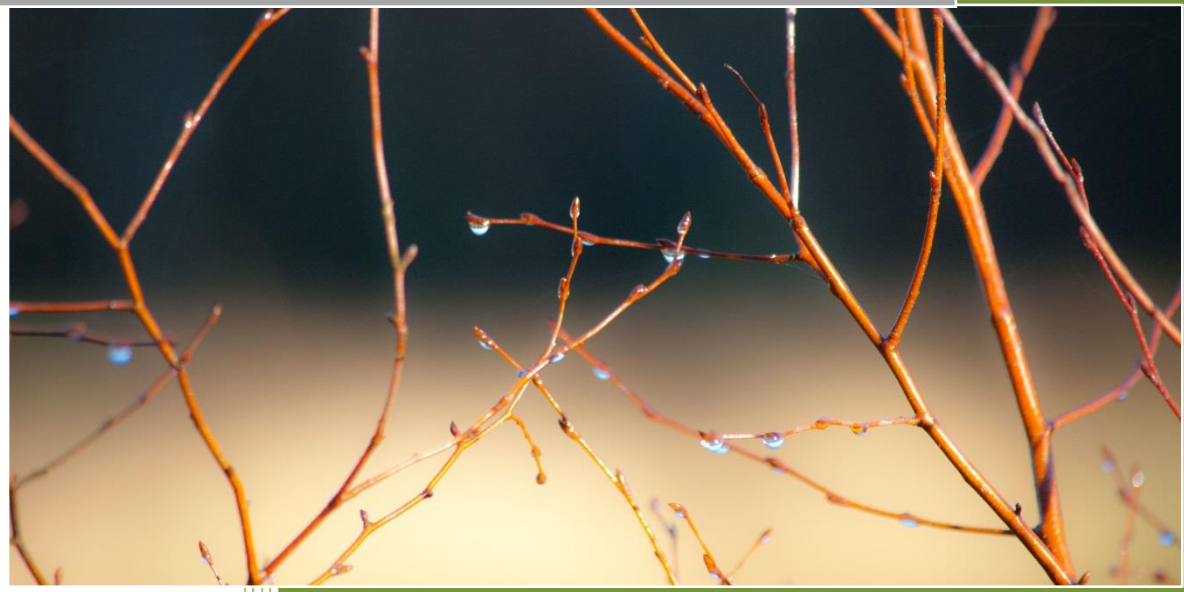
BS5837 Arboricultural Impact Assessment



3/3a Frognal Gardens, Hampstead, London, NW3 6UY

Client: **Alexander Martin Architects**

Job Reference: 03124Rv4

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

Tamla Trees
consulting arborists

June 2020

Contents

1. Executive Summary

1.1 Tamla Trees ltd has been appointed by Alexander Martin Architects to provide advice on the arboricultural issues relating to refurbishment and extension of 1 outbuilding (Building A – Garage) and complete demolition and replacement (on existing footprint) of additional outbuilding (Building B – Garden Room). We surveyed the site in July 2019. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations". The proposal requires the removal of the garden tree T5 (Cypress) to allow the increased footprint of the garage (Building A). T12 (Plum) will also be removed.

1.2 The structure encroaches into the Root Protection Area (RPA) of T3, T4 & T12 for Building A as this is extended in size slightly, but this extension is minimal and at the distances involved and given the replacement construction is on virtually identical footprints to the existing building.

1.3 Demolition of Building B is required but, in both cases, the existing footings are retained with new reinforced slab footings tying into the retained footing. This approach minimises the need for ground excavations significantly reducing the risk of damage to underlying roots. All excavations are undertaken by hand within tree Root Protection Areas (RPA's). Any service connections to the main dwelling can be hand dug using the same principles of tree root retention detailed within this report.

1.4 The potential tree issues can be summarised as: **Effective tree protection> Demolition works> Installation (including footings) of the garden room structure and garage> service provision> landscaping.**

1.5 New pathways and small landscape features are proposed and will be installed by hand following a toolbox talk in order that contractors understand the potential implications. Following concerns regarding the proposed bin and cycle stores close to T2 the bin store has been moved and the cycle store rotated in order that it can sit on an existing concrete base within the RPA of T2.

1.6 At the time of writing Camden Council have advised the site is within a Conservation Area and trees T2 & T3 are the subject of a TPO. Subject to the working practices and tree protection measures outlined within this report there should be no discernible impact on the retained trees. This report is based on the client plans ref: 197-AP-205 (2) and associated drawings.

2. Statutory Protection

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

Conservation Area Status	
Is the site located within a Conservation Area?	Yes The Hampstead Conservation Area
Notes: (i)All trees larger than 7.5cm diameter at 1.5m above ground level are subject to regulations within a Conservation Area. Exemptions apply for trees which are dead and dangerous but clarification before any tree works is advised. A notification is required in many circumstances.	
Tree Preservation Order Status	
Are inspected trees subject to a TPO?	TBC
Type of TPO	~~**Area**~~
	Individual
	~~**Group**~~
	~~**Woodland**~~
TPO Reference	7H-T50 & 51
Date TPO Made	confirmed 10/07/56.
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) Protected status to be advised by Camden Council.	

3. Terms of Reference

3.1 BS5837:2012 'Trees in relation to design, demolition and construction – recommendations'

3.2 BS3998:2010 'Tree work – recommendations'

3.3 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

3.4 BGS Open Source Soil Data http://www.bgs.ac.uk/nercsoilportal/maps.html

4. The Trees

4.1 The trees can be summarised as follows:

BS 5837 Cat	A	B	C	U
Specific Trees	T1, T3, T4	-	T2, T5, T6, T7, T8, T9, T10, T11, T12, T13 TG1 TG2	T14
Total Number	3 individuals	None	10 individuals & 2 groups	1 individual

4.2 These tree locations and a summary of their visual contributions can be summarized as follows:

BS 5837 Cat	A	B	C
Frognal Gardens Providing amenity between properties and contributing to the local (garden) tree scape and street scene	T1, T3 & T4	-	T2
Frognal Gardens (From south) Providing amenity between properties and contributing to the local (garden) tree scape	-	-	T7, T8, T9 & T10
Frognal Gardens (From north) Providing amenity between properties and contributing to the local (garden) tree scape	-	-	TG1 & T13
Frognal (From west) Providing amenity between properties and contributing to the local (garden) tree scape	-	-	TG2

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

4.4 Other trees shown on the site plan are of a smaller size limiting their contribution to the local and wider public amenity.

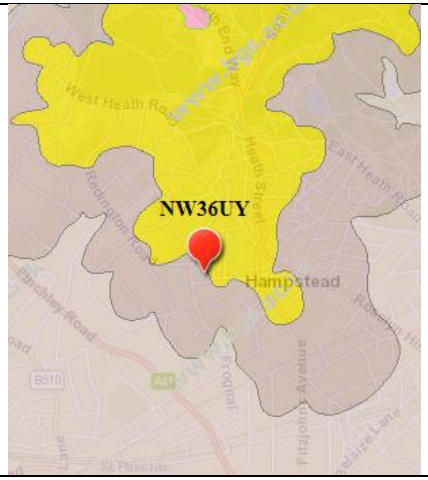
5.0 Arboricultural Impact Assessment

5.1 Site Specific Soils

5.1.1 Soil is an important factor in tree growth and the type of underlying soil can impact on successful integration of new developments.

5.1.2 A free draining sandy soil containing sand/gravel is likely to lead to water being accessible in the upper horizons during the growing season and available at greater depths and trees will generally be forced to explore a larger volume/ depth on such soils. The structure of such soil also makes compression more difficult (by heavy construction plant) and root penetration is easier for the trees. By comparison, a clay soil is more easily compressed, particularly when wet and compression can have a greater impact on tree health.

5.1.3 As shown below the site is located within what is defined as clay.



Soil Description
Claygate Member Clay, Silt And Sand. Sedimentary Bedrock formed approximately 48 to 56 million years ago in the Palaeogene Period. Local environment previously dominated by shallow seas.

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

5.1.4 All comments regarding soils should be verified with onsite geotechnical investigations and laboratory testing with foundation depth and design undertaken by a structural engineer in accordance with the requirements of NHBC Chapter 4.2.

