BS5837 Arboricultural Impact Assessment



2 Lidlington Place, Rear of 75/76 Oakley Square, Mornington Crescent, NW1 2JU

Client: Minh Quach

Job Reference: 02992Rv2

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

MEWI)

Tamla Trees consulting arborists

January 2020



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1. Executive Summary

- 1.1 Tamla Trees Itd has been appointed by Minh Quach to provide advice on the arboricultural issues relating to proposed development which can be described as: "Provision of a single storey residential property with basement below." We surveyed the site in November 2018. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction Recommendations".
- 1.2 The proposal is accessed over existing hard standing which will be retained for all works as indicated in Appendix 5 (i.e. all areas outside the footprint of the proposal). This maintains the relationship as it currently exists for much of the Root Protection Areas (RPA) and removes the risk of adverse modifications to the underlying soil in this area during development. Following construction this material will be broken out by hand before localised soft and hard landscaping.
- 1.3 The proposal places basement excavation within the Root Protection Area of T1 (Sycamore) 6.1% of RPA, T4 (Tree of Heaven) 5.5% of RPA & T5 (Elder) 25% of RPA.
- 1.4 T6 Fig will be removed to facilitate the proposal. The canopies of low levels trees T2 (Elder), T3 (Elder), T4 (Tree of Heaven) & T5 (Elder) will be cut back to provide suitable clearance. The canopy of T1 is sufficiently high over the rear amenity area that pruning is not required to facilitate the build.
- 1.5 The tree issues can be summarised as: Effective Tree Protection> Effective retention of existing hard surface> Competent tree pruning works> Site operative knowledge of tree protection issues> soft & hard landscaping to make good amenity area.
- 1.6 The site is located within the Camden Town Conservation Area, but we have not been advised of any Tree Preservation Order (TPO).
- 1.7 Subject to the detailed working practices outlined within this report there should be no discernible impact on the retained trees.
- 1.8 This report is based on the client plans ref: 191014 revised plans



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 Camden Town
Notes: (i)All trees larger than 7.5cm diameter at 1.5m above ground level are subject to regulations within a Conservat which are dead and dangerous but clarification before any tree works is advised. A <u>notification</u> is required in many circu	
Tree Preservation Order Status	
Are inspected trees subject to a TPO?	Unknown
Type of TPO	Area
	Individual
	Group
	Woodland
TPO Reference	13/1996
Date TPO Made	Confirmed 12.6.1997
Notes: (i) The type and details of any TPO determine which trees are 'protected'. Exemptions apply for trees which are	_

before any tree works is advised. An <u>application</u> may be required before undertaking works. (ii) Protected status as per Wycombe District Council website



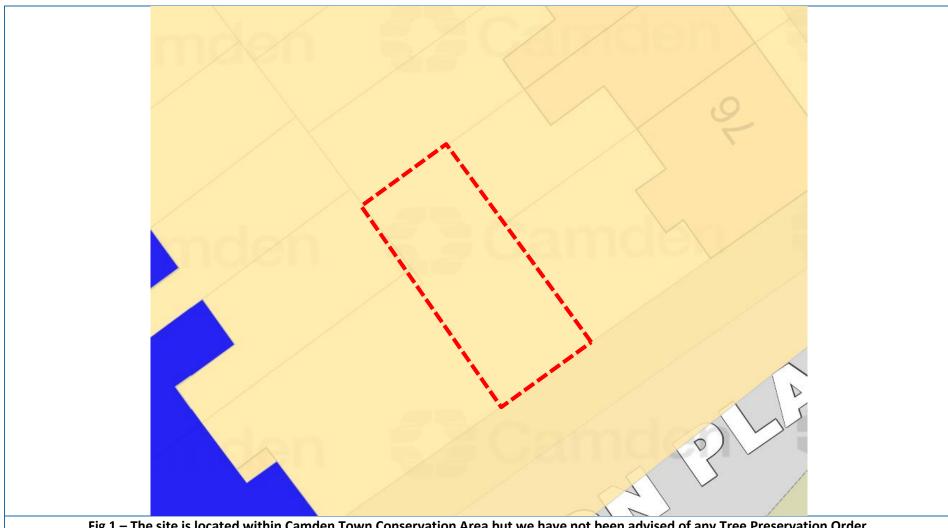


Fig 1 – The site is located within Camden Town Conservation Area but we have not been advised of any Tree Preservation Order



