BS5837 Arboricultural Impact Assessment & Method Statement



31A Wood Lane, Fleet, Hampshire, GU51 3EA

Client: R Taylor

Job Reference: 05014R

Planning Ref: -

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

MEWI, AARC, APAEWE)

December 2023





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1. Executive Summary

- 1.1 Tamla Trees ltd has been appointed by R Taylor to provide advice on the arboricultural issues relating to proposed development which can be described as: "Demolition of existing garage with replacement side extension, front porch extension." .
- 1.2 We surveyed the site in December 2023. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction Recommendations". No trees need to be removed or pruned to facilitate the proposed works. T5 (Bay Laurel) is proposed for removal at the request of the client to maximise garden space and enhance the amenity/ views of T6 (Persian Ironwood) which offers greater amenity to the garden area.
- 1.3 The main constraint trees are T1 (Oak) and TG1 (Cypress) to the front of the site. The existing driveway will be supplemented with ground protection. To the rear trees are more distant from the proposed work areas. A system of tree protection (Herras fencing) will also be used to ensure all remaining trees (front & rear) are adequately protected through the development process (see Appendix 6 Tree Protection Plan).
- 1.4 All protection measures will be installed prior to any site activity (including demolition side garage) and retained for the duration of works. All site welfare/ storage etc will be located in areas outside of the designated protection.
- 1.5 The tree issues can be summarised as: Removal of T5 (Bay Laurel)> Effective Tree Protection (demolition, excavation & construction)> Hand digging / installation of Service routes (if required)> Site operative knowledge of tree protection issues> Soft landscaping to make good.
- 1.6 The site is affected by a Tree Preservation Order but is not located within a designated Conservation Area.
- 1.7 Subject to the working practices detailed within this report there should be no discernible impact on the site trees.
- 1.8 This report is based on the client plans ref: Tamla Layout 1 & 2.



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 trouble which are dead and dangerous but clarification before any tree works is advised. A <u>notification</u> 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	HDC1050 2001				
Date TPO Made	12.4.2002				
Notes: (i) The type and details of any TPO determine which trees are 'protected' Exemptions apply for trees y	which are dead and dangerous but clarification				

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 <u>application</u> may be required before undertaking works. (ii) Above information taken from Hart District Council constraint plan Dec 2023.



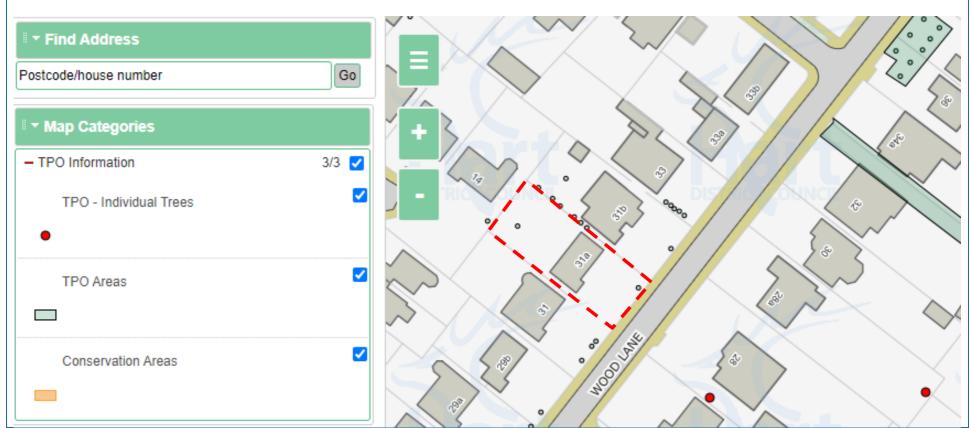


Fig 1 – The Hart District Council website shows the proposal area is not located within a Conservation Area but is affected by a Tree Preservaton Order at the time of writing.



3. Terms of Reference & Resource Information 3.1 BS5837:2012 'Trees in relation to design, demolition and construction – recommendations' BS3998:2010 'Tree work - recommendations' 3.2 3.3 Arboricultural Associations Approved Tree Work Contractors List https://www.trees.org.uk/Help-Advice/Help-for-Tree-Owners/Guide-to-Tree-Pruning 3.4 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 TDAG Trees Planning & Development – A guide for delivery 3.7 TDAG Trees in Hard Landscapes – a guide for delivery 3.8 TDAG Tree Species Selection for Green Infrastructure – a guide for specifiers 3.9 BGS Open-Source Soil Data http://www.bgs.ac.uk/nercsoilportal/maps.html 3.10 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.

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

3.15

3.16

https://www.hart.gov.uk/trees-hedges



4. The Trees

4.1 The trees can be summarised as follows:

BS 5837 Cat	А	В	С	U
Specific Trees	T1	T6 & TG1	T2, T3, T4, T5 TG2, H1, SG1	-
Total Number	1 tree	1 tree & 1 tree group	4 trees, 1 tree group, 1 hedge, 1 shrub group.	None

- 4.2 All the surveyed trees were classified as mature and scope exists for elements of replacement planting to seek to diversify the age class creating a more sustainable tree population.
- 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 Sand & Gravel.¹.