5.2 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	T3 & T4	-	T12 & T13	**Foundations (Building A - Garage)** – The proposal places the expanded structure partially within the RPA area of the identified trees. On an individual level the footing incursions are minimal (as existing footings are retained). The extended footing will be hand dug as detailed within this report and an assessment of any exposed roots >25mm undertaken. The footing will be inspected prior to the wet concrete pour which ties into the existing slab significantly limiting the potential for root disturbance. In summary whilst there may be some localized root disturbance this is considered well within the tolerable range and there should be no discernable impact. The existing footing is retained, and the excavation works are to strengthen and partially extend the existing slab. The main significant trees are T3 & T4 and these are at such a distance from the works that we would not envisage any structural roots. Lime as a species is also very tolerant of works of this type.
	T1 & T3		T2, T6 & T7	**Demolition (Building B – Garden Room)** – This building is demolished and tree protection utilizing a combination of protective fencing (herras panels) and plywood shuttering will be installed prior to any on site works (please see Tree Protection Plan – Appendix 5). This building is removed to ground level retaining the existing slab footing.

	T1 & T3		T2, T6 & T7	**Foundations (Building B – Garden Room)** – As with Building A there is an incursion into the RPA of the identified trees. In this instance the footprint remains the same as existing and the footing/ slab is strengthened. Any excavation works around the retained footing is undertaken by hand and any wet concrete pour will be lined prior to works to remove the risk of concrete to root contact. As the existing footing remains there is little in the way of direct risk to the retained trees from these works. Once the footing has been strengthened the replacement structure can be constructed with all tree protection remaining in place for the duration of works.
			T2	**Bike Store** – The design has now been amended to move the proposed bin store and rotate the proposed bike store so that existing levels close to T2 can be maintained. The store will be located on an existing concrete base removing the need for excavation in this area. This design modification also allows the whole existing soft surface area close to the tree to be protected with a bespoke plywood frame (as herras panels are less likely to work in this area). **Service**s –Any pipes or cables will be in hand dug trenches and fed below retained roots >25mm in diameter if required as no service drawings are currently available for review.

5.2.2 The remaining free draining soft surface garden areas limits the impact of the minor incursions detailed above.

5.2.3 New pathways and small landscape features are proposed and will be installed by hand following a toolbox talk in order that contractors understand the potential implications. Please refer to landscape drawing FG01 for further details.

5.3 Tree Loss

5.3.1 The proposal requires the removal of T5 (Cypress). The overall amenity of this tree is considered limited given its position and the retention of all other site trees. The density of the existing tree stock limits scope for replacement planting works. T12 (Plum) is also proposed for removal.

Fig 1 – T5 (Cypress) indicated above and shown on the plans at Appendix 4 & 5 will be removed.

5.3.2 **Birds** - In the event future tree works will 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).

5.4 Demolition & Foundations

5.4.1 The tree protection and demolition process can be summarised as follows:

Stage 1

- Complete tree works to remove T5 and T12
- Install BS5837 protective as indicated.
- Install plywood frame around base of T2 & T3 (Lime)
- Brief ground workers/ construction team on tree issues.

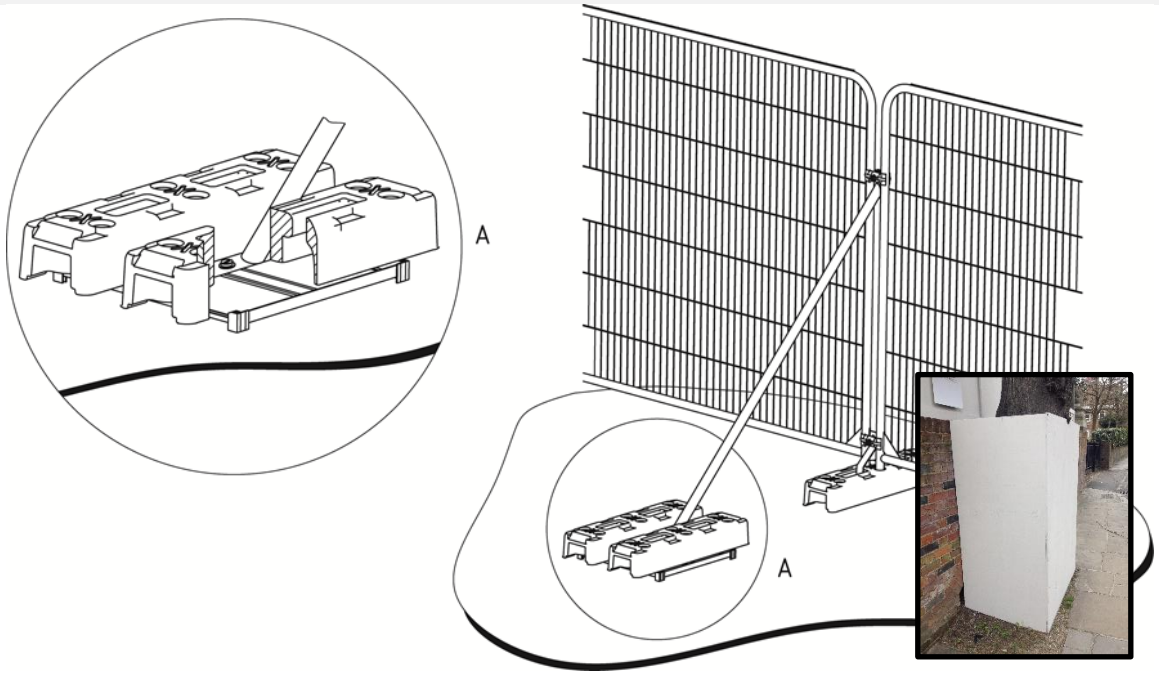
Stage 2

- Remove section/ face of outbuilding A - Garage.
- Demolish outbuilding B - Garden Room.
- Retain footings of both buildings - extend/ upgrade with careful hand digging.

Stage 3

- Building A & B constructed.
- Tree protection measures removed only upon completion.
- Rake out BS3882 compliant top soil to no more than 100mm depth in remaining garden area and seed/ plant as required to make good.

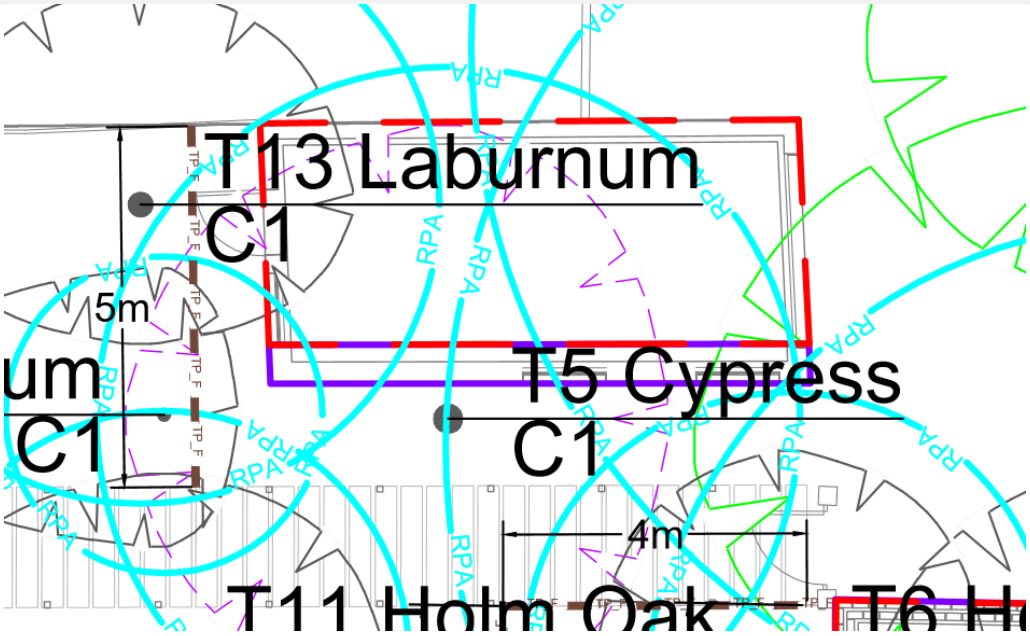
5.4.2 High quality BS5837 compliant tree protection will be installed prior to any on site activity and maintained for the duration of the build. It will tie into site boundaries to restrict access towards retained trees and shrubs. T2 will benefit from a bespoke tree protection frame to maximise the protection and reflect the fact herras panels are unlikely to work in the available space. T3 will also benefit from basal shuttering to limit the risk of direct contact damage.

