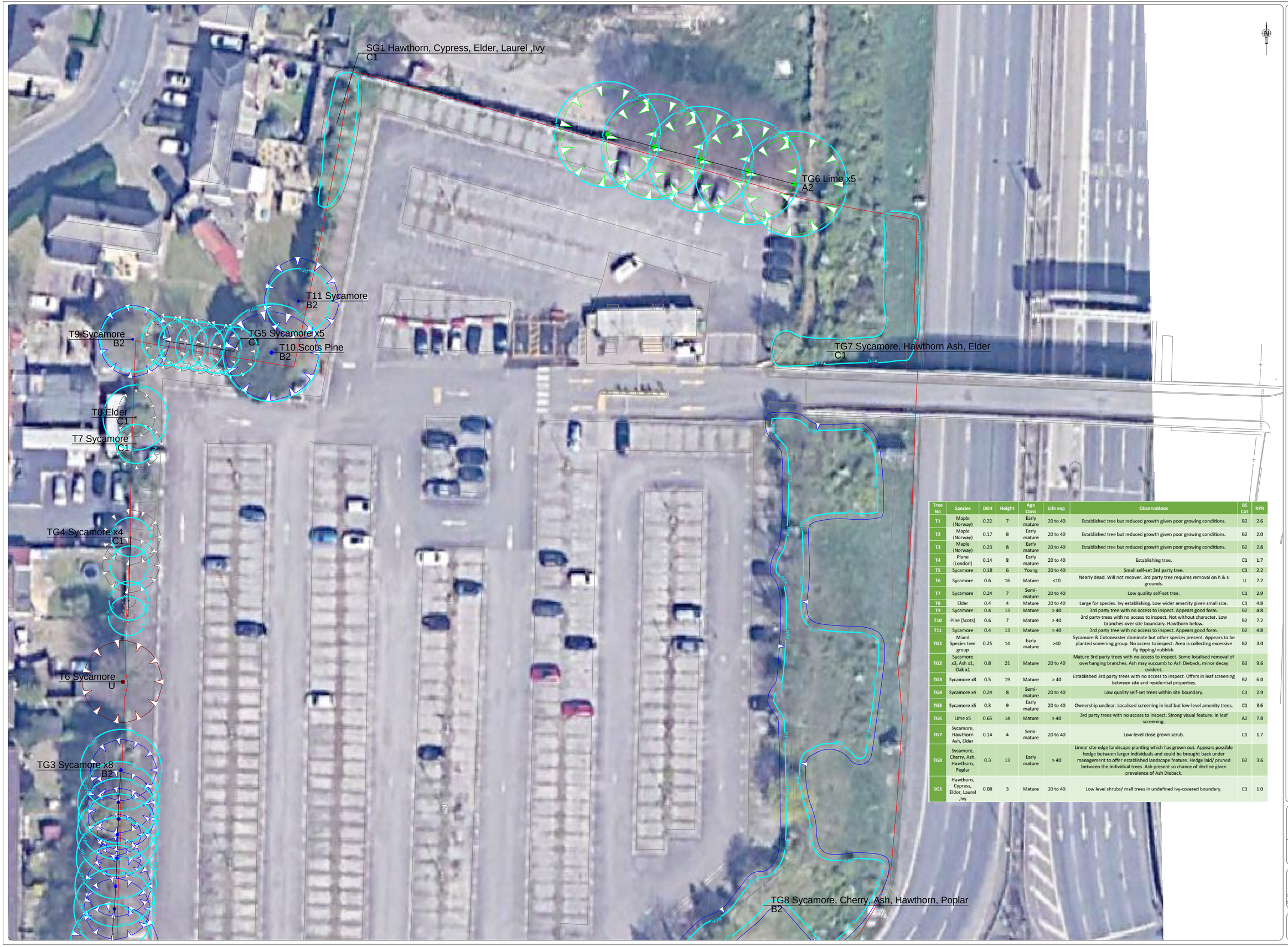
Tamla Trees consulting arborists



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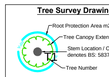
Tree Survey Drawing Key



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
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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
Terminals 2-3 Heathrow
Heathrow Flightpath,
West Drayton UB7 0DU

CLIENT
Aprirose Real Estate Investment

TITLE
Tree Constraint Plan (TCP)

JOB	03526R	SCALE	1:250 @ A1	DRG NO	03526P_TCP_04	Revision
DATE	17/05/2022	BY	IE			-