Soil Description

Bedrock Deposits: Windlesham Formation - Sand, Silt And Clay. Sedimentary Bedrock formed approximately 34 to 56 million years ago in the Palaeogene Period. Local environment previously dominated by shallow seas.

Superficial Deposit: Head - Sand And Gravel. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by subaerial slopes (U).

¹ http://mapapps.bgs.ac.uk/geologyofbritain/home.html?



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

- 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.



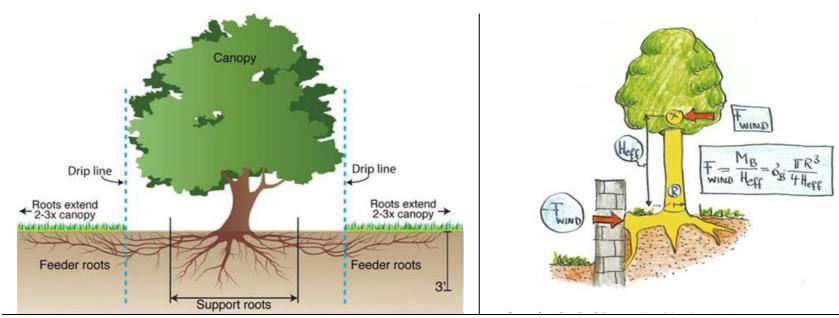


Fig 2 – Open grown trees or those with minimal obstructions close to their stems will have a network of structural roots supporting feeder/ fine root growth beyond (above left). In certain situations root morphology can be affected by structures close to the main stem (above right: Mattheck).

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 year²). 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 soil³. 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.



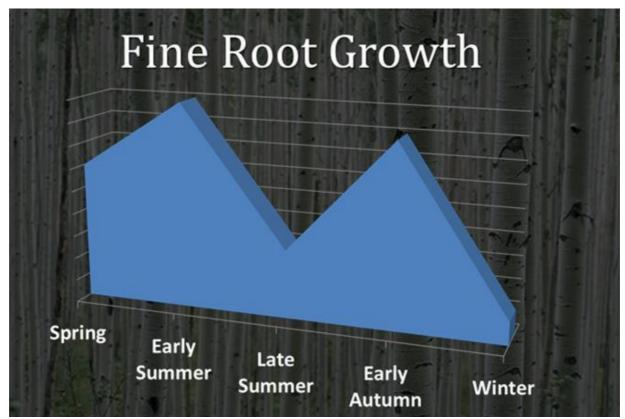


Fig 3 – Fine root growth is (generally) seasonal peaking in late spring and again in early autumn but dying back in winter dormant periods when photosynthetic production ceases. This is an important part of the soil nutrient cycle and demonstrates that a static RPA as calculated by BS5837 is a 'simplistic'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



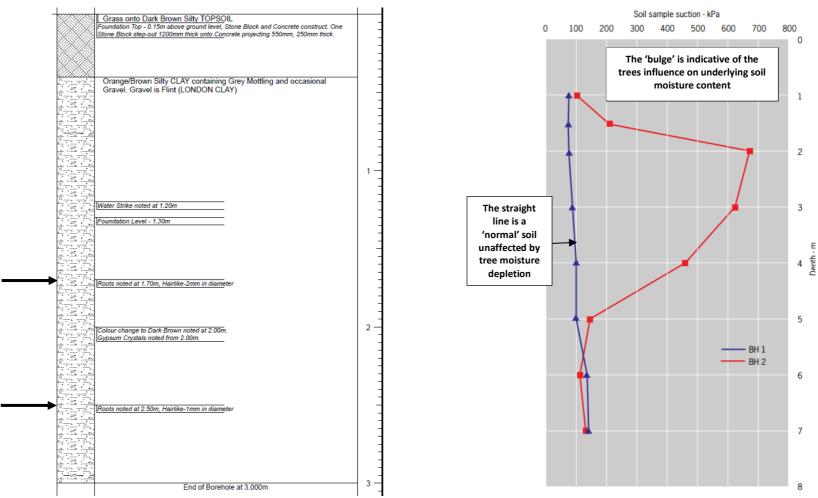


Fig 4 – Borehole log 10m from mature Oak tree on clay soil detailing fine roots to depths of 2.5m indicated with arrows (Source: Tamla Trees project) and annotated soil moisture depletion by trees showing a peak influence at 2m and extending to 5m (above right)



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 Itd will show RPA's in a circular fashion but seek to maximise the quality and positioning of specified tree protection measures and encourage ground treatments (such as mulching – see Section 5.7). Clients and developers must implement these measures for them to be effective. A failure to protect trees during the development process adversely affects soil and roots. Symptoms may not present themselves for a number of years following the development as the tree(s) enter a spiral of potentially irreversible decline.