Tree Protection	
	**Overview** • ***Tree protection required internally to site.*** • ***Installed prior to any on site works.*** • ***Note: To be marked with signs (inset) and purpose to be briefed to all ground workers.*** • ***Basal shuttering (inset) to be used for T2 & T3 to limit the risk of direct contact damage to the lower stem.***
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 2 – Professional grade weatherproof tree protection signs no smaller than 297 x 420 mm (A3) will be located at 5m intervals and all 'return' faces for tree protective fencing.

5.4.4 The existing footings are retained and enhanced with careful hand digging where excavations are within the RPA.

Foundations	
	**Overview** • ***Existing footings of both buildings retained.*** • ***Extended for Building A (left).*** • ***All works within RPA's undertaken by hand.*** • ***Any 'wet pour' areas to be lined prior to concrete pour to remove risk of root to concrete contact.***
Threat Level to Retained Trees	**LOW/MEDIUM**

5.4.5 Extract of engineers footing drawing showing it tying into the existing footings. Please refer to formal engineering drawings for full detail.

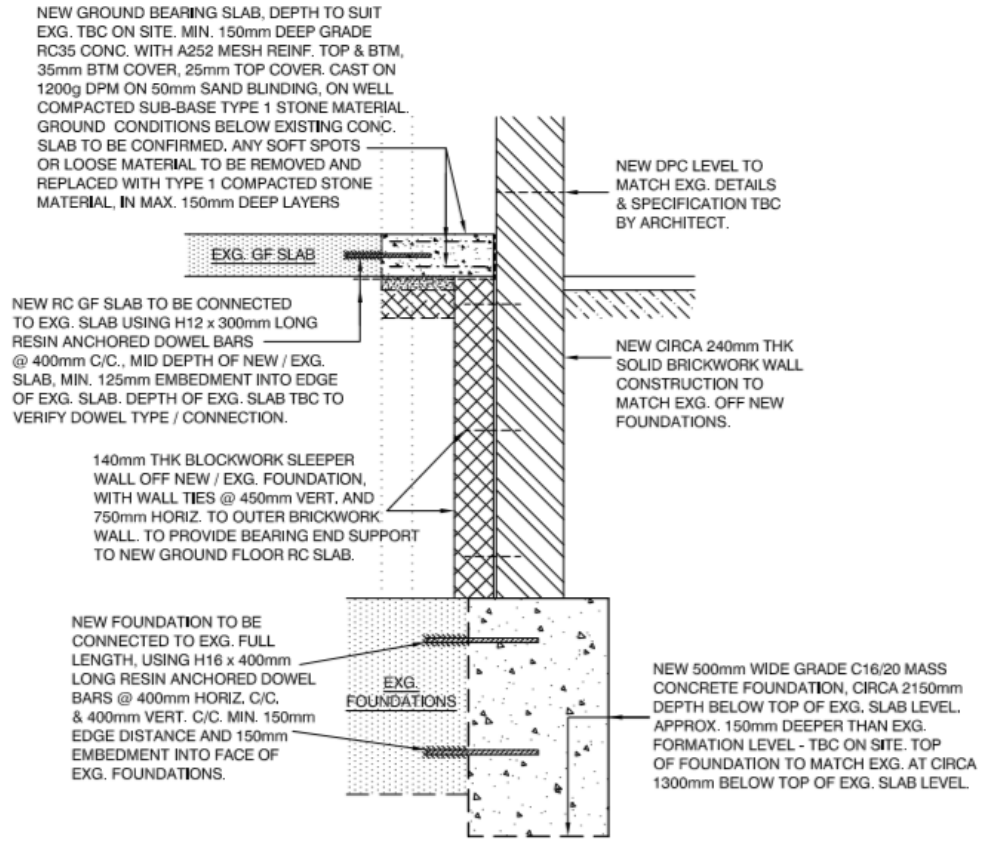


Fig 3 – The footings tie into the existing footing as indicated above. Any excavation work is completed by hand and all excavations are lined with non-permeable membrane prior to a concrete pour to remove the risk of root to concrete contact. Excavations to be subject to site inspection.

5.4.6 **Planning the excavation:** The footing areas within the RPA of retained trees where excavation is required are marked out by hand.

5.4.7 Digging around tree roots is a skill and operatives must proceed with caution. Once (and if) 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.

5.4.8 **How deep?** – The excavation need only be as deep as the proposed footing. Any exposed roots must be covered/ wrapped in hessian if being left uncovered for longer than 12 hours.

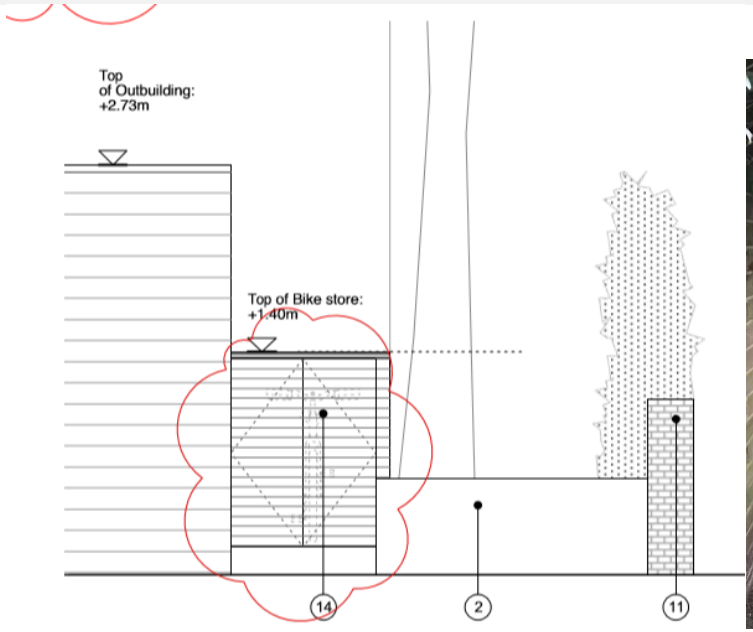
				
Narrow Face Spade & Hand Trowel	**Stiff Hand Brush**	**Hi Vis Paint (for spot marking roots)**	**Hessian (to wrap exposed roots)**	**Duct Tape (to secure hessian)**

Fig 4 – Advised tools for any hand digging activity

5.4.9 **WARNING:** Breaking the ground has the potential to uncover services/ destabilise adjacent structures etc.

Fig 5 – Sample excavations for similar projects where careful hand digging is used and footing locations manipulated to reflect the presence of any root >25mm in diameter.

5.4.10 Further to representations from the local authority the bin store close to T2 has been removed completely and the bike store rotated. This means the bike store can now be accommodated on the existing hard surface in the area it is proposed and the low wall and ground levels close to T2 can be maintained.

Bike Store / Foundations	
 	**Overview** • ***Built on existing concrete base visible in image (left).*** • ***Existing low wall retained.*** • ***Timber construction.*** • ***No ground excavation required.***
Threat Level to Retained Trees	**LOW**

5.5 Surfaces near Trees

5.5.4 There is existing hard surface access for site movements and storage so no temporary storage is proposed.

- ***Existing hard surface access to the garage and garden room removes risk of adverse ground compression.***
- ***Lower stem of T3 is visible and will be basally shuttered prior to any on site works.***
- ***Removal of epicormic growth from lower 2m of stems on T2 & T3 proposed.***
- ***Area suitable for material storage. No materials to be stored on soft 'open ground'.***

Fig 6 – Site access is already existing hard surface through the RPA of T2, T3 & T4

5.5.5 New pathways and small landscape features are proposed and will be installed by hand following a toolbox talk in order that contractors understand the potential implications. Please refer to landscape drawing FG01 for further details. Pathways and wall footings will be installed following the hand digging principles outlined elsewhere in this report:

