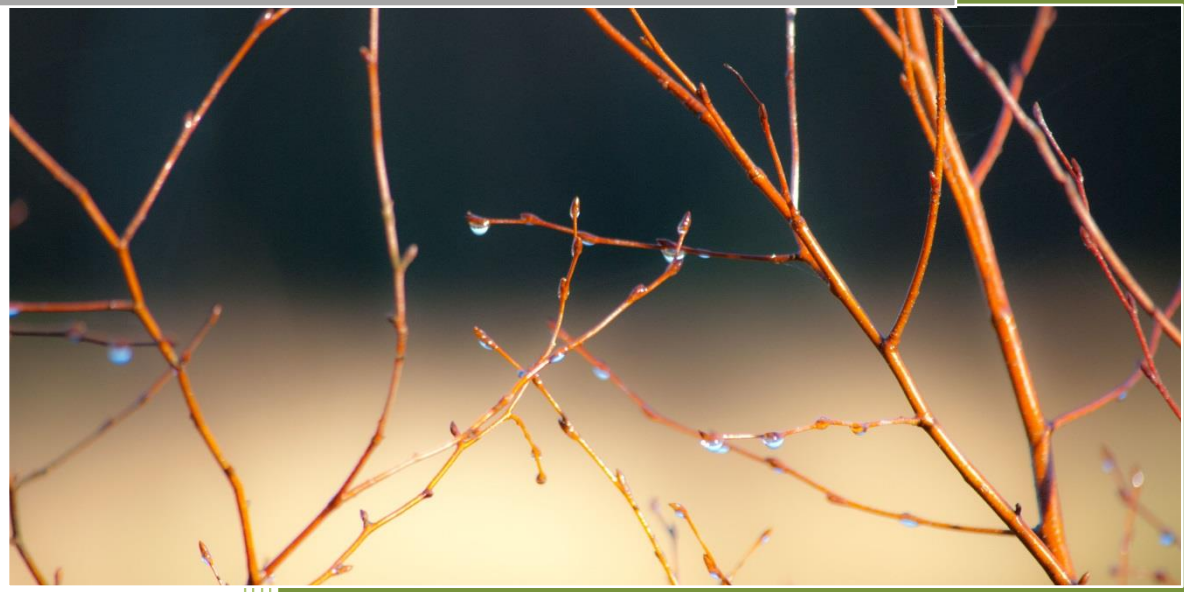
BS5837 Arboricultural Impact Assessment



131 Arlington Road, London, NW1 7ET

Client: **Jonathan Myerson**

Job Reference: 03051R

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

Tamla Trees
consulting arborists

April 2019

Contents

1. Executive Summary

1.1 Tamla Trees ltd has been appointed by Jonathan Myerson to provide advice on the arboricultural issues relating to the installation of an Ecospace prefabricated garden room. We surveyed the site on 9th April 2019. The survey accorded with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations". The Ecospace garden room structures are prefabricated panel structures assembled by hand and with a typical installation time of 10 days/ 2 weeks.

1.2 The predominant trees affected by the works are T1 & T2 (Sycamore) both 3rd party trees. The proposal places pad footings within the Root Protection Area (RPA) of T1 & T2 but the nature of the pad excavations is that they affect 1% of T1's RPA and 3% of T2's. The structure itself covers a greater area but in terms of root disturbance the issues are extremely minimal.

1.3 No demolition is required, and the garden cannot be accessed by large ground compressing machinery. All excavations are undertaken by hand and scope exists to manipulate stone positions to avoid tree roots which has worked well on numerous other installations within tree Root Protection Areas (RPA's).

1.4 The works will be accessed through the rear garden with 3rd party trees protected by virtue of their location on neighbouring land. A localised area of ground protection for access will be installed prior to any suite works to allow movement and prefabricated panel storage. Any service connection will be hand dug. A Privet shrub (S1) will be removed to facilitate the proposal.

1.5 The potential tree issues can be summarised as: **Shrub removal> Installation (including footings) of the garden room structure> service provision> landscaping.** At the time of writing Camden Council have not responded to our statutory search but the client has advised that the site is within a Conservation Area.

1.6 Subject to the working practices outlined within this report there should be no discernible impact on the retained trees. This report is based on the client plans ref: MYE.ECO.01A

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
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?	NA
Type of TPO	~~**Area**~~
	~~**Individual**~~
	~~**Group**~~
	~~**Woodland**~~
TPO Reference	-
Date TPO Made	-
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) Conservation Area advised by client. (iii) At the time of writing Camden Council have not yet responded to our statutory search.	

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, T2 & T3	T4, T5 & S1	-
Total Number	None	3 individuals	2 individuals & 1 shrub	None

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

BS 5837 Cat	A	B	C
Arlington Road & Albert Street Private Residential Amenities Providing amenity between properties and contributing to the local (garden) tree scape.	-	T1, T2	-
Arlington Road Private Residential Amenities Providing amenity between properties and contributing to the local (garden) tree scape.	-	T3	T4 & T5

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

4.4 S1 (Privet) is considered of a size, location or condition where their wider contribution to the public amenity is limited.

4.5 Please note that there was no access to 3rd party trees and any assessment/ BS Categorization is made without the benefit of a full inspection.

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
London Clay Formation Clay and Silt. 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	A	B	C	Summary
RPA Incursion		T1		**Pad Foundations** – The proposal places the structure within the RPA areas of T1 & T2. On an individual level the pad footing incursions are minimal. The collective impacts are tabulated on the following page with the greatest incursion being 3% of T2's RPA. The pads will be hand dug as detailed within this report and their exact location manipulated to reflect any roots >25mm which may be encountered (which will be retained). Each pad will be hand dug and the swift stone is precast meaning there is no wet concrete used in the proximity of tree roots. In summary whilst there may be some localized root disturbance this is well within the tolerable range and there should be no discernable impact. **Service**s – The service trench to the proposal will be hand dug following the principles outlined within this report. Any pipes or cables will be fed below retained roots >25mm in diameter.