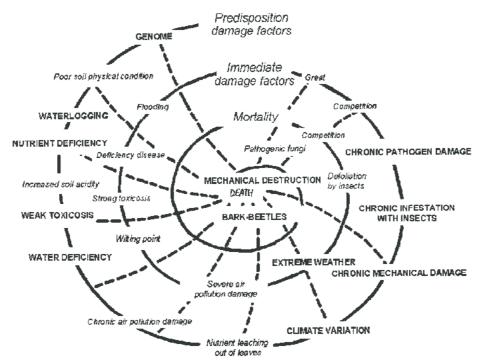


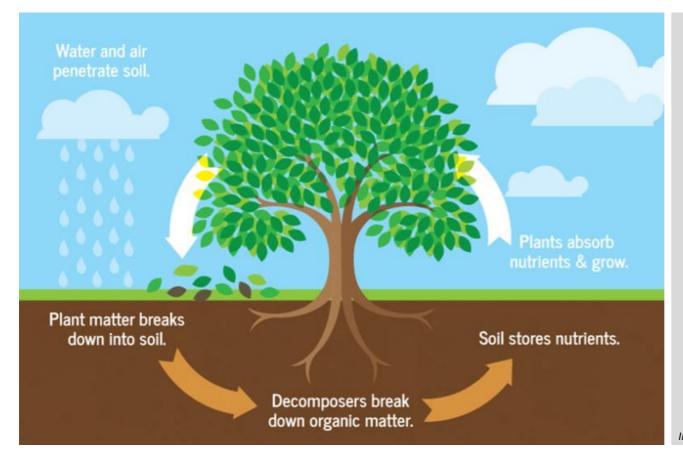
Fig 5 - Manion's spiral of tree decline for Norway Spruce (modified by Mrkva 1993)



5.1.11 BS5837 Section 4.6.3 Site Specific Assessment:

Section	Consideration	Site Specific Comments
4.6.3 (a)	the morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures, and underground apparatus);	 T1 (Oak) will likely have some minor manipulation of rooting to the southeast of the tree given the adopted level public highway located to the southeast of the tree. There are no existing site structures with the capacity to significantly affect the morphology of roots of retained trees.
4.6.3.(b)	topography and drainage;	 There was no evidence of intermittent flooding/ pooling of water on site within the identified RPA's. Any level changes and ground undulations within this site are considered minor.
4.6.4.(c)	the soil type and structure;	 Soil is indicated by the BGS as a sand and gravel reducing the issues associated with compaction and development compared to a clay soil. 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.	 There are no RPA incursions for the construction elements. The greatest risk is from access, material storage and use of/ mixing of cement and materials within the most likely driveway area to the front of the property. As roots from T1 & TG1 will be well established below this area, we have shown temporary ground protection measures to secure the integrity of this garden area (in combination with the established driveway) during the works. The key to this (and any) scheme is effective and robust tree protection and measures that seek to retain and respect the immediate landscape below tree canopies/ within RPA's to maintain soil conditions and nutrient recycling.





- 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



5.2 Root Protection Area (RPA) Incursions

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

BS 5837 Cat	Α	В	С	Summary
RPA Incursion	T1	TG1	-	Demolition & Construction Access — There are no actual incursions from new construction, temporary ground protection and tree protective fencing will be used to maintain the integrity of the underlying soil and prevent storage of materials and movement towards tree stems in protected areas (front & rear). The Tree Protection Plan at Appendix 6 details these measures In the event that there is insufficient space we / Hart DC must be consulted prior to any manipulations to fencing locations. Ground workers will be fully briefed on site of the purpose of the protection measures prior to works commencing. Services — It is envisaged that the extended property will tie into existing services but overview hand digging guidance is provided in the event any new service connections are required. Service works must form part of the contract for the construction to ensure these elements are clearly specified to the construction firm/ builders. 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 There are no RPA incursions from the proposed building works:

Tree Number	RPA Total (Sqm)	Incursion (Sqm)	As % of trees RPA
-	-	-	-

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

Tree & Development Risk Indicator



- Our assessment has confirmed the presence of SAND & GRAVEL
- All excavation works are located outside the RPA of retained trees.
- The Tree & Development Risk Indicator (TDRI™) is therefore MODERATE on the basis that development pressures to the retained trees could be HIGH.
- 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.



