ARBORICULTURAL REPORT

12 Keats Grove
Hampstead
London

7th October 2019

Prepared by Andrew Day HND Arb. M.Arbor.A, CEnv

NB: Original report by ©Andrew Day Arboricultural Consultancy. Annotated notes & additions by Studio Dera 23.12.20 in red in response to planners email 21.12.20 including:

-T4 Retained - P5, P10, P16
-Dimensions of replacements added in red - P20
-Maintenance plan added in Appendix

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Scope

The purpose of this report is to provide Arboricultural advice in relation to identifying the constraints of trees both on site and in neighbouring properties, during development works to redevelop part the existing building and construct two garden rooms. Providing advice on how the trees could be impacted and protection measures to be implemented using the guidelines and principles of BS5837:2012 for those to be retained.

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1 INTRODUCTION

1.1 Brief:

This report has been prepared at the request of Chris Dyson Architects on behalf of the site owner, to provide advice on how the trees could be detrimentally impacted by construction activities to implement the proposed layout during construction works. Identifying the constraints of the trees and providing advice on suitable tree protection measures to address this for those to be retained.

1.2 Qualifications and experience:

I have based this report on my site observations and the provided information, and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture and list the details in **Appendix 1.**

1.3 Documents and information provided:

A plan of the proposed layout.

1.4 Relevant background information:

None.

1.5 Scope of this report:

This report is only concerned with an trees both on site and in third party ownership, that could be impacted by construction works to implement the proposed layout, and the measures required to provide protection for them as best prescribed in the guidance of BS5837: 2012 'trees in relation to design, demolition and construction'. Any issues regarding construction methods etc. is outside the remit of an Arborist and remedy should be sought with suitably qualified persons, for example builder, engineer etc. For the purposes of this report an Arborist / Arboriculturalist is someone who through training and experience has the knowledge to assess trees and their condition in a competent manner. Trees with a dbh of less than 75mm have not been included as per the guidance in BS5837:2012 or species considered to be shrub specimens.

2 APPRAISAL

2.1 Brief site description:

The site is a detached residential dwelling that is set back from the public highway and accessed via a private drive. The front garden space comprises of an area of hard standing for vehicle parking, and a formal garden space divided with planting and paths. To the rear the garden space has a patio extending directly off of the house with paths leading into the garden. A more formal lawn space is the main part of the garden with trees and shrubs set towards the edges. The end of the garden is more overgrown with remanence of a kitchen garden layout. Other residential properties of a similar nature surround the site.

2.2 Condition of the tree:

The tree appears to be in a healthy condition with no signs of pests or diseases normally associated with the species. However, T1 appears to have a decline in vigour for the crown. There is no visual reason to identify why this is the case, so this tree should be monitored. Those in third party ownership were inspected as best could be achieved from the confines of the property.

A more detailed analysis of the trees can be found in **Appendix 3**.

2.3 Suitability of trees for location and management requirements at present:

In my opinion the trees can be considered suitable for their location, even T6 as it has been present for a number of years despite its proximity to the property. A number of the trees on site have been planted in recent years as part of the landscaping of the garden. The more mature trees that have been present longer are set back further form the property and main garden setting.

No management is considered necessary at this moment in time for the trees.

2.4 Potential effects of development on the trees:

To implement the planning permission being sought, the following trees will need to be removed:

G1, G4, G5, T2, ~~T4~~, T5, T10, T11,T12, T13 & T15.

G1 will be removed and replicated with Yew hedging along the front boundary, with espalier magnolia grandiflora by the bin store to offer screening to the property, and not affect the street scene perspective.

G4 & G5 will be removed or could potentially be lifted and used elsewhere on site, or gifted to a local school etc. Given their size it would be easily to replicate these trees with new planting. The other trees to be removed are low quality with no benefit to the wider public amenity.

New planting as part of the garden setting will be installed to replicate the tree cover, and with species that will offer more long term future amenity, screening and diverse habitat for wildlife. This can be conditioned as part of a planning consent. The owners have already commissioned a soft landscape scheme for the garden to incorporate these elements.