5.2.2 The relative incursions in to the RPA for the pad excavations are as follows.

Tree Number	RPA Total (Sqm)	Incursion (Sqm)	Pads as % of trees RPA
T1	452	4.9	1%
T2	162	4.9	3%

5.2.3 Whilst the ground will be covered by the structure this is again minimal relative to the RPA of the trees and remaining free draining soft surface garden areas where the trees currently root. These RPA incursion figures for the pads are well within the tolerable range for a Sycamore with remaining areas of soil undisturbed and not covered by existing hard standing or buildings.

5.3 Tree Loss

5.3.1 No trees are removed to facilitate the project, but the Privet shrub referenced as S1 will be removed. This is a small and insignificant shrub relative to the local amenity.

Fig 1 – S1 (Privet) above will be removed

5.3.2 **Birds** - In the event future tree works/ site clearance 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 supporting swift stone pads (or similar) will be installed as follows:

Stage 1

- Pad locations/ spec confirmed by engineer and marked out.
- Tree/ ground protection installed.

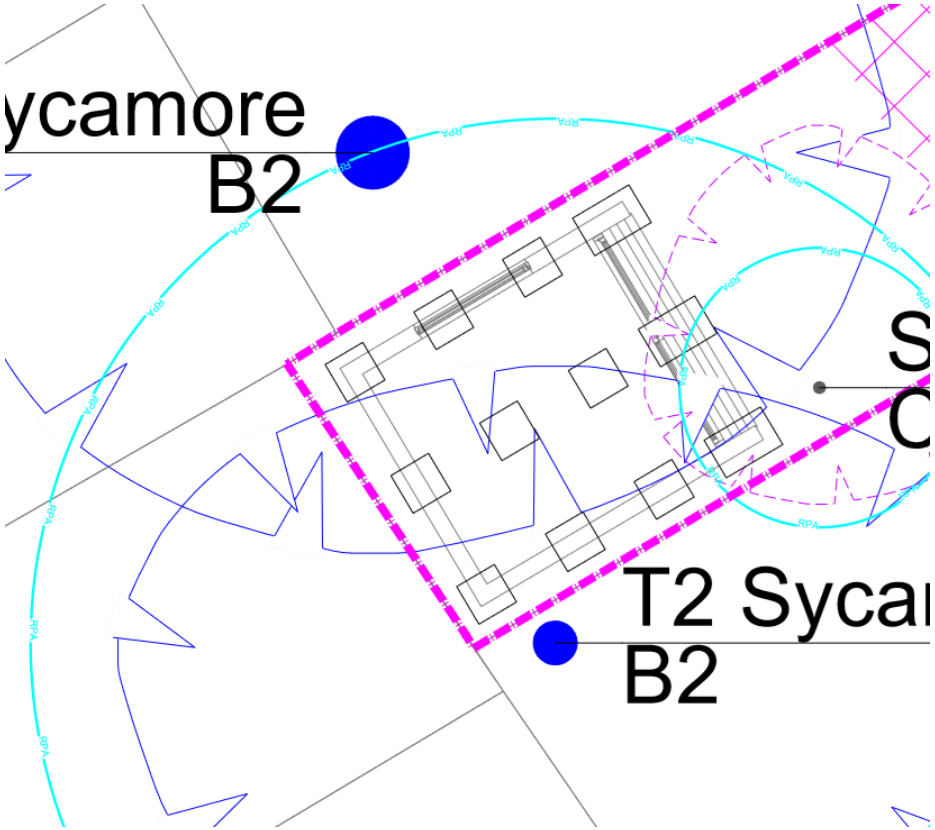
Stage 2

- Localised garden clearance of plants/ materials.
- Pad's hand dug and installed, garden room constructed.

Stage 3

- Ground protection remains in place for duration of all works and is removed upon completion. Note: trees protected by virtue of 3rd party location.

5.4.2 Pad footings will be utilised.



- ***Pad footings used to minimise impact.***
- ***Hand dug with localised repositioning to avoid roots >25mm.***
- ***The level of works is such that no special foundation measures are proposed. In summary at this level and in this location, we believe there will be no discernible impact on the health or stability of T1 or T2.***

Fig 2 – Foundation incursion overview. Note: form and location of pads to be confirmed by structural engineer.