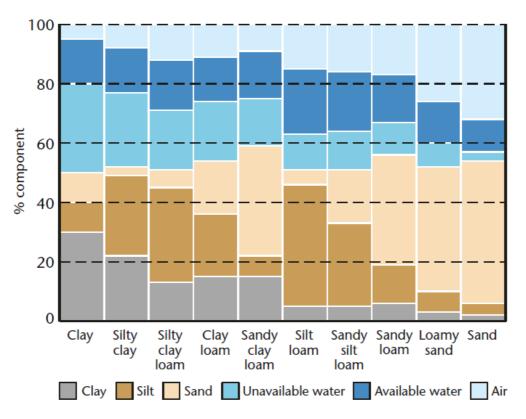


Fig 7 – Diagram showing the typical particulate composition and air/ water content at field capacity for mineral soil types⁴ The variation in soil type has a direct bearing on the potential impact of adverse construction techniques (such as soil compaction) as well as overall root system morphology & 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 by BGS as Sand & Gravel

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 $^{^{\}rm 4}$ Forestry Commission (2005) The Influence of Soils and Species on Tree Root Depth



5.3 Tree Removal and Pruning Works

5.3.1 No tree pruning or removal works are required to facilitate the proposal. The client has indicated a desire to remove T5 (Bay Laurel). This is a low-quality example of the species formed of multiple stems with weak V union formation evident. The tree therefore has a limited retention span without repeat pruning management which significantly reduces the overall size and amenity the tree can provide. Furthermore, to the west of this tree is a good example of a Persian Ironwood tree, this provides significantly more and unusual garden amenity and removal of T5 will open views to this tree for the clients. It is noted that Hart Council have recently raised no comment or objections to the complete removal of over 100 mature Oak trees the subject of TPO 462. The TPO is noted to T5 but in relative terms the amenity provided by this tree (compared to an Oak woodland) is minimal and in the interests of consistency it is difficult to see how an objection can be raised to the proposed removal works.



Fig 8 – T5 (Bay Laurel) proposed for removal to enhance views of T6 (Persian Ironwood) and maximise garden area. Note multiple stem form.



Tree Surgery

Tree No. Species		Proposed Tree Works	BS Cat

Proposed Removal

Tree No.	Species	Proposed Tree Works	BS Cat
T5	Bay Laurel	Remove	C1

- 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

- The proposal retains the main/existing relationship as the footprint of the structure is not increased relative to the trees. It should not result in increased pressure to prune or remove existing trees.
- The TPO means the council retain control over the potential pruning of T1.
- 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
- Please note that this is not a health and safety assessment report and that vigilance for the emergence of any fungal pathogens is advised. In places on this survey full access to the basal areas of trees was not possible given their ownership/location/extensive undergrowth. Further information on tree safety can be found here.6

⁵ https://www.trees.org.uk/ARB-Approved-Contractor-Directory

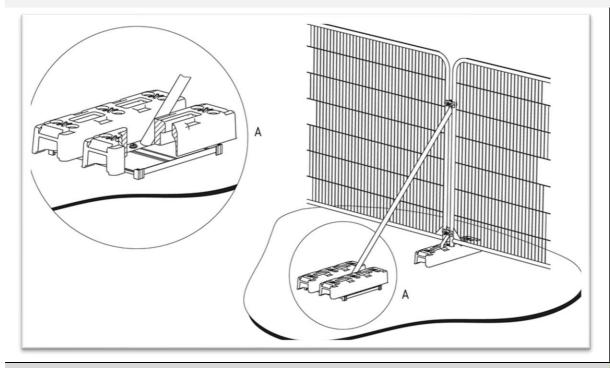
⁶ https://ntsgroup.org.uk/guidance-publications/



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: 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.
- Feet fence scaffold spec indicated given reduced site constraints/ pressures.
- 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



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

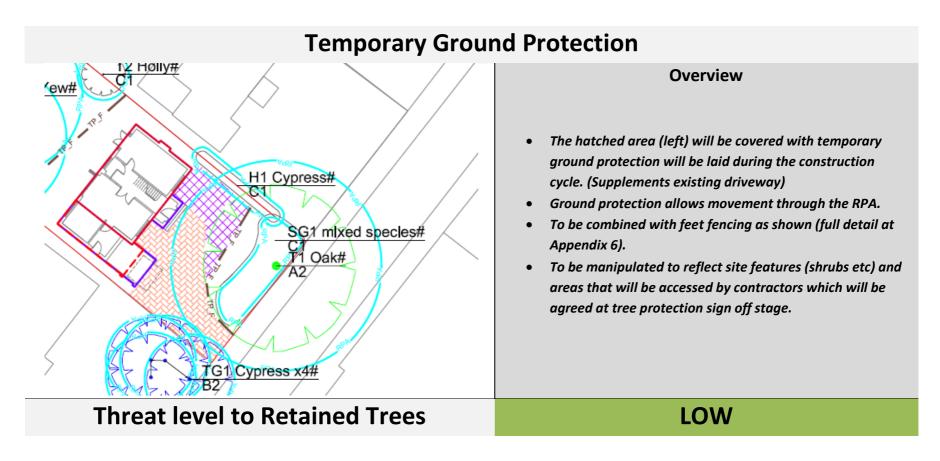


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Fig 9 – Professional grade weatherproof tree protection signs no smaller than 297 x 420 mm (A3) will be located at 5m intervals and all 'return' faces for tree protective fencing. Note: High quality jpg/ png image available upon request



5.4.3 Temporary Ground Protection is required to allow safe movement around the site (front area to supplement existing gravel driveway) whilst retaining the integrity of the underlying soil/ tree rooting areas. The exact extent will be defined by identified working areas to be agreed with the site contractor prior to works starting on site. The default is that all areas that could be accessed by contractors where RPA overspill from tree protection exists will be covered.