The main aspect in relation to this development in relation to tree protection and retention will be for the basement construction adjacent to T6. The plan shows the footprint of the building and the basement, which is to sit under the existing building, set back further form the original foundation line. Given the age of the building and the tree I believe it is likely that the roots from this tree have developed in a more parallel fashion with the existing foundation, rather than deeper and under the building. Therefore, it is less likely that the excavation works to install the new basement will impact on the tree. The project engineer has said that the existing foundations which are set closer to the tree can be retained and there is no reason for them to be removed, this will then mean the foundation that is acting as a barrier can be maintained and it is unlikely that significant roots will have developed beyond this and be affected by the new basement which is set back further. When undertaking the excavation works it will be better to start excavating from the rear to the front, so that if any roots are present, they can be suitably pruned clear and covered to prevent conflict. Limes are tolerant of root pruning, so its feasible if roots have extended below the existing foundation, they will be fibrous or minor roots. In my opinion I consider it feasible to implement the proposed layout and suitably protect and retain this Lime tree. Hoarding may provide better protection around the tree compared to heras fencing, because this will provide a solid barrier to protect from any debris that may accidentally fall during demolition. However, extreme care will be taken when demolishing the building in this location using a method to pull its down and away from the tree. The demolition contractor can provide further details as to how this will be achieved taking into account the protection of this tree and others on site. Arboricultural supervision will be important as well to ensure on hand advice is available during woks to demolish and excavate the existing structure in this location. To ensure every effort to take steps to ensure roots do not get damaged unnecessarily the existing hard surface will be removed using hand tools where possible, or a pneumatic head on a digger under the supervision of an arborist. All debris will be removed by hand working back across the area from the furthest point, so that the ground in the RPA is protected by the hard surface as its removed. Where possible the hand dig method statement provided in **Appendix 3**,Will be followed when working in the RPA.

One of the garden rooms will partially encroach into the RPA of T8, this is a bay and would likely tolerate root pruning to clear when installing the base for this structure. BS5837:2012 allows provision for such hard surfaces to be accommodated in the RPA, as long as it doesn't compromise more than 20% of the total RPA. In this case it is under this amount for the total amount of RPA. However, minimal excavation for the base should be administered to level for the base, and a non-porous membrane laid down to prevent toxins from the cement leaching into the soil. This way the best protection as can be possibly afforded can be implemented.

To the front the changing of the garden space from a more formal layout to a soft garden setting will be more beneficial for the trees to be retained. The same care when excavating in the RPA to achieve this, as set out in the hand dig method statement will need to be adhered to as well.

Protective fencing will need to be placed in locations shown on the Tree Protection Plan in **Appendix 5** to prevent collision damage occurring or unauthorised access into the RPA where it is not required, to prevent soil compaction or contamination. If access is required over the RPA once the hard surfacing has been removed and soft ground is exposed, then suitable ground protection will be in place as outlined in the method statement in **Appendix 3**.

The other risks this development proposal presents to the tree will be via indirect actions from construction activities such as, inconsiderate material storage etc. However, this can be addressed by careful planning of work procedures and installing protection fencing, ground protection etc. as required. There is space on site for accommodating construction works and material storage on the existing hard surface or areas outside of the RPA.

The site manager will need to confirm the locations of material storage etc. and how this will be managed around the ground protection of the trees, demonstrating how the protective areas will be avoided for this purpose and ensuring the ground is protected always until the build is finished.

Details of ground and other protection measures are provided in the method tree protection method statement in **Appendix 3**.

In this case the potential impact of the proposal in relation to the trees to be retained is considered to be moderate, with specific measures being able to be implemented to ensure that construction pressures do not adversely affect their health or longevity. Particular care will be required when working adjacent to T6, which can be achieved by liaising with the supervising arborist and following the measures outlined in this report.

The trees can be sufficiently protected by following the principles and measures contained within this report and those within the method statement in **Appendix 3**.

2.5 Potential effects of the tree to be retained on the development:

Leaf litter could become a problem if it causes drains or gutters to become blocked, that could impact in other ways on the building, or if left on access surfaces where they could become a slip hazard. To address this gutter guards could be installed to prevent build-up of leaf litter that could become a problem, or regular cleaning of the gutters employed. Regular clearing of falling leaves on the access route, especially in times of wet weather will address any potential slip hazards caused by this seasonal occurrence.

Shadow cast caused by the trees will be no different to what is already being experienced and is not an issue.

The conflicts normally encountered with having buildings near to trees can be addressed with scheduled maintenance.

2.6 Proposed solutions to safeguard the trees to remain during construction works:

2.6.1 Protective fencing

Protective fencing will be placed in the locations shown on the tree protection plan in **Appendix 5** prior to works commencing on site. The fencing will be retained at times. Access beyond the fence line will only be allowed with good reason and with the tree officer's permission. It is important to ensure that construction activities do not occur beyond the extents of the protective fence line.

2.6.2 Services

No details relating to service runs have been provided to me. I suspect the existing services will be connected to. Careful consideration will be required as to where service runs are to be placed to involve as little breach of the RPA as possible. If the RPA will need to be crossed by these trenches, they will be opened using hand digging / air spade. Alternatively, trenchless techniques to install the services will be used and approved by the local authority. The project architect will confirm locations, installation method and any arboricultural methodology that needs to be considered to achieve this prior to them being installed to ensure the potential impact on the trees is to a minimum.