5.4.3 The pad footing is used for buildings of this type. It seeks to minimise any impact on underlying tree roots.

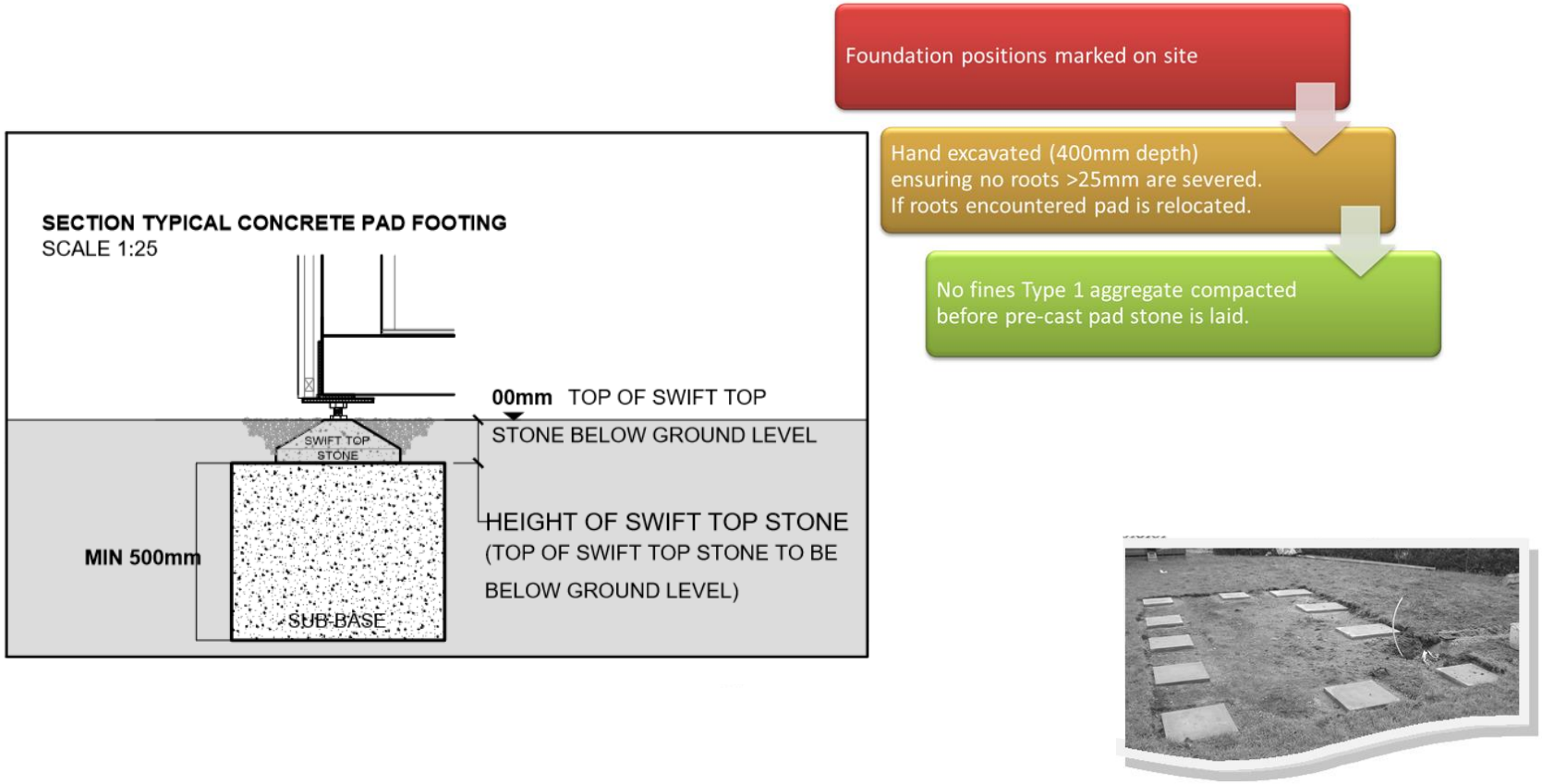


Fig 3 – Typical pad detail with installation (inset). This approach removes the need for a 'strip' foundation reducing the impact on underlying roots. Pads are hand dug and localised manipulations to retain roots >25mm diameter are possible as a result. **(Note: depth as per image not flow)**

5.4.4 All hand dug pad excavations are not lined as the pad stones are precast meaning there is no wet pour root to concrete issues.

5.4.5 **Planning the excavation:** The pad footing areas within the RPA of retained trees are marked out by hand.

5.4.6 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.

5.4.7 **How deep?** – The excavation need only be as deep as the proposed pad. 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

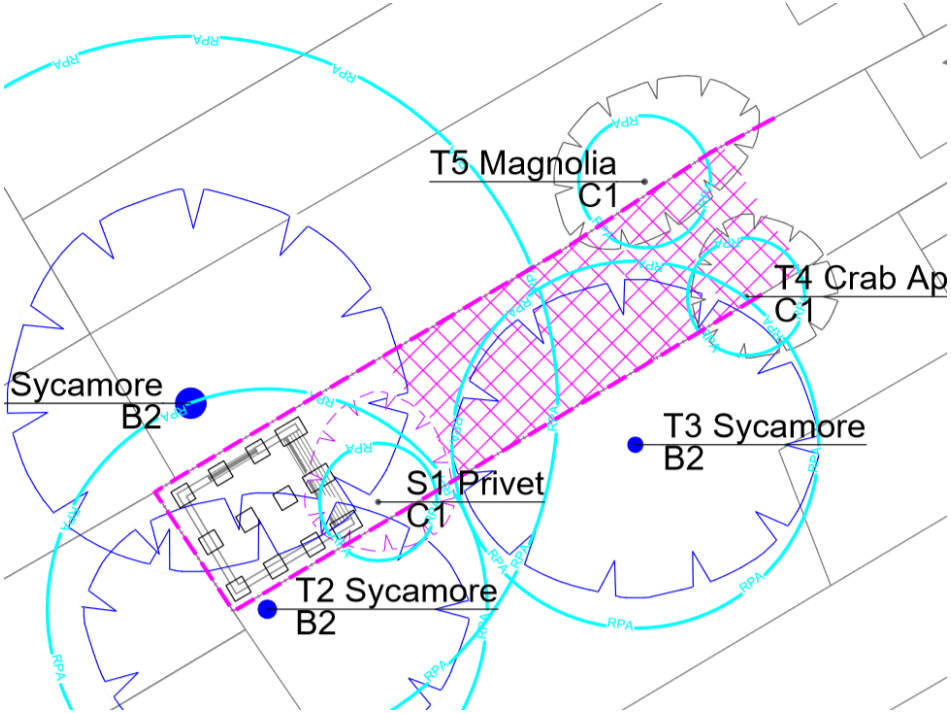
5.4.8 **WARNING:** Breaking the ground has the potential to uncover services/ destabilise adjacent structures etc.