5.4.4 The existing driveway is inconsistent and the temporary ground protection seeks to supplement this allowing material storage/ parking.



Fig 10 – Existing front driveway area. Temporary ground protection will supplement this given likely parking/ site storage. Note: Garage to be demolished is visible.



5.4.5 The 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 11 –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 12 – 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)



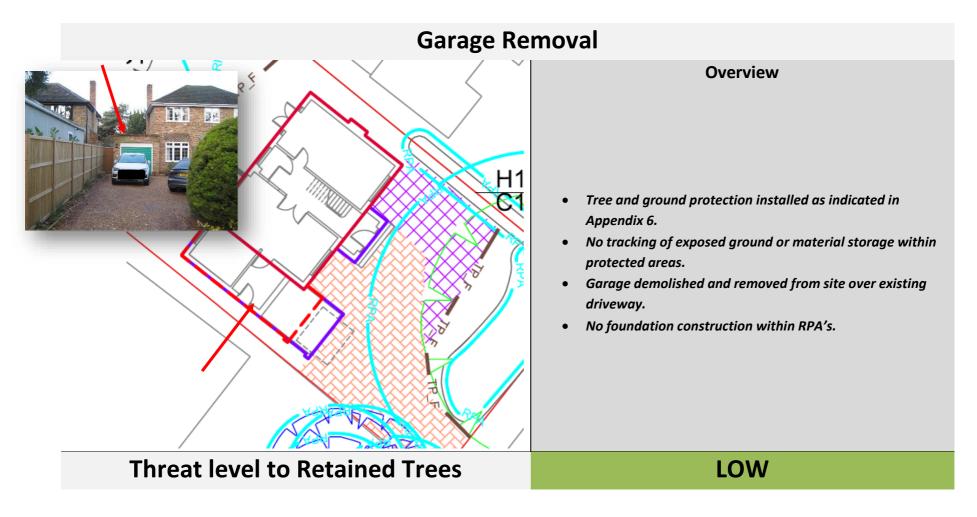
5.4.6 **Site Manager/ Consultant Sign Off:** At this point a site inspection is required to confirm the appropriate tree protection measures have been completed.

Date of Inspection		Compliance with Tr	ee 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



5.4.7 Once protection measures are in place the existing garage can be demolished and removed and construction works undertaken:





5.5 Surfaces near Trees

5.5.1 No new surfaces within tree RPA's are advised.

5.6 Site Service Provision

5.6.1 It is envisaged that the extensions will tie into existing service connections. On this project currently no new connections are advised and this (hand digging) information is an advisory overview.

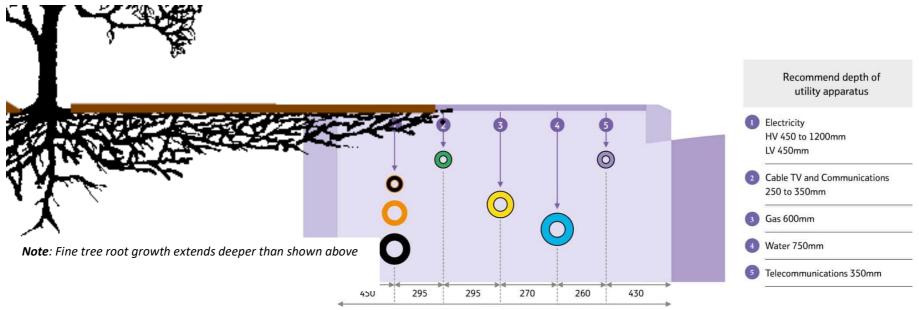


Fig 13 – Annotated service installation depth drawing (source: Thorne & Derrick). Service installations occupy the same soil volume/ depth where the greatest level of tree roots will likely be found.



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.



Fig 14 - 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.





5.7 Landscaping & Tree Planting

5.7.1 Ground levels remain unchanged other than the development works (outside the RPA's). 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 15 – All 'making good' topsoil will be BS3882 compliant and raked out by hand to no greater depth than 100mm.