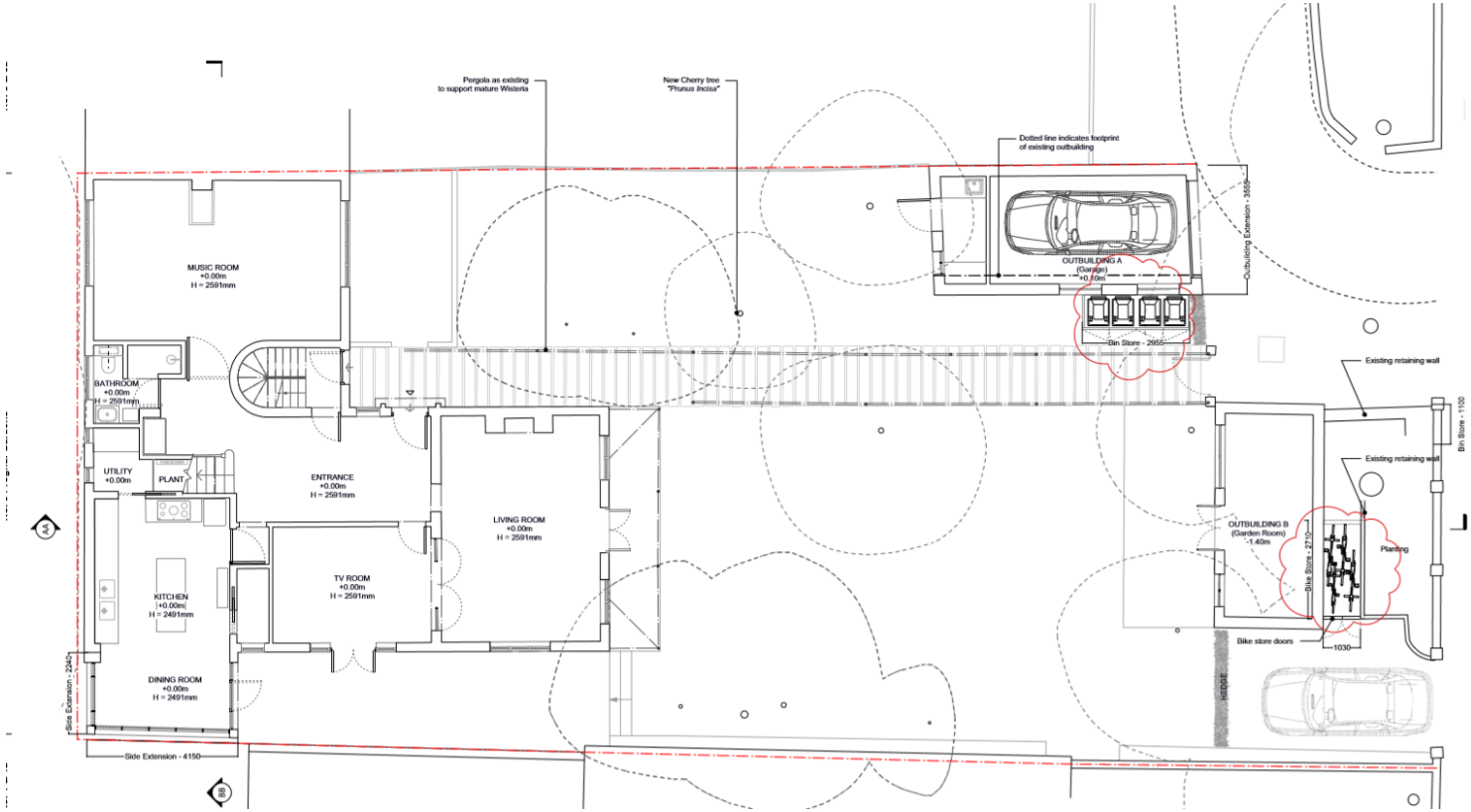


Fig 7 – The proposal includes new landscape elements which will be installed carefully by hand retaining tree roots and respecting existing ground levels. Note: Bin store moved from close to T2 and bike store rotated to be placed on existing concrete base.

5.6 Site Service Provision

5.6.1 No new service connections have been advised. The extent of trees and the associated RPA's is such that any service trench to either structure will require careful hand digging following the principles detailed elsewhere in this report. Any service can then be fed below retained roots >25mm in diameter before appropriate backfilling. To limit maintenance impact to the garden room from leaf drop given the proximity/ overhang of trees it is proposed that gutter guards be installed.

Fig 8 - Suitable gutter guards (2 types shown above) should be fitted to ensure that leaf drop from adjacent trees does not block new guttering leading to potential pressure for tree works.

5.7 Ground Level Changes

5.7.1 No ground level changes within the RPA areas of retained trees are proposed other than the extended footing works detailed elsewhere in the report.

5.7.2 Following completion of the project any 'making good' will be with BS3882 compliant topsoil raked out by hand (to no more than 100mm depth within any tree RPA) and then seeded/ planted as appropriate. We encourage the use of composted bark mulch below tree canopies where possible to aid water retention and increase soil microbial activity.

Fig 8 – In the event of 'making good' topsoil will be BS3882 compliant and raked out by hand to no greater depth than 100mm

5.7.3 Where possible areas below retained tree canopies should be mulched. This designs out issues with grass no growing and encourages natural recycling of leaf litter.

Mulching	
	**Overview** • ***Composted mulch then spread around below tree/ structure void 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**

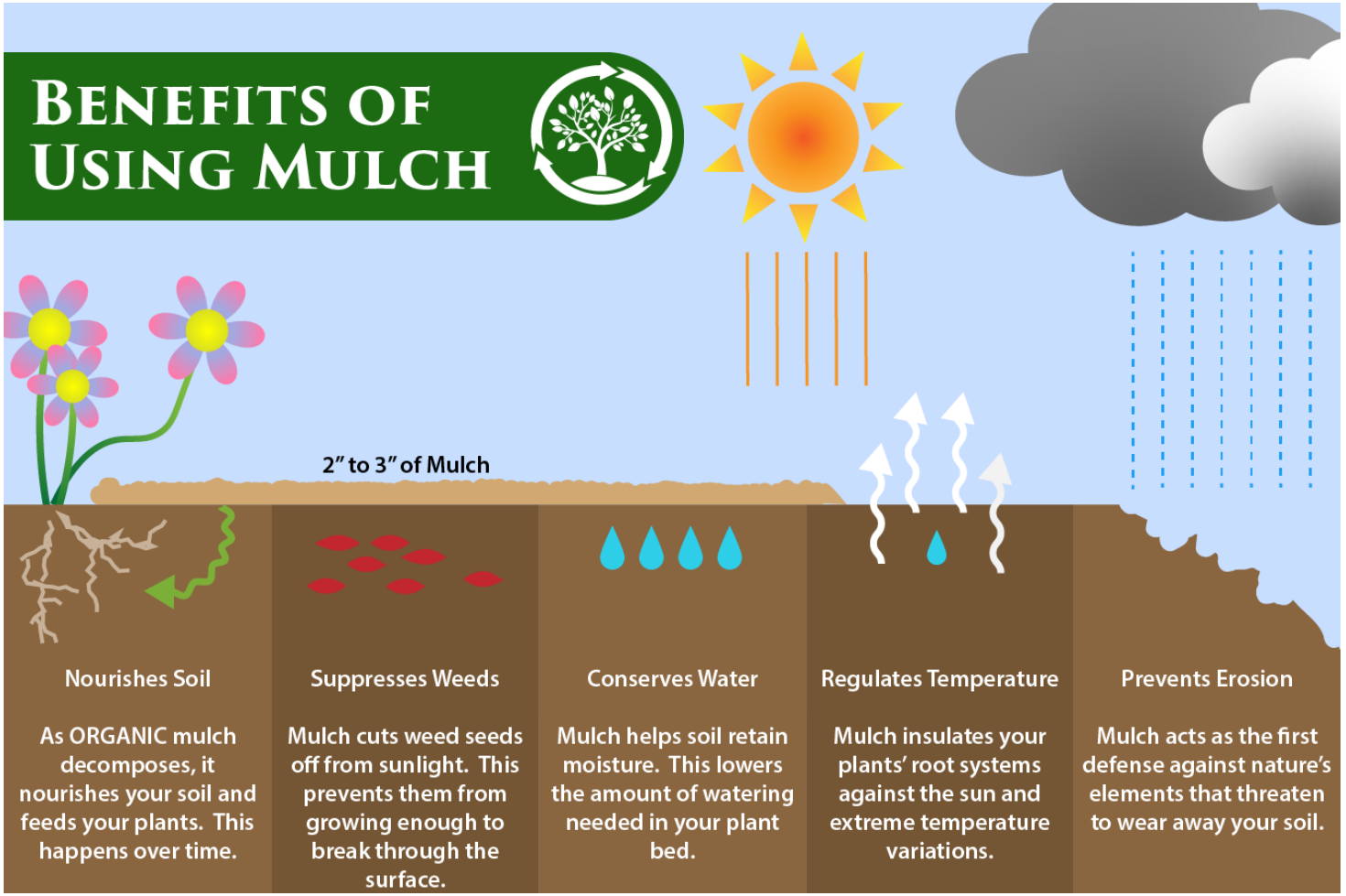


Fig 9 – Benefits of Mulch (Image Source 1st Stop Landscape Supply (US)

5.8 Tree Shading of Proposal

5.8.1 The nature of the proposal with works to a garage and creation of the garden room mean that the structures are not in permanent occupation and as such there are not considered issues associated with shading.