3. Terms of Reference

- 3.1 <u>BS5837:2012</u> '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
- 3.5 Camden Council: Basement Impact Assessments: Defining the scope of Engineering input Guidance note 1v0

4. The Trees

4.1 The trees can be summarised as follows:

BS 5837 Cat	А	В	С	U
Specific Trees	-	T1	T2, T3, T4, T5, T6, T7	-
Total Number	None	1 individual	6 individuals	None



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

BS 5837 Cat	А	В	С
Eversholt Street Providing amenity and in leaf screening	<u>-</u>	T1	T3, T4 & T5
between properties and contributing to the local (garden) tree scape.			
Harrington Square Providing amenity and in leaf screening	-	T1	T3, T4 & T5
between properties and contributing to the local (garden) tree scape.			
Lidlington Place	-	T1	-
Providing amenity and in leaf screening			
and contributing to the wider public			
amenity			

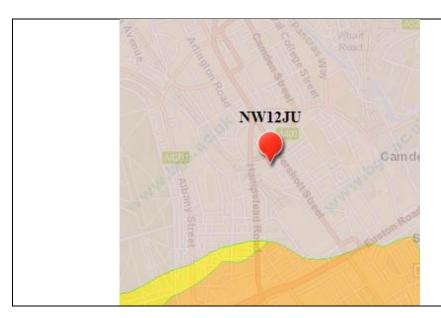
4.3 There were no hedgerows that qualify for consideration under the 1997 Hedgerow Regulations.

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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

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.



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	А	В	С	Summary
RPA Incursion	-	T1	T4 &	Basement Excavation/ Foundations— The proposal places the structure (including
			T5	basement) within the partial RPA areas of T1, T4 7 T5. On an individual level the incursions
				are considered tolerable and for t1 are away from the south western side of the tree
				(where a greater level of structural rooting would be envisaged given prevailing wind
				directions). The collective impacts are tabulated on the following page. These levels of potential root disturbance, particularly at the distances involved relative to T1 are
				considered within the tolerable range. T4 7 T5 are smaller trees with less canopy/ sail area
				and the remaining rooting areas are within residential gardens for all 3 trees enhancing
				the view that the proposed basement and building will not adversely impact on the health
				or stability of the trees.
				In summary whilst there may be some localized root disturbance this is well within the
				tolerable range and there should be no discernable impact.
		T4	T2 T2	Data ildina af Danadam Mall. His managanda naba ildaha banadam mall. andahis manda
		T1	T2, T3, T4 &	Rebuilding of Boundary Wall – It is proposed to rebuild the boundary wall, and this would be completed prior to any other on-site works. The existing wall would be removed to the
			T5	lower brick courses which would have localized repair as necessary. The replacement wall
			13	can then be constructed from this retained lower brick course removing the need for
				activities that could have an adverse impact on underlying roots. We would encourage the
				use of helical bars within the rebuilt wall to give it the maximum structural integrity.
		T1	T2, T3	Rear Garden/ Landscaping – It is proposed to retain the existing concrete slab in the
			& T4	amenity area to the rear of the proposed dwelling. This approach removes the risk of
				adversely impacting the underlying soil/ roots during the build and would facilitate local
				storage on a site where storage space during construction will be at a premium. Further



to the proposal being completed this concrete will be broken out by hand and a mixture of permeable (decking or similar) and soft planting (mulched shrub beds or similar) incorporated. BS3882 compliant topsoil will be spread/ raked out by hand to a depth no greater than 100mm and any localized shrub and tree planting completed where necessary. Areas below trees are recommended for mulching with composted bark mulch which can be overlain with a permeable decking surface. To address the overhang and potential leaf, seed and sticky deposits from T1 a pergola structure is proposed, and this will be supported on hand dug post footings.