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

Mulching

Overview

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

Threat Level to Retained Trees

LOW



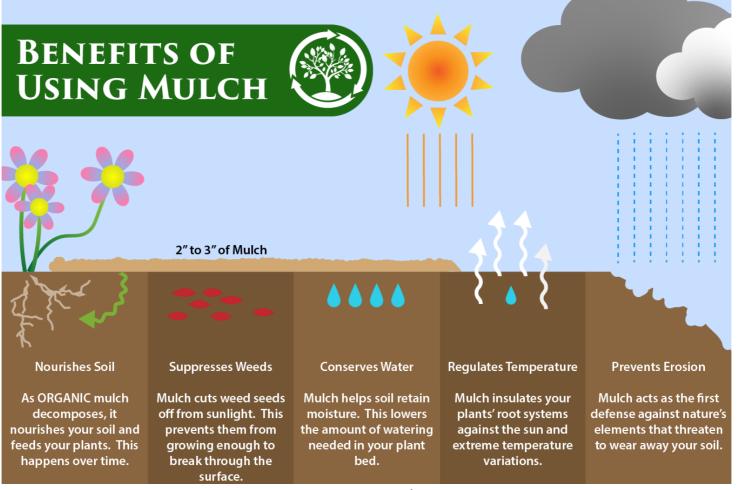


Fig 16 – Benefits of Mulch (Image Source 1st Stop Landscape Supply (US)



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

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5.8 Tree Shading of Proposal

5.8.1 No shading issues have been identified as the relationship stays predominantly as it currently is between trees and the building.

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.	ТВС	Incomplete
Final Site Inspection Final site visit to confirm that no damage has been done to retained trees/ identify any remedial actions in the event damage has occurred. Assess any required tree surgery following construction. Update local authority and project team on findings.	ТВС	Incomplete

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



Appendix 1 – BS5837 Survey Key

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

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

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



Appendix 2 – BS5837 Tree Classification

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

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

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

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



Table 1 Cascade chart for tree quality assessment

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



Appendix 3 – BS5837 Survey Data

Tree No.	Species	DBH (m)	No of Stems	Ht (m)		Crown Spread		BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPR (m)	
T1	Oak	0.82	1	15	7.6	7.4	S	6.8	A2	Mature	> 40	3.8	Established tree in prominent front garden location. Shrubs hindered full basal inspection but appears in good condition.	No works	9.8
Т2	Holly	0.2	1	4.2	2	2.1	2	2	C1	Mature	> 40	1.8	3rd party tree. Some minimal canopy thinning.	No works	2.4
Т3	Holly	0.2	1	4.2	3	4	4	3.7	C1	Mature	> 40	1.8	3rd party tree. Previously reduced.	No works	2.4
Т4	Yew	0.6	M/S	5.5	3.5	3.4	2.9	3.8	C1	Mature	> 40	1.7	Established multi stem garden tree. 11.4m from rear elevation.	No works	7.2
Т5	Laurel (Bay)	0.6	M/S	5	3	2	3.5	2.3	C1	Mature	20 to 40	2	Established multi stem garden tree. 10.1m from rear elevation. Multiple weak basal unions. Poorly suited	Remove	7.2



Tree No.	Species	DBH (m)	No of Stems				BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPR (m)		
					N	E	S	W				(m)	for long term retention. Blocking garden views to T6.		
Т6	Persian Ironwood	0.21	1	7	3.5	3.3	3.5	3	B2	Mature	20 to 40	1.7	Established garden ornamental.	No works	2.5
TG 1	Cypress x 4	0.35	1	14	44		4	4	В2	Mature	20 to 40	4	3rd party trees.	No works	4.2
TG 2	Prunus spp, Malus spp, Shrubs	0.14	M/S	5	3	3.2	3	3	C1	Mature	20 to 40	1	Close grown garden boundary planting offering some localised screening between properties.	No works	1.7
H1	Cypress	0.08	1	2	0.6	0.6	0.6	0.6	C1	Mature	20 to 40	0.2	Established and managed hedge, slightly larger at house end.	No works	1



Tree No.	Species	DBH (m)	No of Stems	Ht (m)		Crown Spread		BS Cat	Age Class	Life Expect	I Ht I	Ht Observation	Recommendations	RPR (m)	
					N	Е	S	W				(,			
SG 1	Cypress, Rhododendron, Viburnum	0.14	1	4	2	2	2	2	C1	Mature	20 to 40	0.3	Mixed shrubs offering low level screening.	No works	1.7