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

5.5 Surfaces near Trees

5.5.1 No new surfaces within retained tree RPA's are proposed. Temporary ground protection will be laid.

5.5.2 Access is through the existing property and ground protection will be laid prior to any on site activity.



- ***Existing site access away from retained trees. Access through property limits size of machinery and materials which can be brought on to the site.***
- ***Ground protection laid prior to any on site works.***

Fig 6 – Temporary ground protection will be used for access and site storage

5.5.3 Tree protection measures are presented in Appendix 5. The structure itself is a pre-fabricated building carried to position in panels. Temporary hard standing in the garden area will be used and the 3rd party trees T1, T2 & T3 are located behind existing boundaries/ where there is no access by construction team.

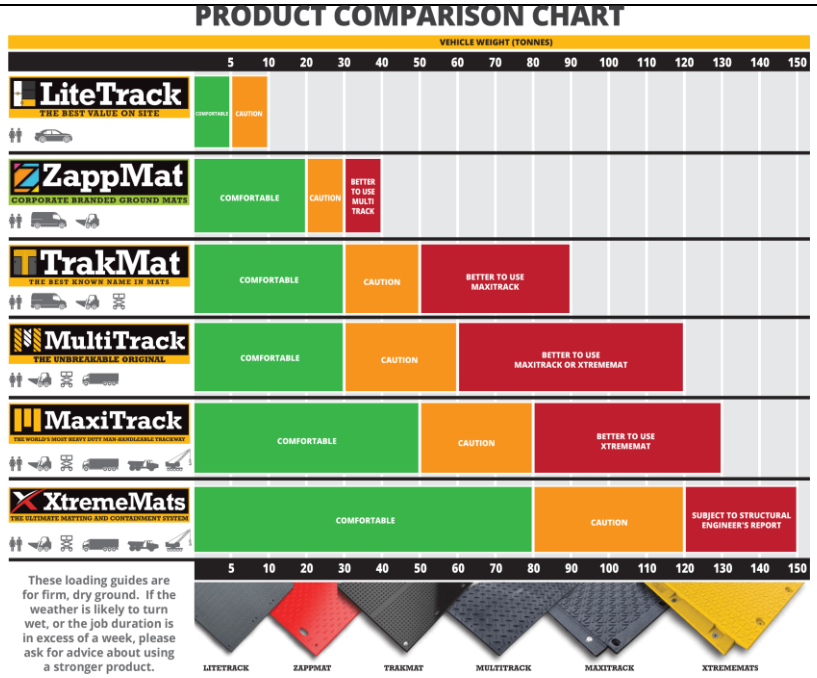


Fig 7 – An assessment of what type of tracking material is required will be relative to the form of access. In this instance only pedestrian/ access within the surface area appears to be required but this should be confirmed with the construction firm prior to any on site works.

5.6 Site Service Provision

5.6.1 Any new service trench will be hand dug utilising the hand digging principles detailed elsewhere in this report. All roots >25mm in diameter will be retained with service fed below them where relevant.

5.6.2 To limit maintenance impact to the garden room from leaf drop given the proximity/ overhang of T1 & T2 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 & Tree Planting

5.7.1 No ground level changes within the RPA areas of retained trees are proposed other than the installation of the pad stones detailed elsewhere.

5.8 Tree Shading of Proposal

5.8.1 The nature of the design is such that it benefits from large glazed areas maximizing light penetration. Issues of shading are therefore not considered to be a concern.

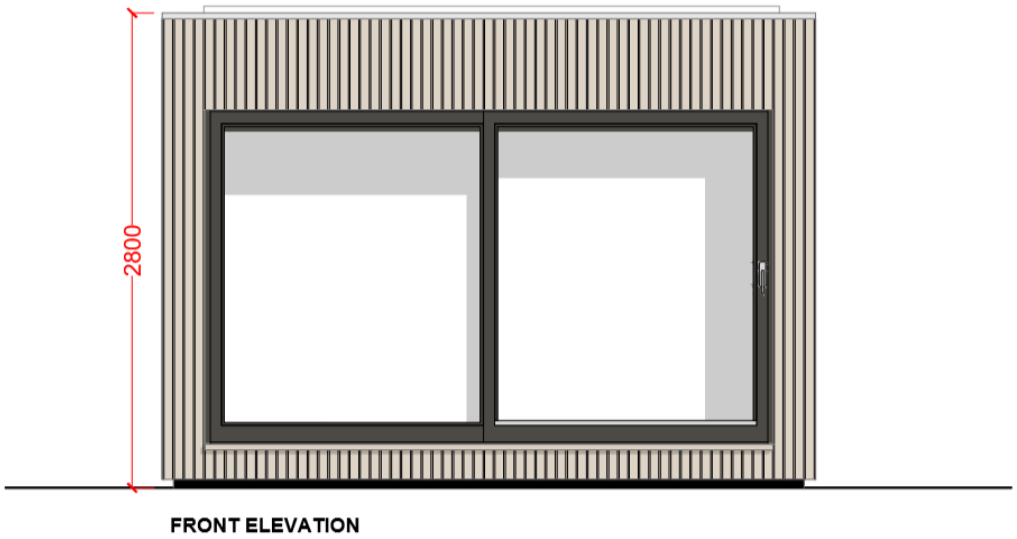


Fig 9 – The garden room benefits from large windows maximizing natural light penetration

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. However, the minimal nature of the proposed construction combined with short duration (10 days to 2 weeks) means site supervision is considered disproportionate to the real pressures on retained trees.

5.9.2 The Local Planning Authority is invited to secure a schedule by way of Planning Condition in the event they do not agree with this approach.