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. Toolbox talk with site operatives regarding tree protection measures and demolition/ foundation works. Update local authority on findings.	**TBC**	**Incomplete**
2nd Site Inspection Attend site to inspect hand excavations for foundation enhancements. Discuss any service provision and mark best hand dig routes if applicable. Update local authority on findings/ compliance with tree protection measures.	**TBC**	**Incomplete**
Final Site Inspection Final site visit to confirm that no damage has been done to retained trees/ identify any remedial actions in the event damage has occurred. Assess any required tree surgery following construction. Update local authority and project team on findings.	**TBC**	**Incomplete**

Note: Actual visit dates subject to change/ confirmation depending on project program.
Note: In the event of proposed service installations a visit will advise/ toolbox talk and inspect works. (tbc)

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 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	Lime	0.6	1	20	6.9	7.8	6.4	6.3	A2	Mature	> 40	3.5	Ivy covered 3rd party tree. Part of linear front garden landscape feature. No access to fully inspect.	No works	7.2
T2	Lime	0.6	1	20	4	4.3	3.8	4.2	C1	Mature	> 40	3	Part of linear front garden landscape feature but suppressed by other Limes. Heavy epicormic hindered inspection. Privet hedge below could be pruned to shape.	Remove epicormic growth to 2m above ground level	7.2
T3	Lime	0.8	1	20	4.9	6.1	4.4	6.2	A2	Mature	> 40	3.5	Part of linear front garden landscape feature. Epicormic growth hindered full basal inspection. Located within access drive/ parking area.	Remove epicormic growth to 2m above ground level	9.6
T4	Lime	0.8	1	20	4.5	7.2	3.6	4.2	A2	Mature	> 40	3.5	Part of linear front garden landscape feature. Epicormic growth and 3rd party garden location hindered full inspection.	No works	9.6

Tree No.	Species	DBH (m)	No of Stems	Ht (m)	Crown Spread				BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPR (m)
					N	E	S	W							
T5	Cypress	0.4	1	11	4	3	3.9	4.4	C1	Mature	20 to 40	2	Established ornamental with garden amenity. Close to garage. Small suppressed Cherry and Yew below.	Remove	4.8
T6	Oak (Holm)	0.3	M/S	7	2.8	2.7	2.6	2.6	C1	Semi-mature	10 to 20	0.4	Establishing multi stemmed tree. High growth potential means it is not well suited to long term retention in this location.	No works	3.6
T7	Pear	0.21	1	6.8	2.2	2.4	3.6	3.3	C1	Early mature	20 to 40	2	Stem leans away from garage. Poorly reduced in the past resulting in water shoot regrowth.	No works	2.5
T8	Apple	0.14	1	5	1.6	0.7	2	2	C1	Young	20 to 40	1.6	Small suppressed fruit tree with asymmetric canopy formation.	No works	1.7
T9	Apple	0.27	1	5.5	4.2	2.8	3	3.7	C1	Mature	> 40	1.4	Established fruit tree with history of poor pruning management but now regrown back into fruit production.	No works	3.2

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							
T10	Plum	0.2	M/S	2.9	4	1.9	2	3.6	C1	Mature	20 to 40	1.5	Species TBC but small suppressed tree/ shrub. Pyracantha below.	No works	2.4
T11	Oak (Holm)	0.28	2	7	2.5	3	3.7	3.4	C1	Early mature	> 40	1.7	Establishing tree with high growth potential. V Union at base. Not well suited to location/ garden size given extent of growth potential but species is tolerant of crown pruning.	No works	3.4
T12	Plum	0.18	M/S	7	2	1	1.8	3.9	C1	Early mature	10 to 20	1	Suppressed multi stemmed tree with asymmetric canopy.	Remove	2.2
T13	Laburnum	0.34	1	8	3	2.9	1.9	3	C1	Mature	10 to 20	1.7	Verging on over mature as large example for species. Some dead wood and canopy thinning consummate with age. Spring feature tree.	No works	4.1
T14	Larch	0.25	1	11	2	1	3	3	U	Early mature	<10	2	Dead 3rd party tree.	Advise 3rd party to remove	3

Tree No.	Species	DBH (m)	No of Stems	Ht (m)	Crown Spread				BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPR (m)
					N	E	S	W							
TG 1	Cherry x 2	0.12	1	4.5	3.8	2.9	2	3	C1	Early mature	20 to 40	1.7	Close grown establishing trees with asymmetric canopies. Spring feature.	No works	1.4
TG 2	Cypress, Magnolia, Yew & Fig	0.25	1	11	3	3	3	3	C1	Mature	20 to 40	1	Established 3rd party trees offering some localised screening for 3rd parties. Cypress are larger than other trees present.	No works	3

Appendix 3 – Tree Works Schedule

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

Tree Surgery

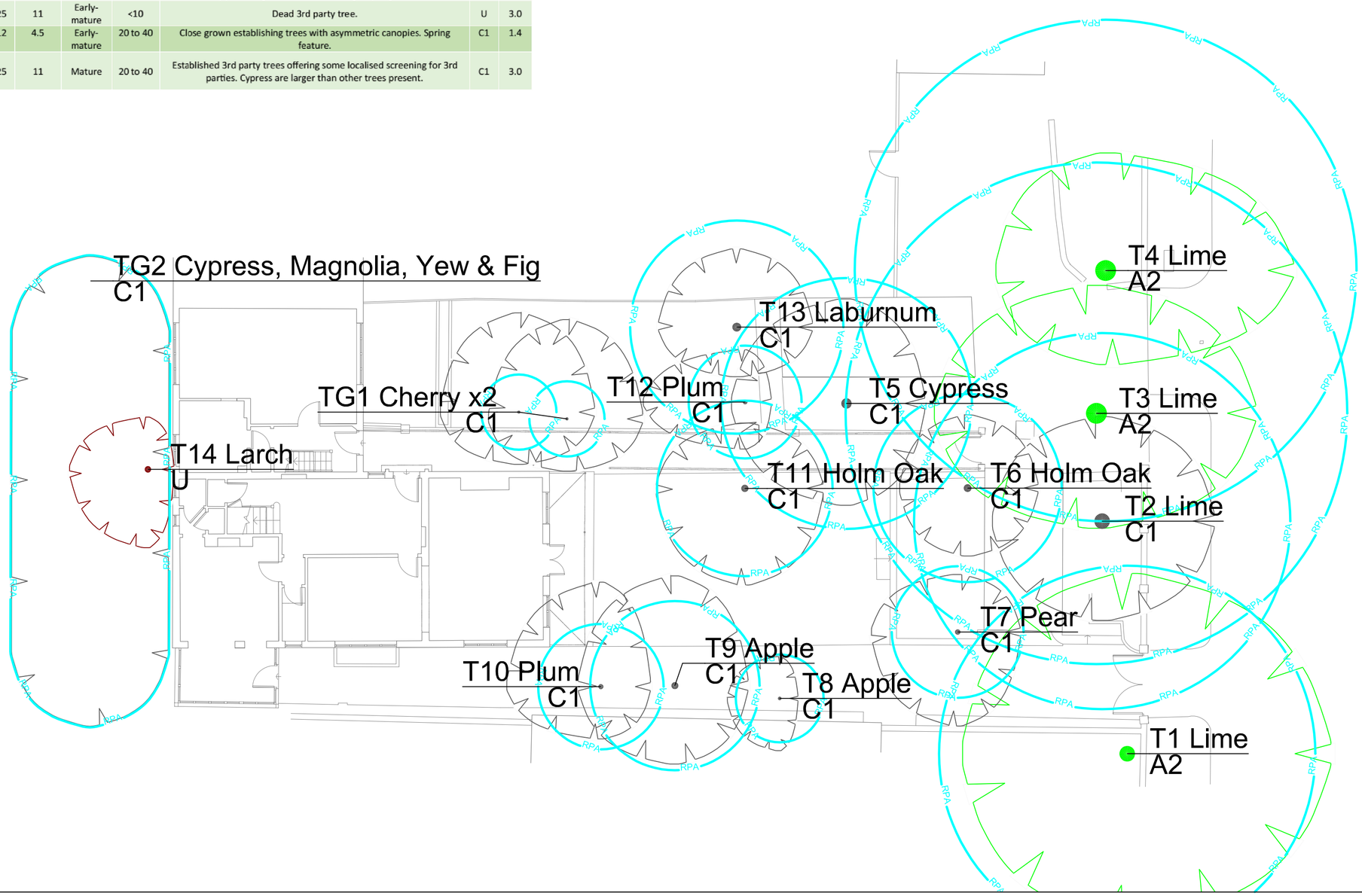
Tree No.	Species	Proposed Tree Works	BS Cat
T2	Lime	Remove epicormic growth to 2m above ground level	**C1**
T3	Lime	Remove epicormic growth to 2m above ground level	**A2**