Appendix 4 – Tree Works Schedule

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat

Proposed Removal

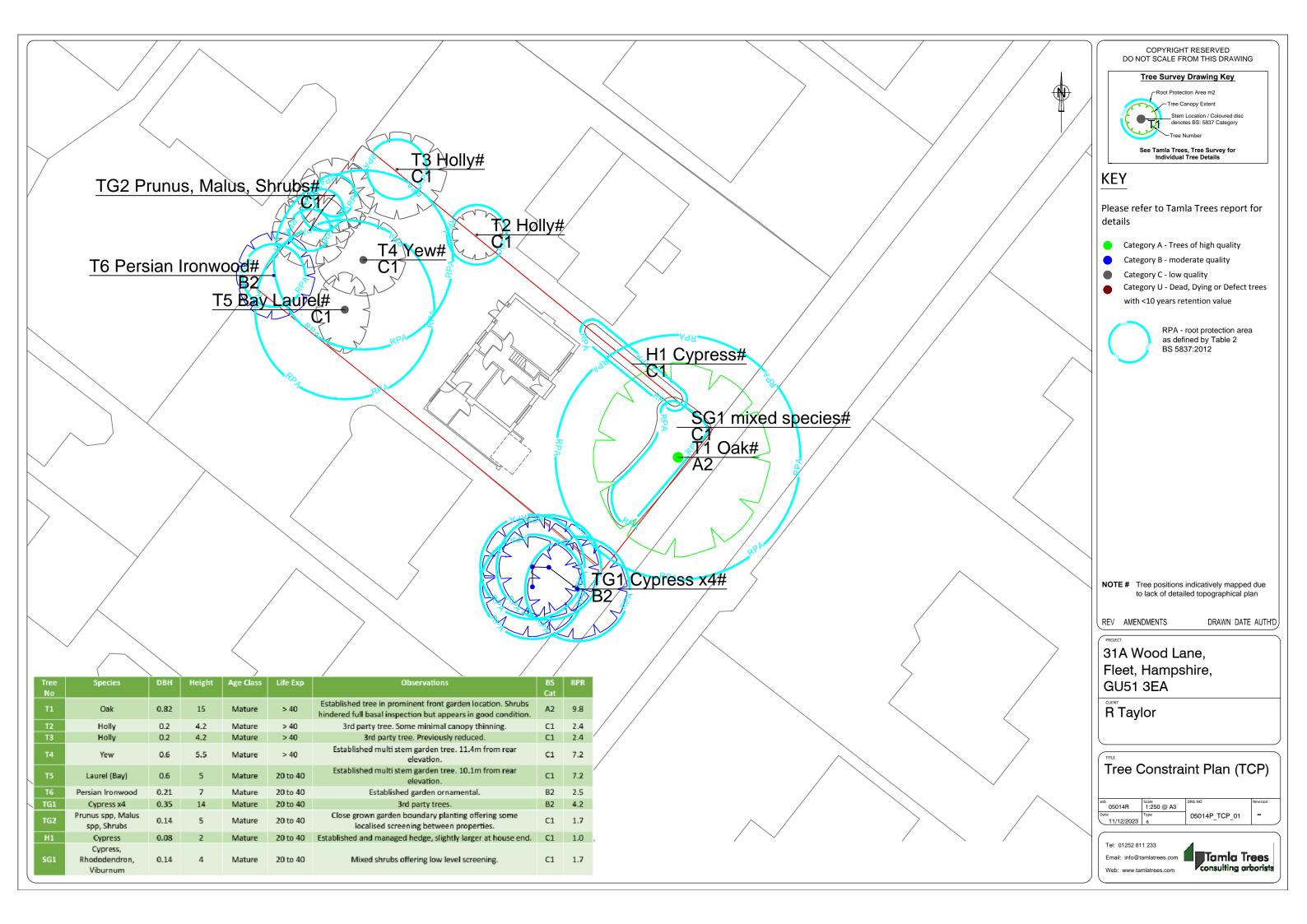
Tree No.	Species	Proposed Tree Works	BS Cat
T5	Bay Laurel	Remove	C1

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

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



Appendix 5 - Tree Constraints Plan





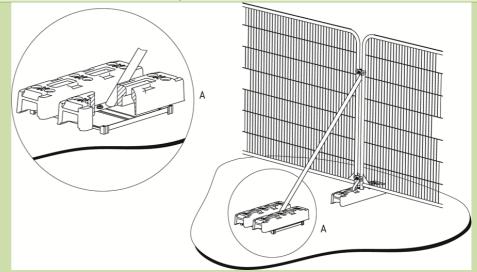


Appendix 6 - Tree Protection Plan

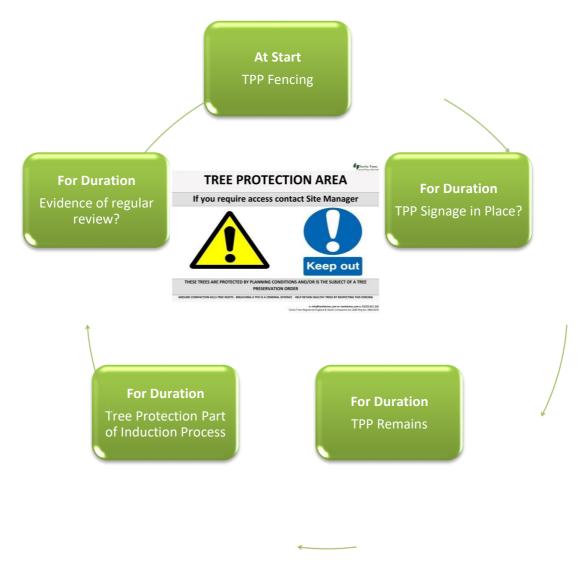
Tree protection is essential to successfully integrate the proposal into the surrounding trees. It is designed to manage the impact on the underlying soil and rooting environment. It must therefore be installed prior to any further site activity. Even apparently minimal tracking of the soil near trees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