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: Sub categories 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	Sycamore	1	M/S	22	7	7.1	5.5	6	B2	Mature	20 to 40	3.5	3rd party tree with multiple stems. Canopy branch structure suggests healthy tree. Ground level slightly raised relative to site.	No works 3rd party tree	12
T2	Sycamore	0.6	M/S	22	3.8	6.6	5.5	6	B2	Mature	20 to 40	3.5	3rd party tree with extensive Ivy covering.	No works 3rd party tree	7.2
T3	Sycamore	0.5	M/S	22	5.4	6	5	6	B2	Mature	20 to 40	3.5	3rd party tree with extensive Ivy covering. Possibly good form tree below Ivy.	No works 3rd party tree	6
T4	Apple (Crab)	0.16	1	5	2.7	3	2	1.8	C1	Early-mature	20 to 40	1.8	Establishing Ivy covered ornamental.	No works	1.9
T5	Magnolia	0.18	1	5.5	4.4	1.8	3	3	C1	Early-mature	20 to 40	3	Establishing 3rd party ornamental.	No works 3rd party tree	2.2

Tree No.	Species	DBH (m)	No of Stems	Ht (m)	Crown Spread				BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPR (m)
					N	E	S	W							
S1	Privet	0.16	M/S	2.2	3.6	2.5	1.6	2.4	C1	Mature	20 to 40	0.4	Low quality asymmetrical shrub of no wider visual amenity.	Remove	1.9

Appendix 3 – Tree Works Schedule

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

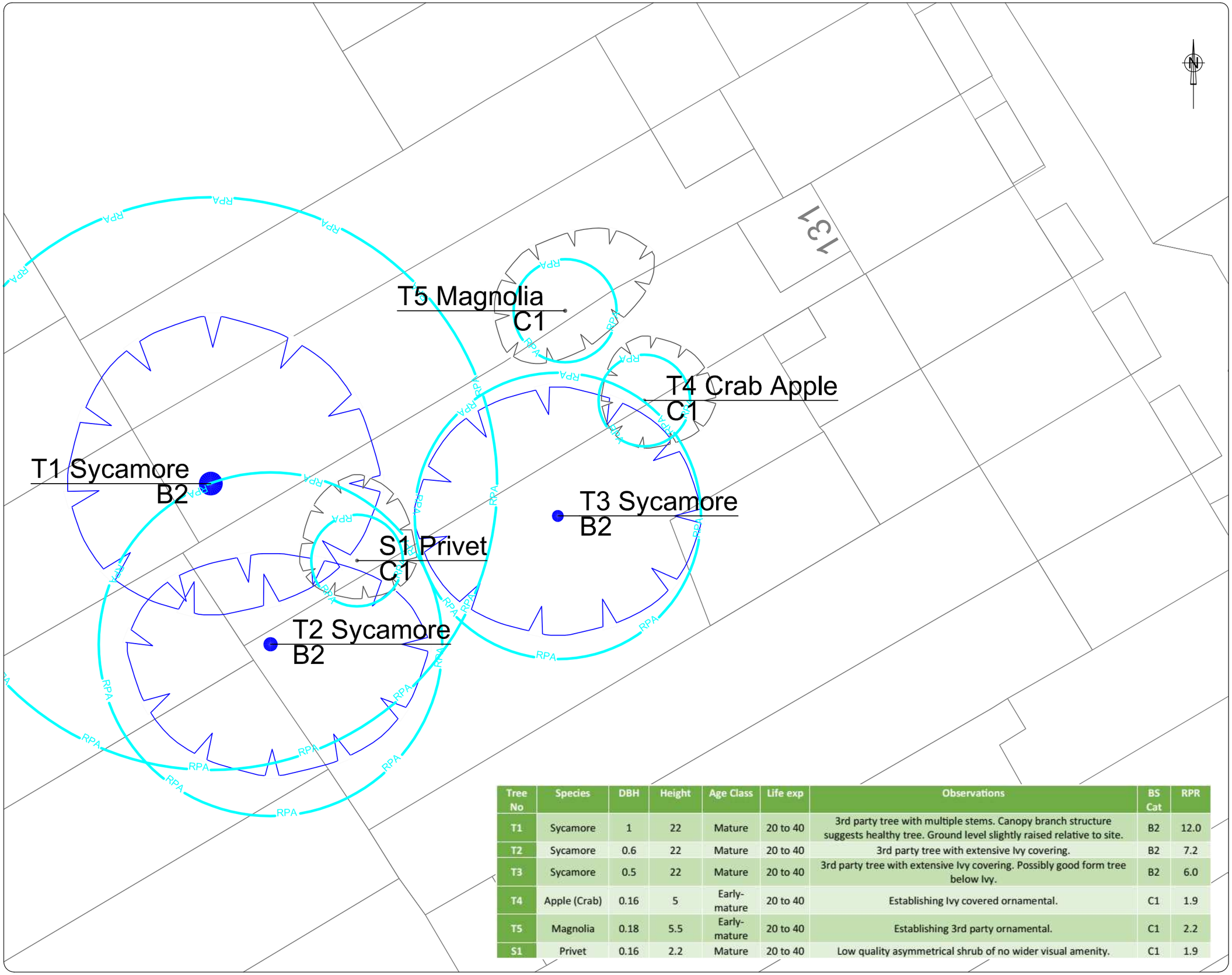
Tree Surgery

Tree No.	Species	Proposed Tree Works	BS Cat

Proposed Removal

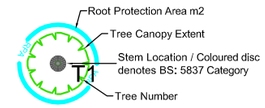
Tree No.	Species	Proposed Works	Observations	BS Cat

Appendix 4 - Tree Constraints Plan



Tree No	Species	DBH	Height	Age Class	Life exp	Observations	BS Cat	RPR
T1	Sycamore	1	22	Mature	20 to 40	3rd party tree with multiple stems. Canopy branch structure suggests healthy tree. Ground level slightly raised relative to site.	B2	12.0
T2	Sycamore	0.6	22	Mature	20 to 40	3rd party tree with extensive Ivy covering.	B2	7.2
T3	Sycamore	0.5	22	Mature	20 to 40	3rd party tree with extensive Ivy covering. Possibly good form tree below Ivy.	B2	6.0
T4	Apple (Crab)	0.16	5	Early-mature	20 to 40	Establishing Ivy covered ornamental.	C1	1.9
T5	Magnolia	0.18	5.5	Early-mature	20 to 40	Establishing 3rd party ornamental.	C1	2.2
S1	Privet	0.16	2.2	Mature	20 to 40	Low quality asymmetrical shrub of no wider visual amenity.	C1	1.9