Proposed Removal

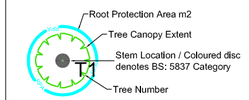
Tree No.	Species	Proposed Works	Observations	BS Cat
T5	Cypress	Remove	Established ornamental with garden amenity. Close to garage. Small suppressed Cherry and Yew below.	**C1**
T12	Plum	Remove	Suppressed multi stemmed tree with asymmetric canopy.	**C1**

Appendix 4 - Tree Constraints Plan

Tree No	Species	DBH	Height	Age Class	Life Exp	Observations	BS Cat	RPA
T1	Lime	0.6	20	Mature	> 40	Ivy covered 3rd party tree. Part of linear front garden landscape feature. No access to fully inspect.	A2	7.2
T2	Lime	0.6	20	Mature	> 40	Part of linear front garden landscape feature but suppressed by other Limes. Heavy epicormic hindered inspection. Privet hedge below could be pruned to shape.	C1	7.2
T3	Lime	0.8	20	Mature	> 40	Part of linear front garden landscape feature. Epicormic growth hindered full basal inspection. Located within access drive/ parking area.	A2	9.6
T4	Lime	0.8	20	Mature	> 40	Part of linear front garden landscape feature. Epicormic growth and 3rd party garden location hindered full inspection.	A2	9.6
T5	Cypress	0.4	11	Mature	20 to 40	Established ornamental with garden amenity. Close to garage. Small suppressed Cherry and Yew below.	C1	4.8
T6	Oak (Holm)	0.3	7	Semi-mature	10 to 20	Establishing multi stemmed tree. High growth potential means it is not well suited to long term retention in this location.	C1	3.6
T7	Pear	0.21	6.8	Early-mature	20 to 40	Stem leans away from garage. Poorly reduced in the past resulting in water shoot regrowth.	C1	2.5
T8	Apple	0.14	5	Young	20 to 40	Small suppressed fruit tree with asymmetric canopy formation.	C1	1.7
T9	Apple	0.27	5.5	Mature	> 40	Established fruit tree with history of poor pruning management but now regrown back into fruit production.	C1	3.2
T10	Plum	0.2	2.9	Mature	20 to 40	Species TBC but small suppressed tree/ shrub. Pyracantha below.	C1	2.4
T11	Oak (Holm)	0.28	7	Early-mature	> 40	Establishing tree with high growth potential. V Union at base. Not well suited to location/ garden size given extent of growth potential but species is tolerant of crown pruning.	C1	3.4
T12	Plum	0.18	7	Early-mature	10 to 20	Suppressed multi stemmed tree with asymmetric canopy.	C1	2.2
T13	Laburnum	0.34	8	Mature	10 to 20	Verging on over mature as large example for species. Some dead wood and canopy thinning consummate with age. Spring feature tree.	C1	4.1
T14	Larch	0.25	11	Early-mature	<10	Dead 3rd party tree.	U	3.0
TG1	Cherry x2	0.12	4.5	Early-mature	20 to 40	Close grown establishing trees with asymmetric canopies. Spring feature.	C1	1.4
TG2	Cypress, Magnolia, Yew & Fig	0.25	11	Mature	20 to 40	Established 3rd party trees offering some localised screening for 3rd parties. Cypress are larger than other trees present.	C1	3.0



Tree Survey Drawing Key



See Tamla Trees, Tree Survey for Individual Tree Details

KEY

Please refer to Tamla Trees report for details

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

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

REV	AMENDMENTS	DRAWN	DATE	AUTH'D

PROJECT
3/3a Frognal Gardens,
Hampstead,
London

CLIENT
Alexander Martin Architects

TITLE
Tree Constraint Plan (TCP)

Job	Scale	DRG NO	Revision
03124R	1:125 @ A2	03124P_TCP_01	-
Date: 29/07/2019	Type: a		

Tel: 01252 811 233
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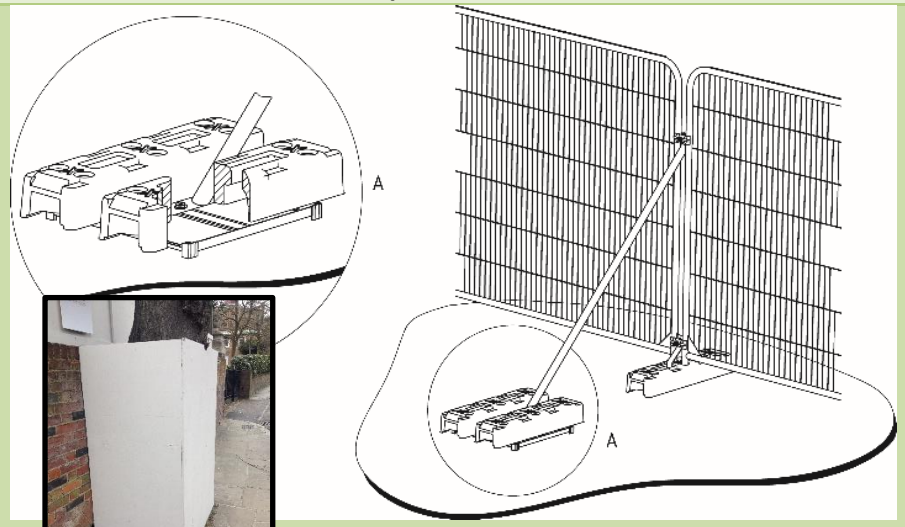
Tamla Trees consulting arborists