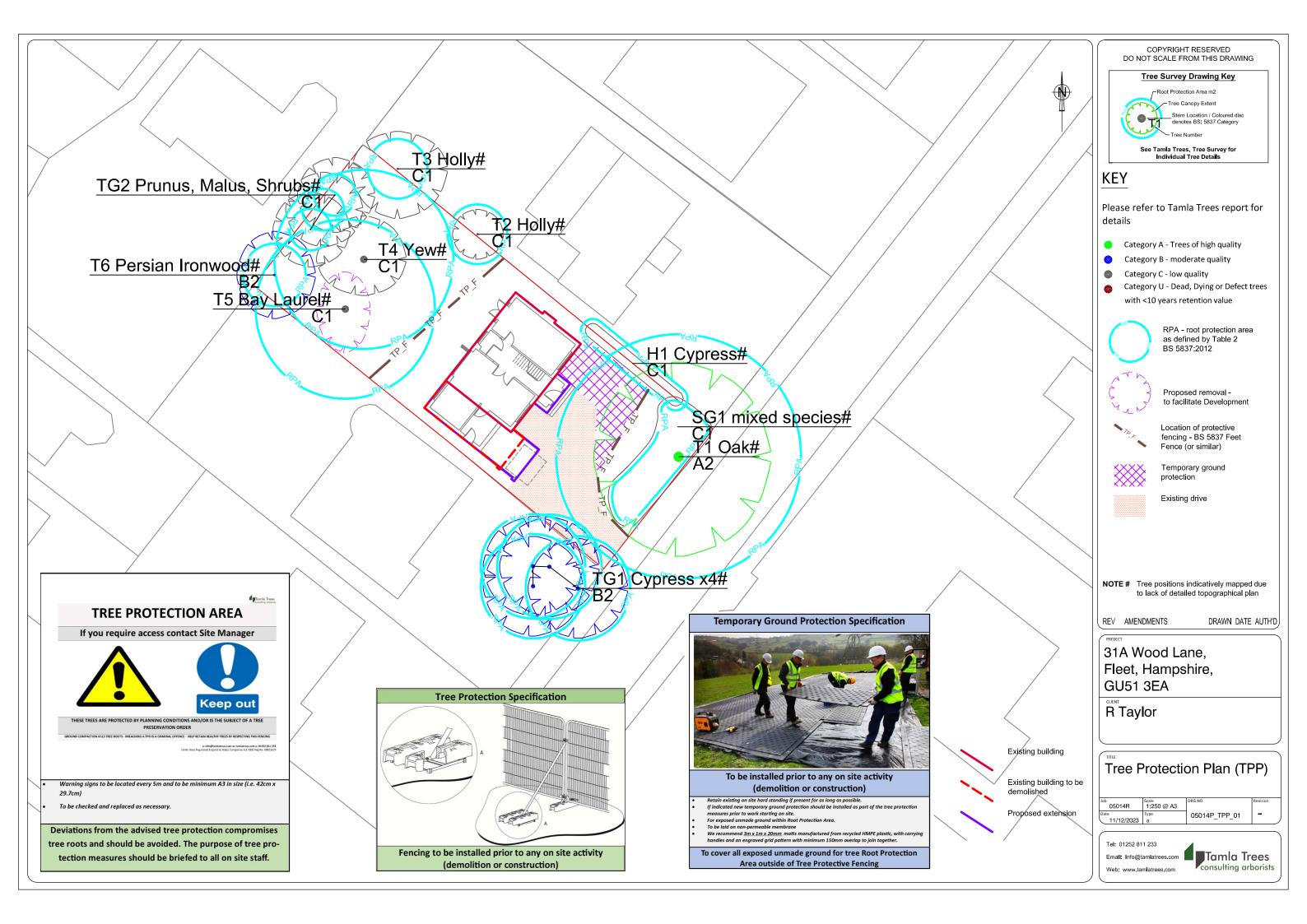
All our fencing specifications accord with advice and guidance within BS 5837. Modifications to fence types are possible but should be discussed prior to implementation. In all other instances the form detailed below should be shown. This offers the best protection to retained trees.

- All tree protection must be in place prior to any site activities. It is recommended that this fencing is installed prior to any site works (including demolition).
- To be effective Tree Protection must remain in place for the duration of the development and form part of the site induction process.
- Fencing spec (right) proposed combined with ground protection to the front of the site (not shown right).
- Maintained for the duration of all site works.











Appendix 7 – Site Photographs



Image 1 – Looking towards area of side extension from rear garden.







Image 2 – T1 Oak Image 3 –T4 Yew



Appendix 8 – Limitations

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Specific - Trees

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

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

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

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