Detailed further comment on landscaping proposals is outside the scope of this report.

5.2.2 The relative incursions into the RPA for the foundation excavations are as follows.

Tree Number	RPA Total (Sqm)	Basement Incursion (Sqm)	As % of trees RPA
T1	163	10	6.1
T4	18	1	5.5
T5	12	3	25



5.3 Tree Loss

5.3.1 T6 (Fig) will be removed, this is a small and insignificant tree. T2, T3, T4 & T5 will be pruned back to suitable side growth points to establish locations of repeat pruning whilst removing the current overhangs into the site.



Fig 2 – T6 (Fig) above left will be removed and further overhanging branches (above right) cut back to the relevant boundaries for T2, T3, T4 & T5

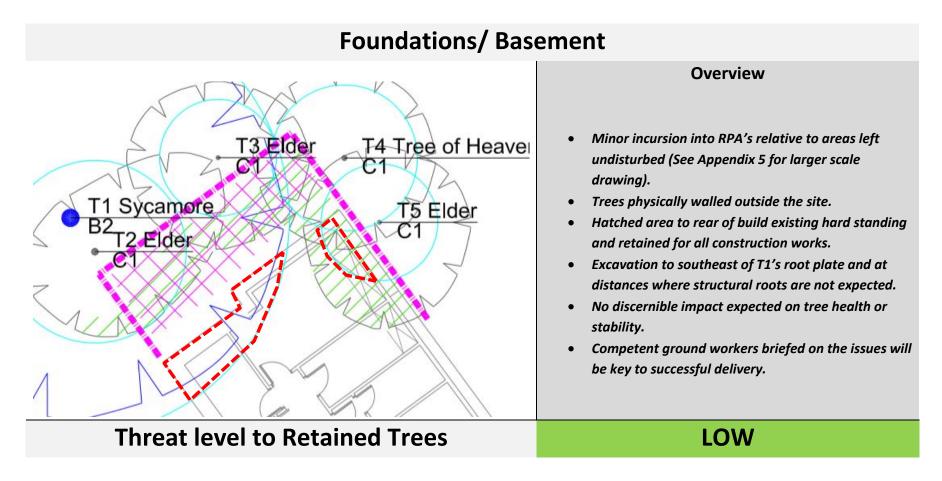


- 5.3.2 **Birds** In the event future tree works are required to be completed between 1st March & the 31st July (inclusive) a due diligence check for nesting birds must be completed before work starts in order to comply with the Wildlife & Countryside Act 1981. This check should be recorded in the Site-Specific 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).



5.4 Foundations & Basement

5.4.1 The minimal new incursions mean no special foundation measures are proposed:





5.4.2 The proposed tree protection procedure can be summarised as follows:

Stage 1

- Prune overhanging trees
- Rebuild existing boundary wall retaining lower brick courses
- Retain existing hard standing to rear.

Stage 2

- Break out remaining hardstanding and excavate basement area.
- Complete construction.

Stage 3

- Break out remaining hardstanding by hand.
- Landscape rear garden area incoporating permeable materials/ mulched soft landscaping.



5.4.3 The existing wall will be rebuilt and retained as a physical barrier to the retained trees. The hard surfacing in this area is also retained for the duration of site works.

TICE PROCES

Tree Protection

- Provided by wall (left)
- Hard surfacing in RPA's to rear of proposal retained.

Overview

- Removed by hand following construction.
- Removes need for temporary ground protection and allows for localised site storage.

Threat Level to Retained Trees

LOW



5.5 Surfaces near Trees

5.5.1 No permanent new surfaces within the RPA of retained trees is proposed with the existing hard surface to the rear of the proposal retained during the main construction phase and removed towards the end of the project.