Tree Survey Drawing Key



See Tamla Trees, Tree Survey for Individual Tree Details

KEY

Please refer to Tamla Trees report for details

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

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

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

REV AMENDMENTS DRAWN DATE AUTH'D

PROJECT
131 Arlington Road,
London
N14 5BA

CLIENT
Jonathan Myerson

TITLE
Tree Constraint Plan (TCP)

Job	Scale	DRG NO	Revision
03051R	1:150 @ A3	03051P_TCP_01	-
Date 11/04/2019	Type a		

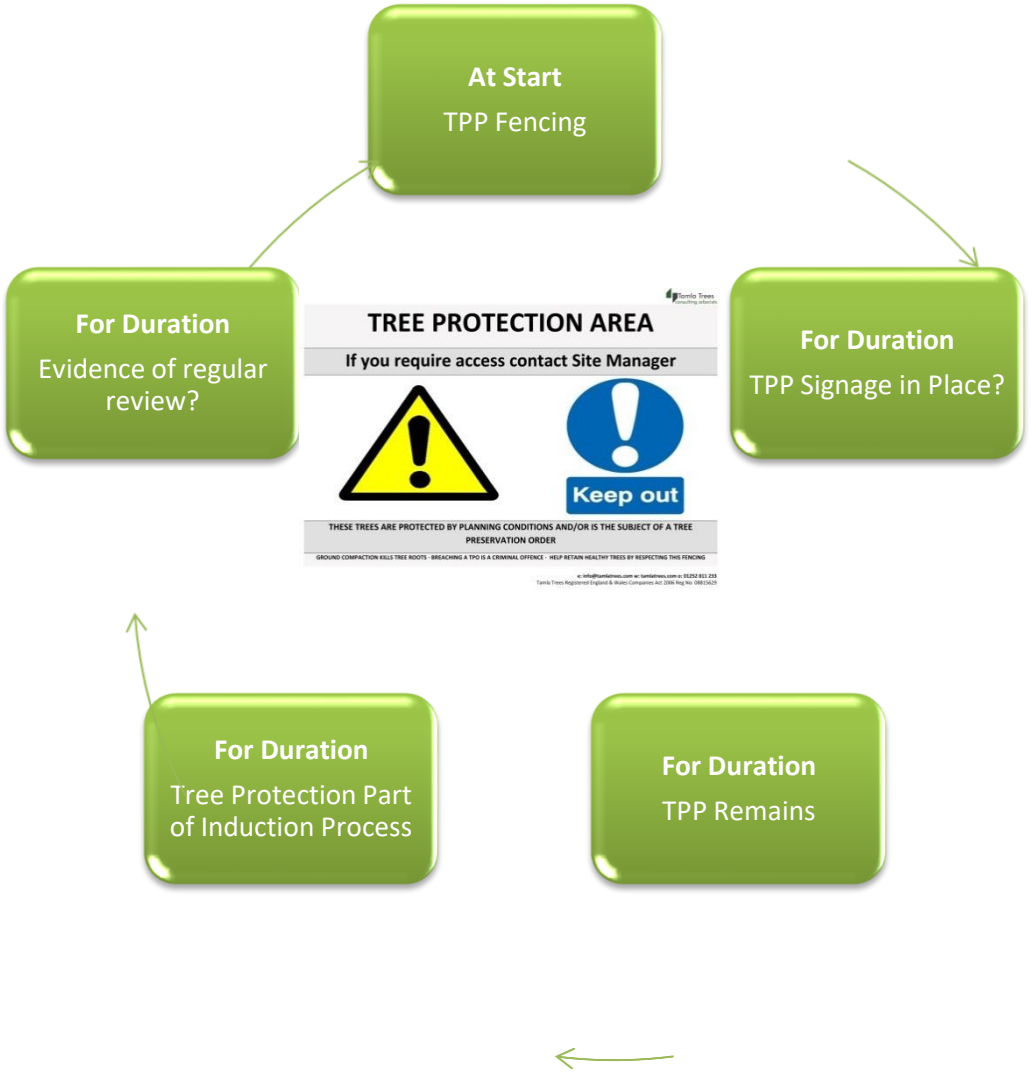
Tel: 01252 811 233
Email: Info@tamlatrees.com
Web: www.tamlatrees.com
Tamla Trees consulting arborists