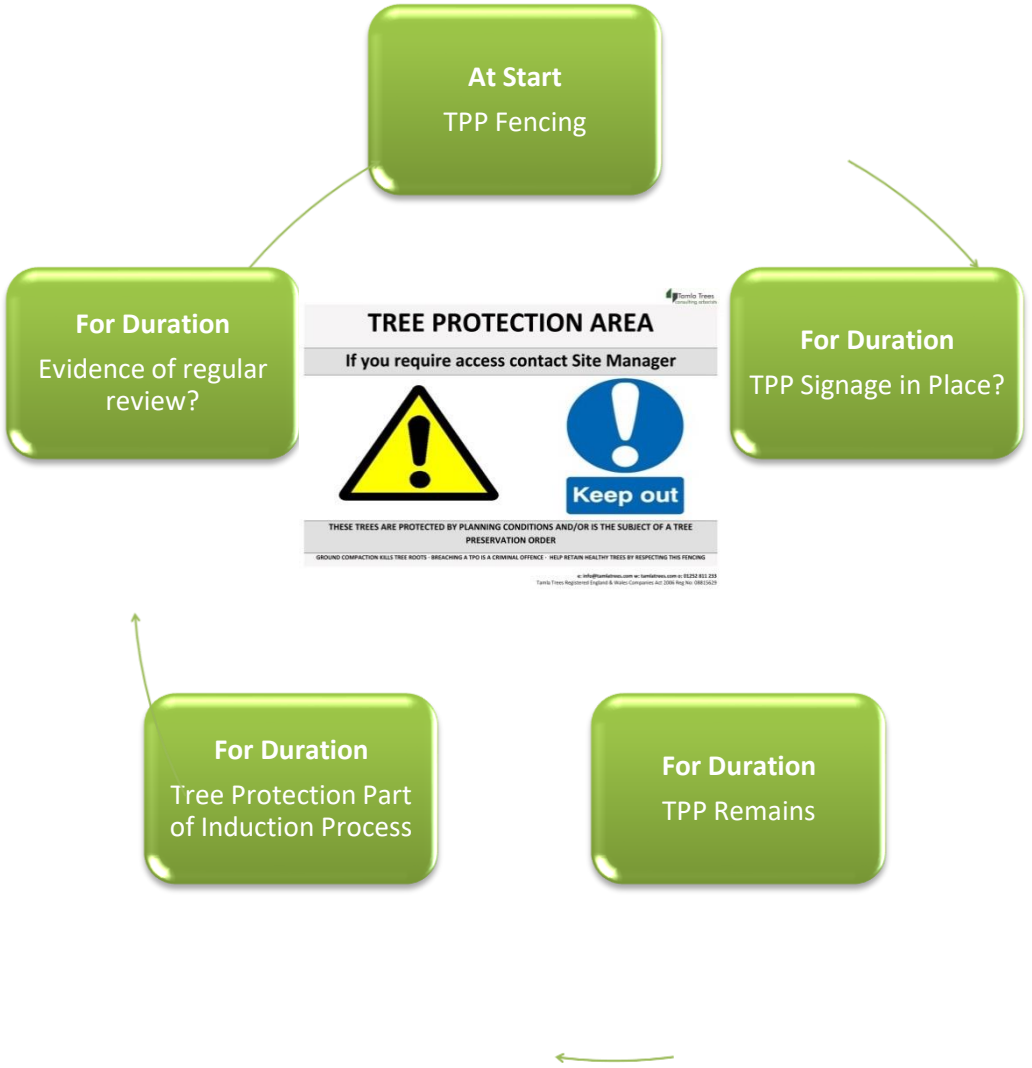
Appendix 5 - Tree Protection Plan

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

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

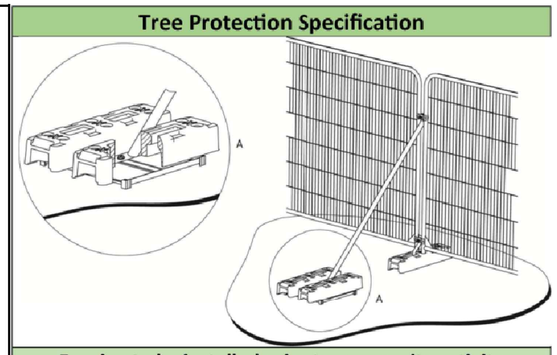
- **All tree protection must be in place prior to any site activities. It is recommended that this fencing is installed prior to any site works (including demolition).**
- **To be effective Tree Protection must remain in place for the duration of the development and form part of the site induction process.**
- **Site operatives to be briefed on ground protection prior to work commencing.**
- **To be combined with feet fencing (shown right) installed prior to any on site works and maintained for duration of the project.**
- **Basal shuttering for T2 & T3 (Lime)**



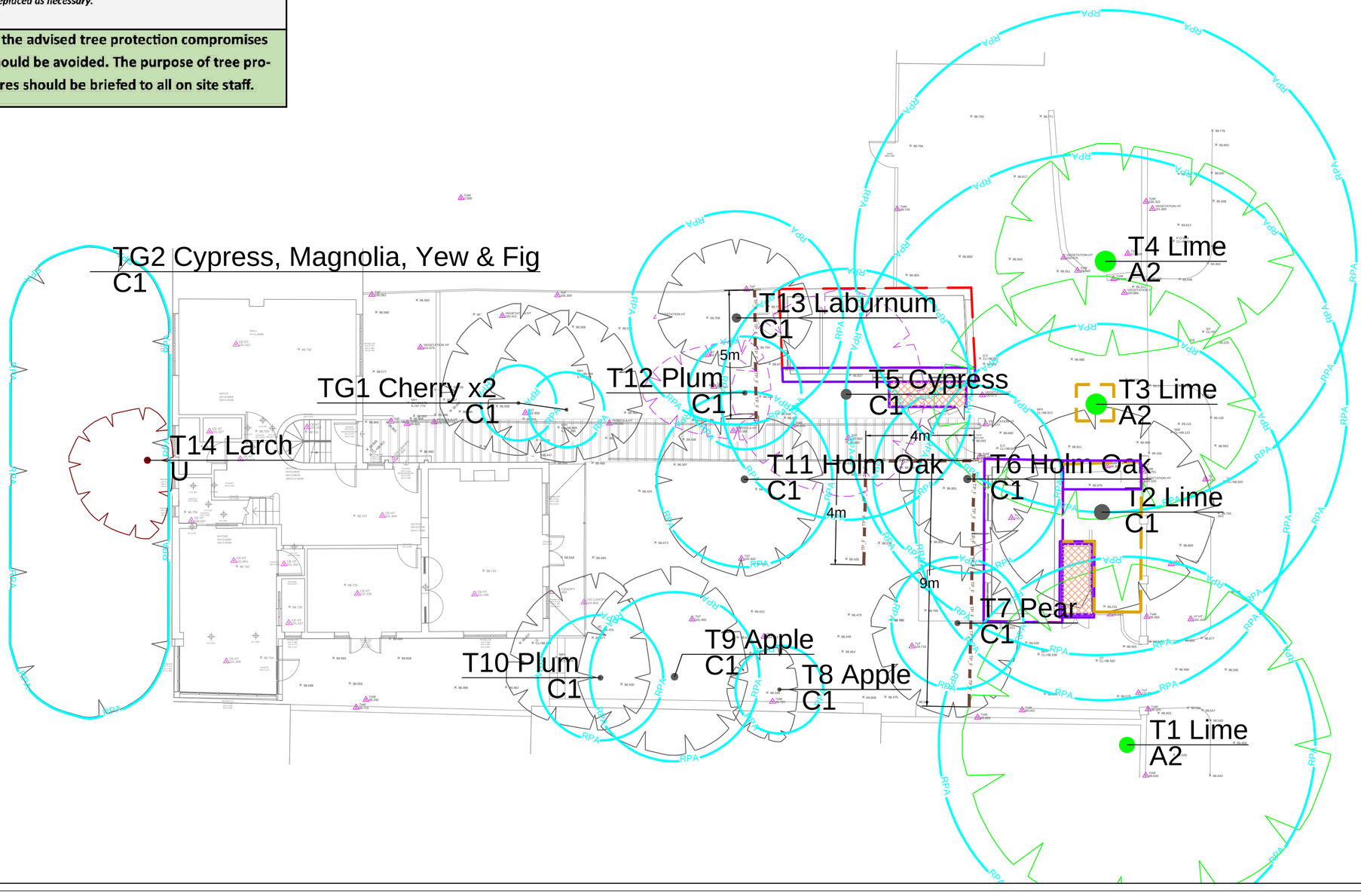

At Start
TPP Fencing
For Duration
TPP Signage in Place?
For Duration
TPP Remains
For Duration
Tree Protection Part of Induction Process
For Duration
Evidence of regular review?
TREE PROTECTION AREA
If you require access contact Site Manager
Keep out
THESE TREES ARE PROTECTED BY PLANNING CONDITIONS AND/OR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

- *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.



Shuttered Tree



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
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- Category C - low quality
- Category U - Dead, Dying or Defect trees with <10 years retention value

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

Proposed removal - to facilitate Development

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

Tree protection - Plywood Frame 1.2m tall

Existing building

New building

Shuttered reinforced 75mm ground bearing slab

REV	AMENDMENTS	DRAWN	DATE	AUTH'D

PROJECT
3/3a Frognal Gardens, Hampstead, London

CLIENT
Alexander Martin Architects

TITLE
Tree Protection Plan (TPP)

Job	Scale	DRG NO	Revision
03124R	1:125 @ A2	03124P_TPP_01	J
Date: 12/06/2020	Type: a		

Tel: 01252 811 233
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Tamla Trees consulting arborists

& Fig

x2
C1

T13 Laburnum
C1

T12 Plum
C1

T5 Cypress
C1

T4 Lime
A2

T3 Lime
A2

T11 Holm Oak
C1

T6 Holm Oak
C1

T2 Lime
C1

T7 Pear
C1

Apple

T1 Lime
A2

5m

4m

4m

9m

Stage 1

- Complete tree works to remove T5.
- Install BS5837 protective as indicated.
- Install plywood frame around base of T2 & T5 (Lime)
- Brief ground workers/ construction team on tree issues.

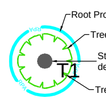
Stage 2

- Remove section/ face of outbuilding A - Garage.
- Demolish outbuilding B - Garden Room.
- Retain footings of both buildings - extend/ upgrade with careful hand digging.

Stage 3

- Building A & B constructed.
- Tree protection measures removed only upon completion.
- Rake out BS3882 compliant top soil to no more than 100mm depth in remaining garden area and seed/ plant as required to make good.