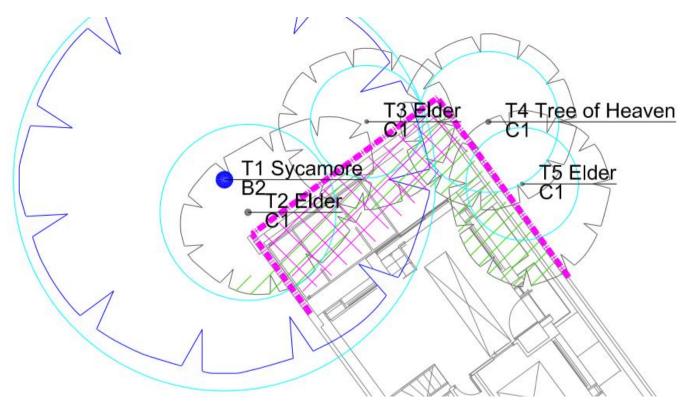


Fig 3 – Retaining this area of existing hard surfacing allows for site storage to the rear of the proposal during construction. It will then be removed by hand prior to localised landscaping.



Removal of Hard Standing



Threat Level to Retained Trees





Low/ Moderate



5.6 Site Service Provision

5.6.1 We are advised that all services will enter the site from Lidlington Place direction well away from retained trees.

5.7 Ground Level Changes

5.7.1 Following completion of the project and removal of the existing hard standing 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. Any localized landscaping can then bridge over this with permeable materials (decking for example).

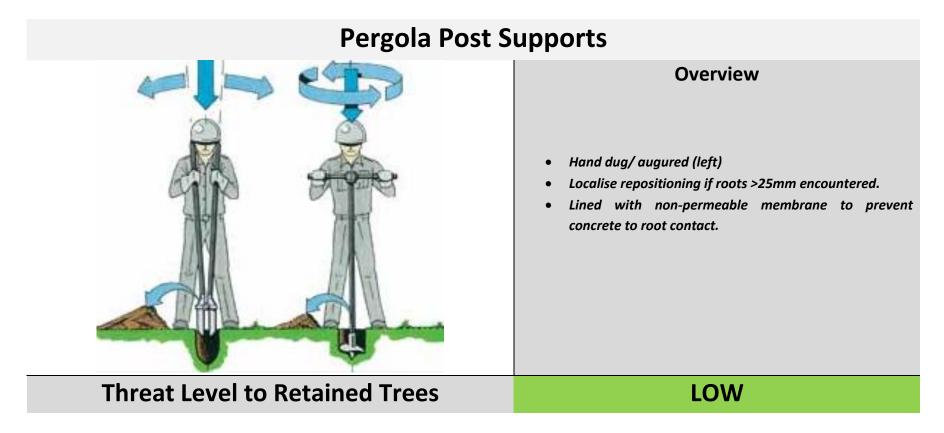


Fig 4 – In the event of 'making good' topsoil will be BS3882 compliant and raked out by hand to no greater depth than 100mm



5.8 Tree Shading of Proposal

5.8.1 The proposal incorporates lightwell and roof windows and the potential impact of T1 (Sycamore) on the amenity space is appreciated by the client. It is proposed to incorporate a pergola to the rear. This provides a cover over any amenity area designing out issues with leaf litter and sticky deposits. The structure will be supported on hand dug post holes.





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 prior to wall rebuilding, inspect completed tree works. Toolbox talk with site operatives regarding tree protection measures. Update local authority on findings.	ТВС	Incomplete
Mid Development Inspection Attend site and inspect fencing, discus any issues with site manager. Update local authority on findings/ compliance with tree protection measures.	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.

Note: In the event of roots within scrape area/ piles a further visit will inspect and advise.