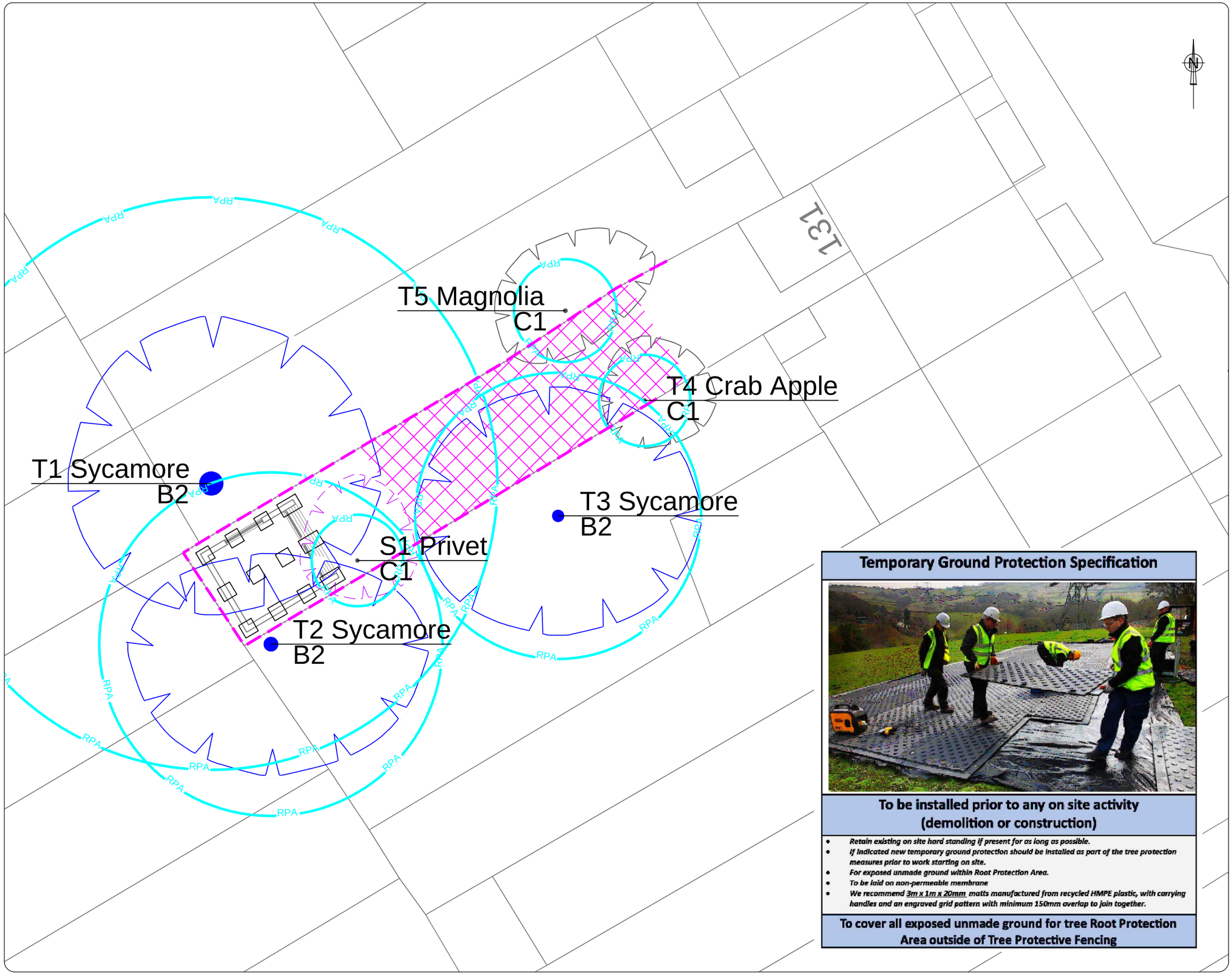
Appendix 5 - Tree Protection Plan

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.

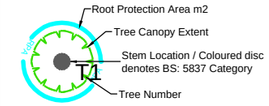
All our fencing specifications accord with advice and guidance within BS 5837. Modifications to fence types are possible but should be discussed prior to implementation. In all other instances the form detailed below should be shown. This offers the best protection to retained trees.

- **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.**


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



Tree Survey Drawing Key



See Tamla Trees, Tree Survey for Individual Tree Details

KEY

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- Category A - Trees of high quality
- Category B - moderate quality
- Category C - low quality
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RPA - root protection area as defined by Table 2 BS 5837:2012

Proposed removal - to facilitate Development

Existing boundary acting as protective fencing

Temporary ground protection

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

REV AMENDMENTS DRAWN DATE AUTH'D

Temporary Ground Protection Specification

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

- *Retain existing on site hard standing if present for as long as possible.*
- *If indicated new temporary ground protection should be installed as part of the tree protection measures prior to work starting on site.*
- *For exposed unmade ground within Root Protection Area.*
- *To be laid on non-permeable membrane*
- *We recommend 3m x 1m x 20mm matts manufactured from recycled HMPE plastic, with carrying handles and an engraved grid pattern with minimum 150mm overlap to join together.*

To cover all exposed unmade ground for tree Root Protection Area outside of Tree Protective Fencing

PROJECT
131 Arlington Road,
London
N14 5BA

CLIENT
Jonathan Myerson

TITLE
Tree Protection Plan (TPP)

Job	Scale	DRG NO	Revision
03051R	1:150 @ A3	03051P_TPP_01	-
Date 11/04/2019	Type a		