2.6.3 Site facilities and material storage

Care will have to be taken to identify the type of materials required and the access of any machinery, vehicles or plant needed to move them, as these can cause collision damage to aerial parts of the trees as well as soil contamination or compaction. At no point will materials be stored within the RPA of the trees unless on existing hard surface with suitable protection measures in place. The site manager will provide details on this aspect of the project if felt necessary by the local authority, but as long as the RPA on soft ground is not breached then this should not present a problem.

2.6.4 Works within RPA

Where the RPA of T6will be compromised by the footprint of the redevelopment of this part of the building and the basement, it is feasible that significant roots will not be affected, for the reasons explained above. Any excavation works will be initially undertaken using hand tools with the supervising arborist present to undertake any root pruning.

Where the garden room partially extends into the RPA of T8, it is possible that no significant roots will be present, or none that cannot be pruned clear. BS5837:2012 does make provision for hard surfacing such as this to be located within the RPA, as long as it does not exceed 20% of the total area. Given the fact the amount of RPA crossed is less than this 20% value the tree is unlikely to be impacted. Again, measures can be put in place to afford this tree as much protection as possible to achieve the build and retain it.

2.6.5 Site supervision

The site manager will provide a timetable of works on the site, listing all of the key stages of development, starting with the placing of protection fencing / hoarding around the trees, establishing site facilities, through to completion of the site. Arboricultural supervision will take place prior to works commencing on site to ensure protection measures are understood and implemented with a pre-commencement meeting with the site manager and other relevant personnel. Site supervision will be on a monthly basis until the completion of the project. **Arboricultural supervision will take place at all times excavation work is required in the RPA.**

Prior to work, all key personnel connected with the site will be briefed by an arborist with regard to the importance of the tree protection and methods of ensuring that the trees are protected during the construction period. A record of all arboricultural related site meetings will be made, signed off and available for inspection by the local authority if required.

Any personnel inducted on site will be made aware of the tree protection measures and will be responsible for their own actions in maintaining them and not breaching them in any way.

2.6.6 Site completion

Once work has been completed, an arborist will inspect the trees and comment on their condition and prescribe any mitigation works required. The tree protection measures are expanded upon in **Appendix 3**.

3 CONCLUSIONS

- To implement this development the following trees will be removed:

  G1, G4, G5, T2, ~~T4,~~ T5, T10, T11,T12, T13 & T15. These will be replicated with new planting as part of the scheme and the removal will not have a detrimental impact on the amenity of the site or surrounds. These trees can be compensated for with new planting as part of the scheme and can be conditioned as part of a planning consent. See the landscape plan to accompany the proposal.

- Part of the RPA of T6 will need to be excavated to achieve the redesign of the building in this location, including the basement construction. Because the existing building is set closer to the tree and has likely been present for the same time the tree has been there, it is feasible that roots have grown in a more parallel fashion and the foundation line has acted as a root barrier.

- The existing foundations will be left in situ with the excavation for the basement being undertaken further back, where it is unlikely that roots from this tree will be impacted. Specific care and arboricultural supervision will be in place when undertaking the works to ensure the tree is suitably protected.

- A small portion of the RPA of T8 will be covered by the base of one of the outside offices. This is unlikely to have a negative impact on this tree. Again, specific protection measures can be put in place to ensure this is the case.

- All ground disturbance works within the RPA will be achieved, initially using hand tools and under arboricultural supervision.

- Protective fencing will be set up in the locations shown on the tree protection plan in **Appendix 5**, to stop unauthorised access into this protected space and prevent collision damage. Ground protection will be in place where access across the RPA on soft ground may be needed.

- The trees to be retained can be adequately protected from construction pressures by implementing and adhering to the protection measures provided in the method statement in **Appendix 3**.

4 OTHER CONSIDERATIONS

4.1 Trees subject to statutory controls:

I am not aware of any tree preservation orders or other restrictions relating to the trees. I suggest that the local authority is contacted to confirm this and kept updated with any proposed tree works including root pruning so as to form a good working relationship and to prevent misunderstandings or contravention of protection measures. This statement is meant for readers of this report as an advisory, to make sure they make the relevant checks so as not contravene any protection status the trees may have.

Andrew Day HND Arb
For Andrew Day Arboricultural Consultancy Ltd.