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
	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 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	Sycamore	0.6	1	19	7	7	6.6	7	B2	Mature	> 40	5	3rd party tree with no access to inspect. Ivy covered its evidence of previous cyclical crown reduction works.	No works	7.2
Т2	Elder	0.25	1	4.3	2	4.9	3	2.5	C1	Mature	10 to 20	1.6	3rd party tree with no access to inspect. Asymmetrical canopy which overhangs site.	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	3
Т3	Elder	0.16	1	4.2	2.5	3	3	3	C1	Early- mature	20 to 40	2	3rd party tree with no access to inspect. Reasonable form. Small garden tree.	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	1.9



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)		
Т4	Tree of Heaven	0.2	1	8	3	3	3	3	C1	Early- mature	>40	3	3rd party tree with no access to inspect. Establishing fast growing ornamental with high growth potential.	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	2.4
T5	Elder	0.16	1	4.2	2.5	3	3.5	2.5	C1	Early- mature	20 to 40	2	3rd party tree with no access to inspect. Small garden tree.	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	1.9
Т6	Fig	0.06	M/S	4	1.2	1.4	1	1.1	C1	Young	<10	1.7	Self-set tree growing through concrete. Below BS size threshold.	Remove	0.7



Tree No.	Species	DBH (m)	No of Stems	Ht (m)	Crown Spread			BS Cat		Life Expect	l Hf	Observation	Recommendations	RPR (m)	
Т7	Tree of Heaven	0.04	M/S	4.5	1.6	1.6	1.2	1.4	C1	Young	10 to 20	1.7	3rd party tree with no access to inspect. Below BS size threshold. Poor form.	No works	0.5



Appendix 3 – Tree Works Schedule

Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat
T2	Elder	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	C1
T3	Elder	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	C1
T4	Tree of Heaven	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	C1
T5	Elder	Prune back overhanging branches to boundary. Prune to suitable side growth point to establish repeat pruning.	C1

Proposed Removal

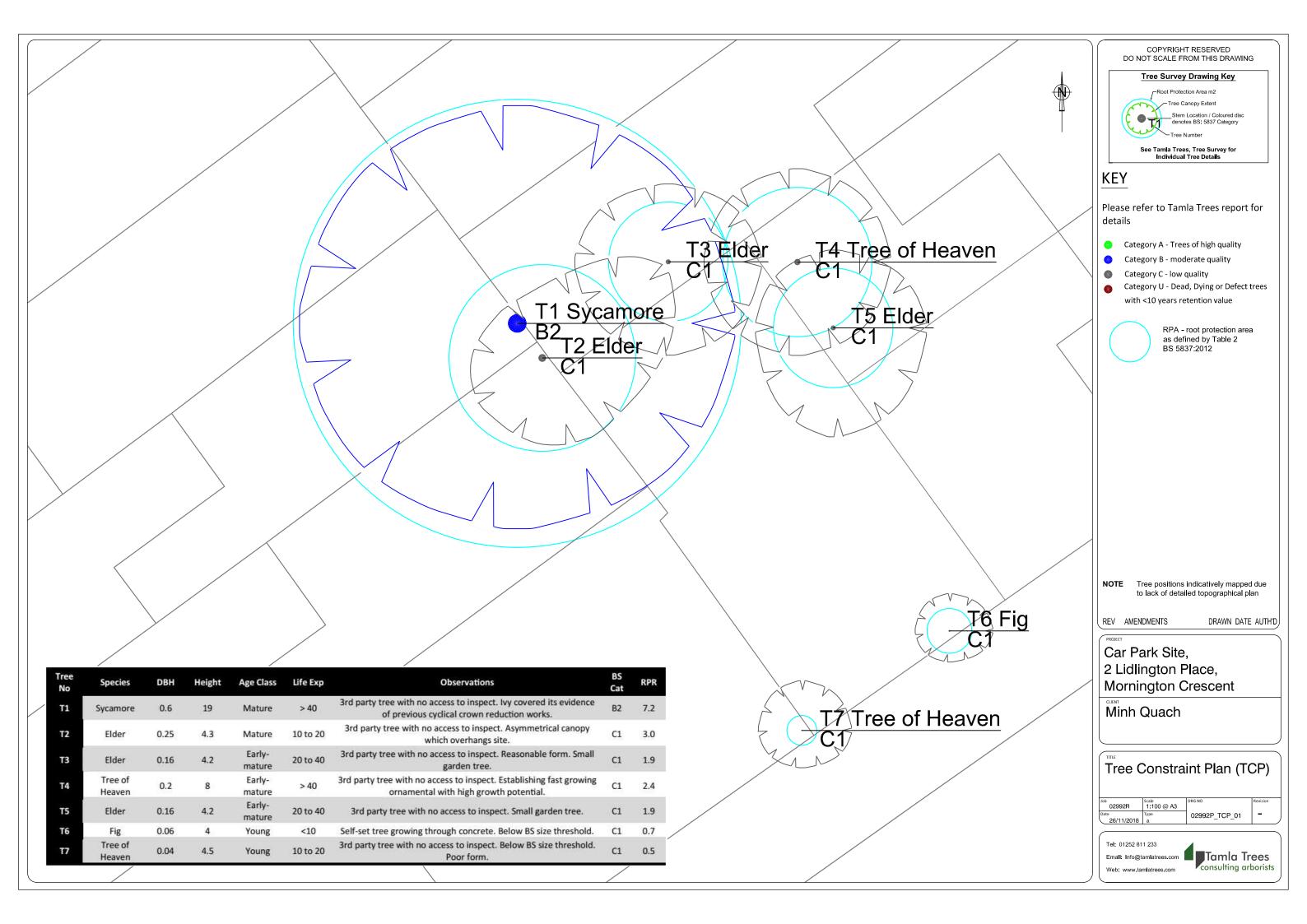
Tree No.	Species	Proposed Tree Works	BS Cat
Т6	Fig	Remove	C1