Tel: 01252 811 233
Email: info@tamlatrees.com
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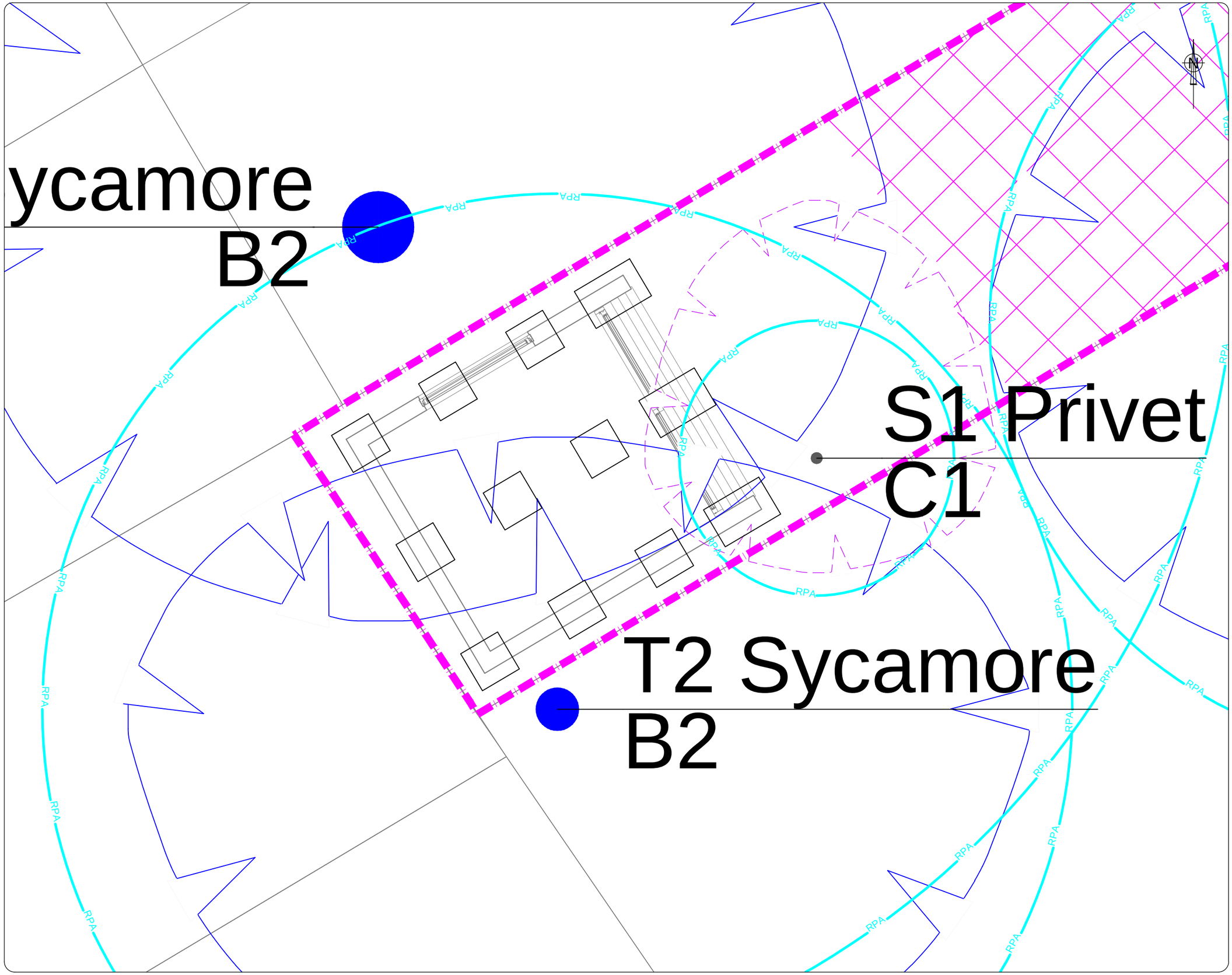
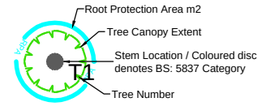


Tree Survey Drawing Key



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Temporary ground protection

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

REV	AMENDMENTS	DRAWN	DATE	AUTH'D

PROJECT

131 Arlington Road,
London
N14 5BA

CLIENT

Jonathan Myerson

TITLE

Tree Protection Plan (TPP)

Job	Scale	DRG NO	Revision
03051R	1:150 @ A3	03051P_TPP_02	-
Date: 11/04/2019	Type: a		

Tel: 01252 811 233
Email: info@tamlatrees.com
Web: www.tamlatrees.com

Tamla Trees
consulting arborists

Appendix 6 – Site Photographs

Image 1 – T1 Sycamore is located on 3rd party land

Image 2 – T1 canopy

Image 3 –T2 is Ivy covered and on 3rd party land

Image 4 – All access is through the house

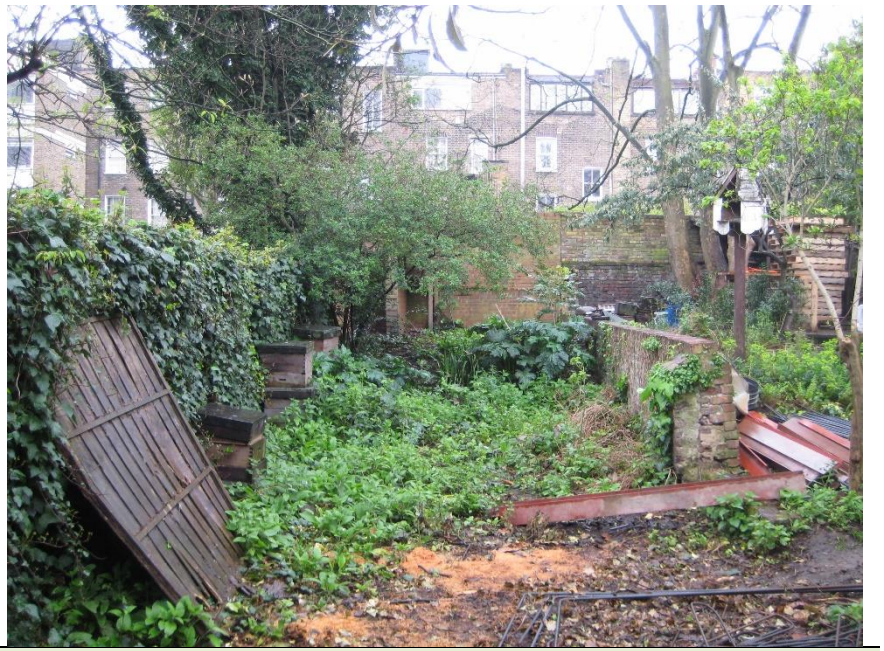

Image 5 –The existing rear garden

Appendix 7 – Limitations

Full Legal Disclaimer

This report was prepared as a report of work instructed by client (as specified). Neither Tamla Trees ltd 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 ltd or any associated company. The views and opinions of authors expressed herein do not necessarily state or reflect those of Tamla Trees ltd or any associated company.

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Third Party 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.