Brief qualifications and experience of Andrew Day

I hold a Higher National Diploma in Arboriculture. I have been working in the field of arboriculture for approximately 10 years, spending time as a contracting arborist undertaking all aspects of practical arboriculture both in the UK and Europe. I have also worked within local government as a tree officer working for a variety of local authorities. I have a broad experience of both the practical and theoretical aspects of arboriculture having worked within the public and private sector.

1. Qualifications:

Higher National Diploma in Arboriculture (1996)

NPTC (National Proficiency Training Council) units 20, 21 and 22

Lantra professional tree inspection certificate

2. Practical experience:

Prior to establishing my company, I worked for a private Arboriculture company for three years undertaking many practical aspects of Arboriculture. I moved on from this to become a local authority tree officer for five years, my duties included consultation on planning matters with regard to trees, advice to the general public, managing the council's tree stock and liaising with other professionals on Arboricultural related issues. I was approached by an established tree contracting and consulting company in Essex to develop and run the consultancy department as their principle consultant which I did for three years.

SITE PHOTOGRAPHS

	
Showing G1 from outside of the site. The part to be removed is not visible	Showing aerial roots in the grass
	
Showing T6 and proximity to the existing building line with hard surfaces	A view down the garden showing T7 – T9, part of G3 & G5

SITE SPECIFIC INFORMATION

Explanatory Notes

Tree Survey

Tree Protection Method Statement and Protection Criteria

Hand Dig Method Statement

Informatives for protection fencing

Arboricultural Considerations notice for site hut and inducted personnel

Explanatory Notes

Measurements/estimates: All dimensions are estimates unless otherwise indicated. Measurements taken with a tape or clinometer are indicated with a '*'. Less reliable estimated dimensions are indicated with a '?'.

Species: The species identification is based on visual observations and the common English name of what the tree appeared to be is listed first, with the botanical name after in brackets. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. Where there is some doubt of the precise species of tree, it is indicate it with a '?' after the name in order to avoid delay in the production of the report. The botanical name is followed by the abbreviation sp if only the genus is known. The species listed for groups and hedges represent the main component and there may be other minor species not listed.

Height: Height is estimate height to the nearest metre.

Spread: The maximum crown spread is visually estimated to the nearest metre of the total crown spread diameter. It should be noted that the crown of some trees can be one side, however this usually indicated within the report.

Diameter: These figures relate to 1.5m above ground level and are recorded in centimetres. Estimate measurements are banded 0-10cm, 11-20, 21-30 etc. If appropriate, diameter is measure with a diameter tape. 'M' indicates trees or shrubs with multiple stems. 'AV' indicates average and is the average of two stems when dealing with twin stem trees.

Estimated Age: Age is assessed as **M** mature (last one third of life expectancy), **EM** early-mature (one third to two thirds life expectancy) and **Y** young (less than one third life expectancy).

FSB: First significant branch from ground level (direction shown on tree protection / constraints plan)

SULE: This is the estimated Safe Useful Life Expectancy of the tree. Trees can live longer than this value but can pose a risk to persons or property.

RPR: Radius of root protection area around the tree /group

RPA: Root protection area for tree or group

BS 5837 2012 - On the basis of this assessment, trees can be divided into one of the following categories:

A - Trees whose retention is most desirable; High category
B - Trees where is desirable; Moderate category
C - Trees which could be retained; Low category
U - Trees that cannot realistically be retained; Fell category

Tag	Name	Age	Diameter (mm)	Height (m)	Crown Hgt (m)	FSB Hgt (m)	Crown Spread (N S E W) (m)				Life Exp	Recommendations	Category	RPR (m)	RPA Area (m)
T1	Crataegus monogyna (Hawthorn)	EM	150	8(3)	3	4	2	4	2	2	10+	Western side of crown sparse and appears to be dying off, monitor or consider removing.	C2	1.8	10.18
T2	Taxus baccata (Yew)	EM	150	4(0)	0	0.3	1	1	1	1	20+	No works required at present.	C1	1.8	10.18
T3	Magnolia (Magnolia)	EM	212	6(0)	0	2	5	5	5	5	20+	No works required at present.	C1	2.54	20.27
T4	Liquidambar styraciflua (Sweet Gum)	SM	150	10(2)	2	2	2	2	2	2	20+	No works required at present.	C1	1.8	10.18
T5	Liriodendron tulipifera (Tulip Tree)	SM	250	14(2)	2	4	2	3	1	2	20+	No works required at present.	C2	3	28.28
T6	Tilia X europaea (Common Lime)	M	950	20(12)	12	12	6	3	5	3	20+	No works required at present.	B3	11.4	408.33
T7	Pyrus (Pear)	M	400	12(5)	5	5	4	4	5	3	10+	No works required at present.	C2	4.8	72.39
T8	Laurus nobilis (Bay)	M	500	12(3)	3	3	3	3	3	3	20+	No works required at present.	C2	6	113.11
T9	Corylus avellana (Hazel)	M	200	8(4)	4	4	4	4	4	4	20+	No works required at present. Located in third party ownership.	C3	2.4	18.1
T10	Sambucus nigra (Elder)	M	350	8(3)	3	3	3	4	4	3	20+	No works required at present.	C3	4.2	55.42