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 4 - Tree Constraints Plan





Appendix 5- Tree Protection Plan

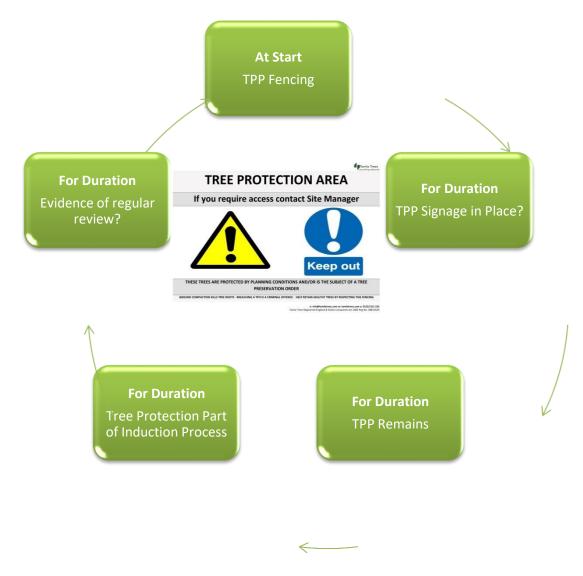
Tree protection is essential to successfully integrate the proposal into the surrounding trees. It is designed to manage the impact on the underlying soil and rooting environment. It must therefore be installed prior to any further site activity. Even apparently minimal tracking of the soil near trees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