Tel: 01252 811 233
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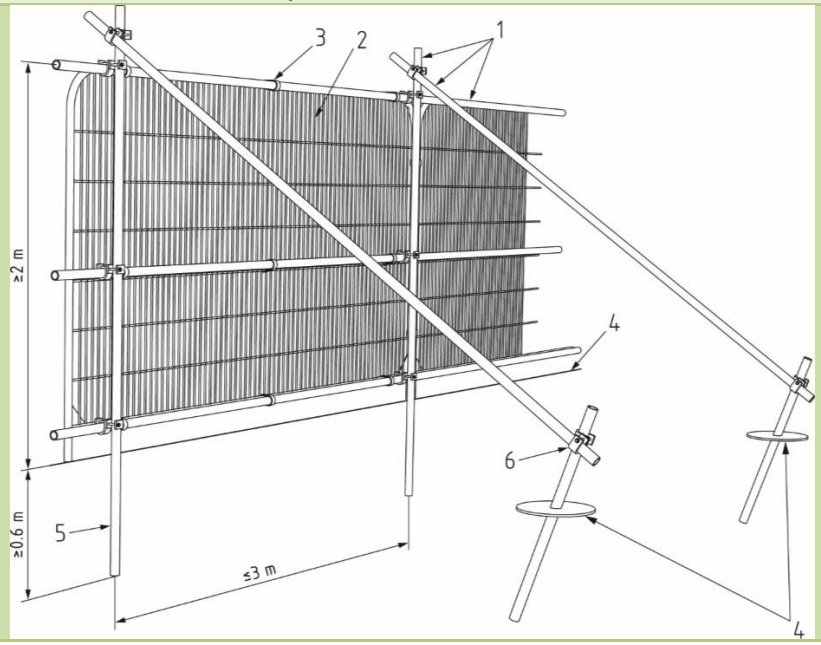
Tamla Trees consulting arborists

Appendix 6 - Tree Protection Plan

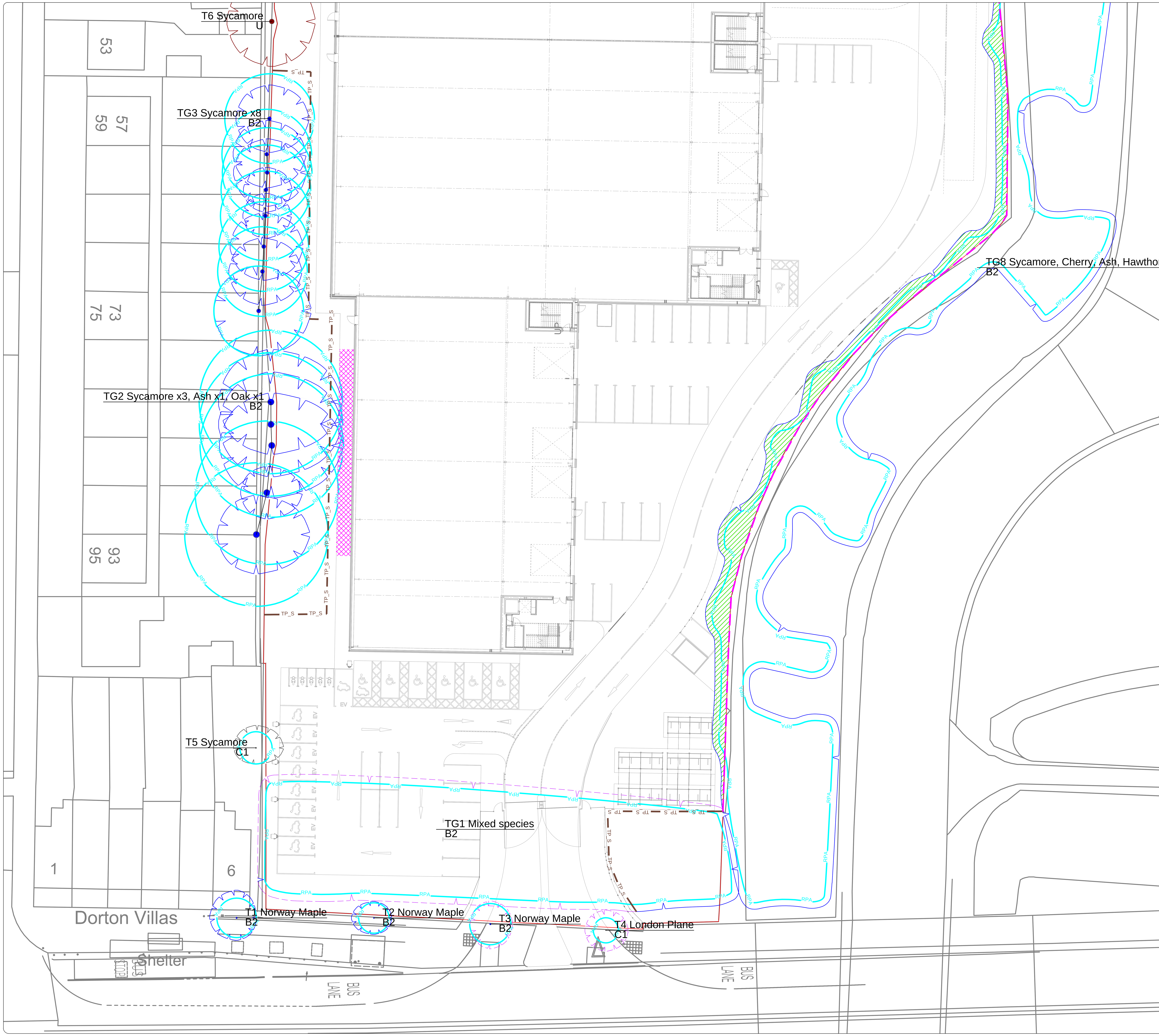
Tree protection is essential to successfully integrate the proposal into the surrounding trees. It is designed to manage the impact on the underlying soil and rooting environment. It must therefore be installed prior to any further site activity. Even apparently minimal tracking of the soil near trees 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) proposed and to be manipulated to reflect site features/ available space for installation.**
- **Maintained for the duration of all site works.**