Tree Survey Drawing Key



See Tamla Trees, Tree Survey for Individual Tree Details

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Existing building

New building

Shuttered reinforced 75mm ground bearing slab

REV	AMENDMENTS	DRAWN	DATE	AUTH'D

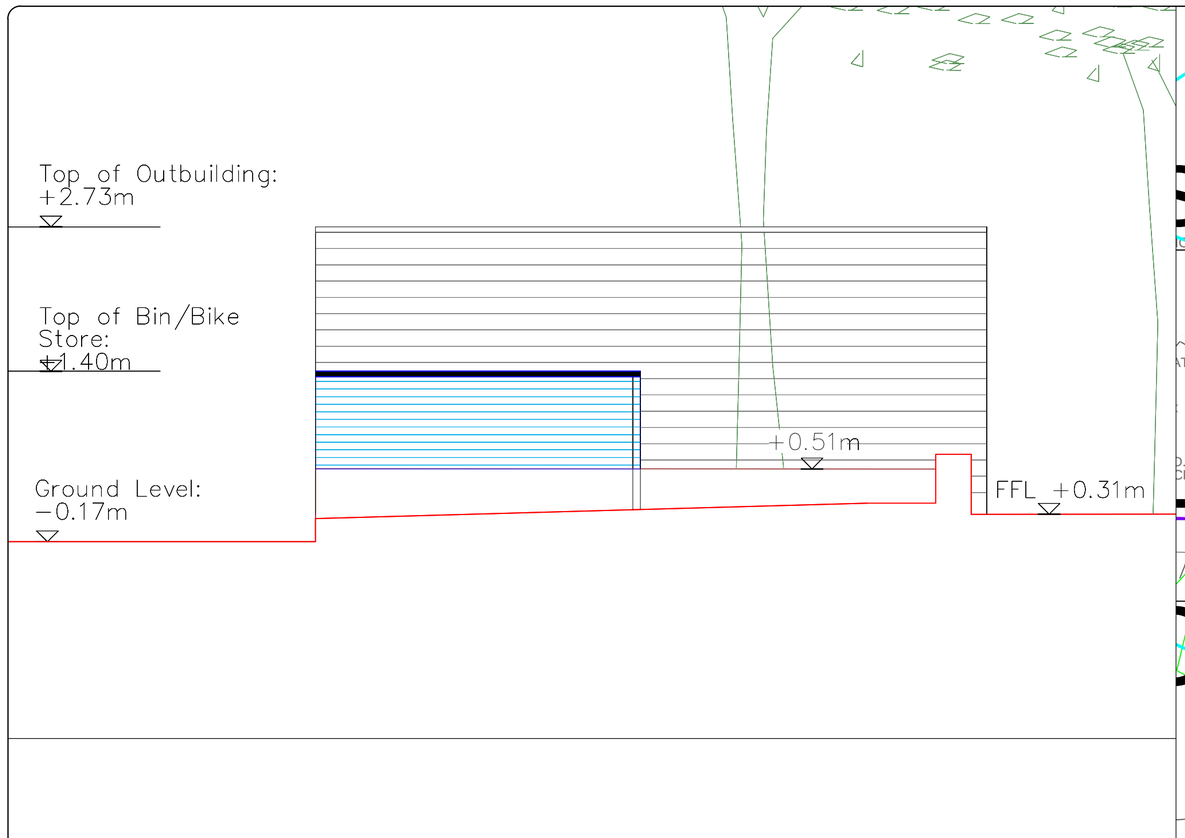
PROJECT
3/3a Frognal Gardens,
Hampstead,
London

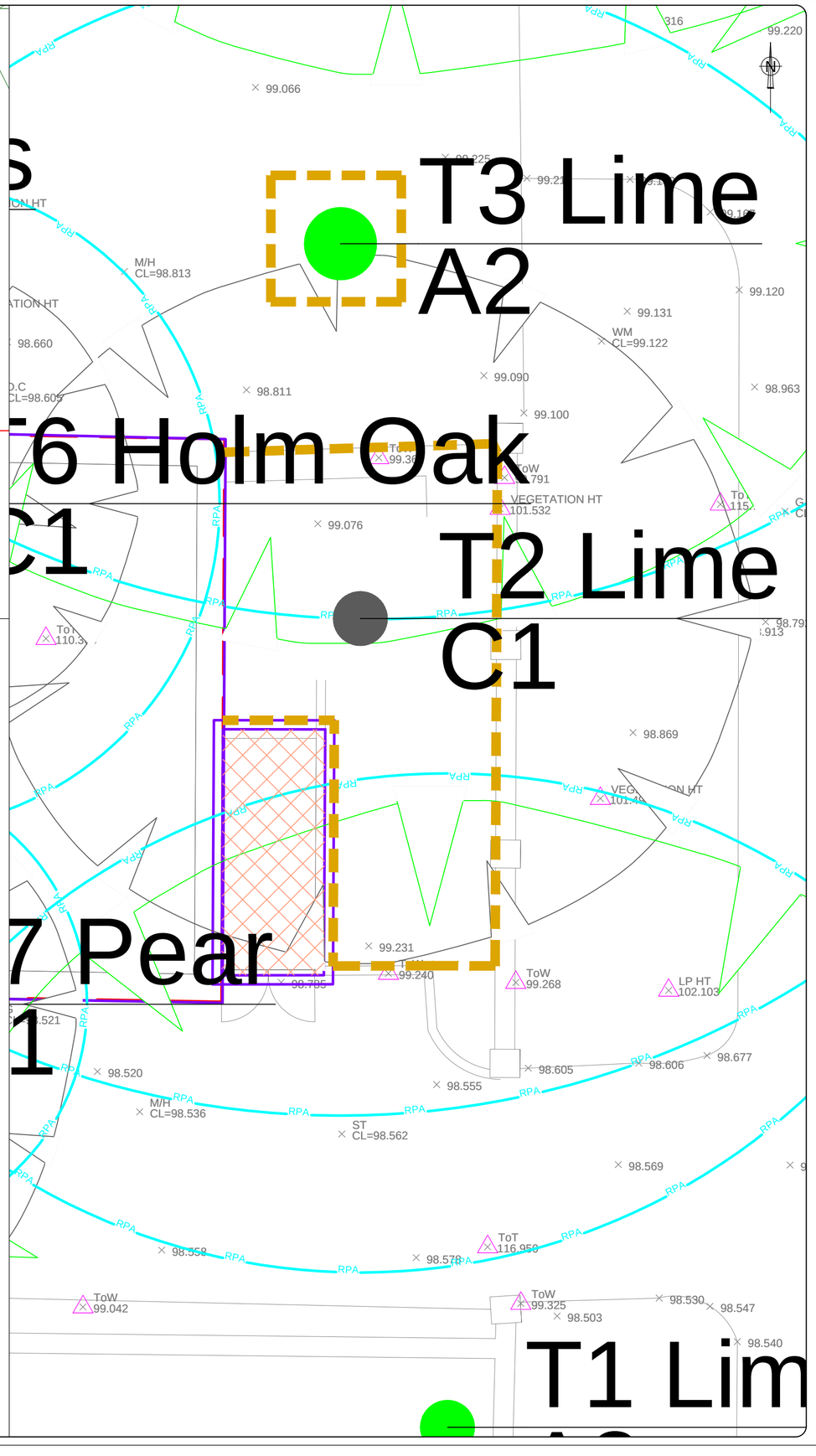
CLIENT
Alexander Martin Architects

TITLE
Tree Protection Plan (TPP)

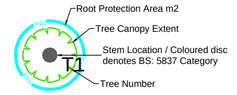
Job	Scale	DRG NO	Revision
03124R	1:60 @ A2	03124P_TPP_02	J
Date: 12/06/2020	Type: a		

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





Tree Survey Drawing Key



See Tamla Trees, Tree Survey for Individual Tree Details

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REV AMENDMENTS DRAWN DATE AUTH'D

PROJECT
3/3a Frognal Gardens,
Hampstead,
London

CLIENT
Alexander Martin Architects

TITLE
Tree Protection Plan (TPP)

Job	Scale	DRG NO	Revision
03124R	1:20 @ A2	03124P_TPP_03	J
Date 12/06/2020	Type a		

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

Appendix 6 – Site Photographs

Image 1 – The Limes (T1, T3 & T4) offer amenity to Frognal Gardens

Image 2 – T7 Pear close to the Garden Room, the footing is retained as this tree may be 'braced' below it

Looking east from the main property – the garden has many trees and shrubs present. Careful planning of material delivery/ storage is required.

Appendix 7 – Limitations

Full Legal Disclaimer

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Specific - Trees

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

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

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

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