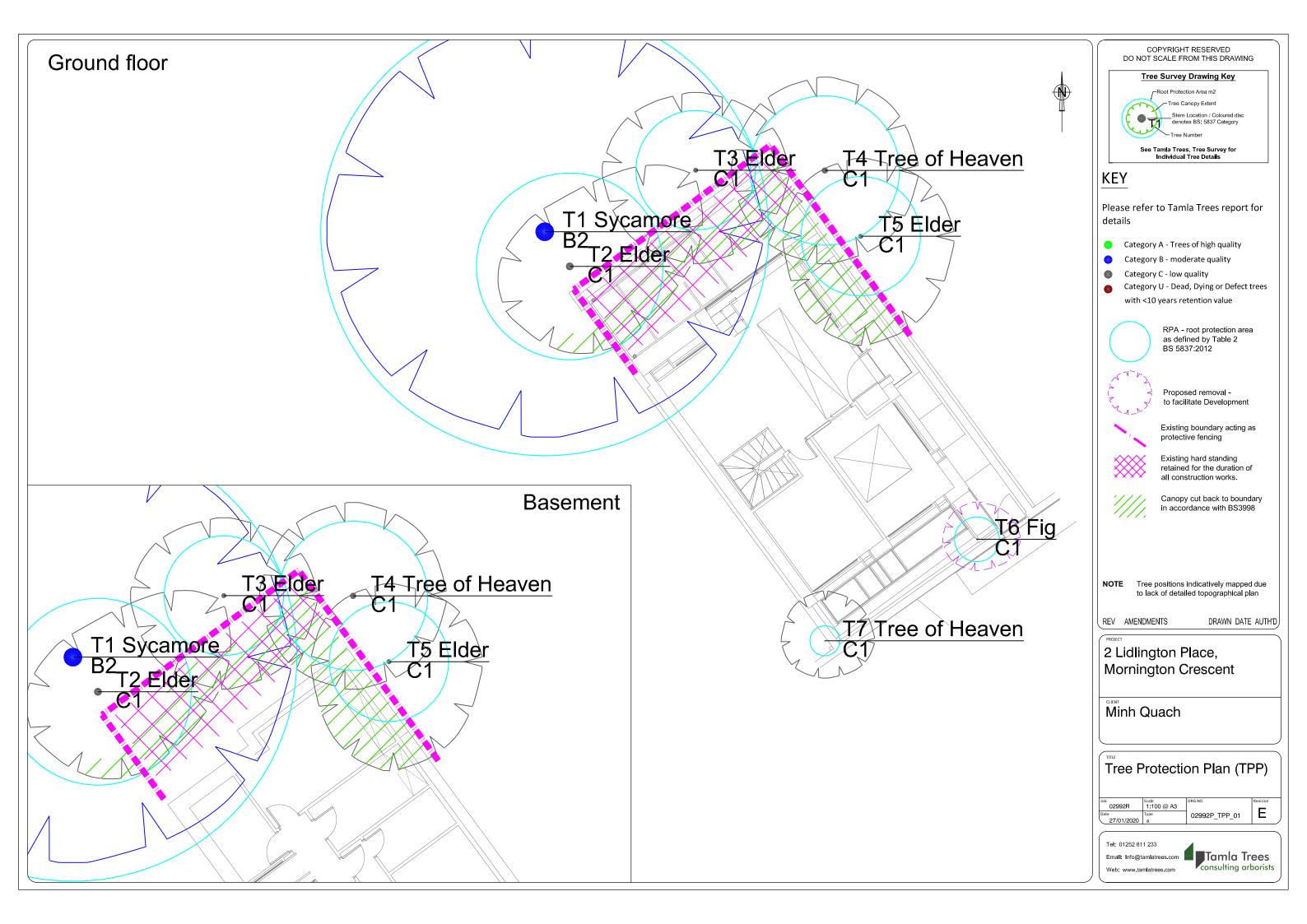
All our fencing specifications accord with advice and guidance within BS 5837. Modifications to fence types are possible but should be discussed prior to implementation. In all other instances the form detailed below should be shown. This offers the best protection to retained trees.

- 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.
- In this instance protection provided by boundary brick wall.











Appendix 6 – Site Photographs



Image 1 – An existing wall prevents movement towards offsite trees (T1 and T2 shown above)







Image 2 – T4 Tree of Heaven

Image 3 –Site access is away from the retained trees



Appendix 7 – Limitations

Full Legal Disclaimer

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

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Specific - Trees

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to risk/ target areas and in accordance with relevant HSE 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.