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

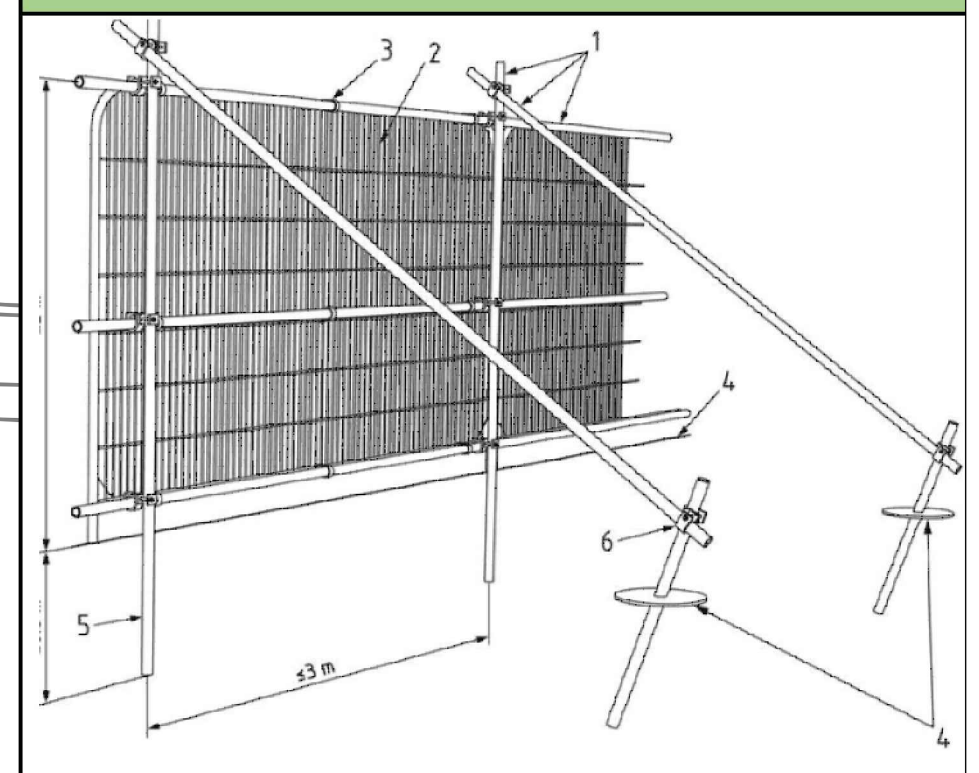


TREE PROTECTION AREA

- *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.

Tree Protection Specification



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

- *Scaffold frame should be spaced at a maximum interval of 3 m and driven securely into the ground.*
- *Welded mesh panels should be securely fixed.*
- *Care should be exercised when locating the vertical poles to avoid underground services and, structural tree roots.*
- *Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray.*
- *Fencing should not be moved without prior approval.*

Tree Survey Drawing Key

- Root Protection Area m2
- Tree Canopy Extent
- Stem Location / Coloured disc denotes BS: 5837 Category
- Tree Number

See Tamla Trees, Tree Survey for Individual Tree Details

KEY

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- Category A - Trees of high quality
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- RPA - root protection area as defined by Table 2 BS 5837:2012
- Proposed removal - to facilitate Development
- Location of protective fencing - Scaffold Frame Fence
- Location of protective fencing - BS 5837 Herras Fence (or similar)
- Site hoarding
- Canopy cut back to boundary in accordance with BS3998
- Proposed hardstanding

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

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03528R	1:250 @ A1	03528P_TPP_03	C
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