Tag	Name	Age	Diameter (mm)	Height (m)	Crown Hgt (m)	FSB Hgt (m)	Crown Spread (N S E W) (m)				Life Exp	Recommendations	Category	RPR (m)	RPA Area (m)
T11	Ficus carica (Fig)	EM	200	8(2)	2	3	2	1	3	2	20+	No works required at present.	C3	2.4	18.1
T12	Malus (Apple)	EM	250	8(3)	3	3	3	2	2	3	20+	No works required at present. Leans to east, no sign of root plate movement to suggest instability. Monitor.	C3	3	28.28
T13	Betula pendula (Silver Birch)	Y	100	6(2)	2	1	2	2	2	2	20+	No works required at present.	C2	1.2	4.52
T14	Malus (Apple)	EM	100	6(3)	3	3	3	3	3	2	20+	No works required at present. Decay in southern stem and leaning on boundary fence, consider removing this stem.	C3	1.2	4.52
T15	Prunus avium (Wild Cherry)	SM	150	8(2)	2	2	1	2	2	1	20+	No works required at present.	C2	1.8	10.18
T16	Robinia pseudoacacia (Locust Tree)	M	300	15(9)	9	9	4	2	2	1	20+	No works required at present. Located in third party ownership.	C1	3.6	40.72

Tag	Name	Age	Diameter (mm)	Height (m)	Crown Hgt (m)	FSB Hgt (m)	Crown Spread (N S E W) (m)				Life Exp	Recommendations	Category	RPR (m)	RPA Area (m)
G1	Carpinus betulus (Hornbeam)	SM	100	6(2)	2	2	0.5	0.5	0.5	0.5	20+	No works required at present.	C1	1.2	4.52
G2	Quercus ilex (Holm Oak)	SM	200	9(2)	2	2	2	2	2	2	20+	No works required at present. Located in a raised flower bed.	C1	2.4	18.1
G3	Tilia X europaea (Common Lime)	M	900	20(5)	5	10	5	5	5	5	20+	2 x Lime. dense epicormic growth limiting inspection. Clear epicormic and reinspect.	B3	10.8	366.48
G4	Carpinus betulus (Hornbeam)	SM	100	6(2)	2	2	0.5	0.5	0.5	0.5	20+	No works required at present.	C1	1.2	4.52
G5	Carpinus betulus (Hornbeam)	SM	100	6(2)	2	2	0.5	0.5	0.5	0.5	20+	No works required at present.	C1	1.2	4.52

Method Statement for Tree Protection Measures

PROJECT: 12 Keats Grove, Hampstead, London

CLIENT: Chris Dyson Architects

1.1 Brief

Provide protective measures specification for trees to be retained the guidelines and principles prescribed in BS5837: 2012 'trees in relation to design, demolition and construction'.

1.2 Protective measures and Site Supervision

An important factor in providing protection for the trees during the construction works is the chronological order in which development tasks are undertaken. Before work continues on site, the following issues will be addressed and submitted to the council for approval.

- A suitably qualified arborist will be retained to oversee tree protection measures where required and liaise with the tree officer as required. The contact information of this arborist will be made available to the council tree officer prior to works starting on site.

- Any excavation work in the RPA will be initially started using hand tools, with the supervising arborist overseeing and recording any root presence.

- The foundation design for the building and hard surfaces will be suitable to address any potential influence that the trees may have on them. Location of services and details of their installation will have been provided, with any arboricultural protection measures or methodologies of working programmed in the works schedule and approved by the council.

- A pre- commencement meeting with a suitably qualified arborist will take place with the site manager and other relevant site personnel, to debrief them on the importance of the protection measures and to assist in setting up of the ground protection etc. before work commences on site.

- A schedule of arboricultural site supervision will be formulated at the pre-commencement meeting and be provided to the council by the site manager once this plan of visits has been set. It is then the responsibility of the site manager to ensure the arboricultural supervision visits are booked in and undertaken at the relevant times.

- All tree surgery works will be completed prior to construction works commencing and will be undertaken in accordance with BS3998:2010. Below is a table of proposed tree works as part of the new landscape scheme.

Ref	Latin	Common name	Proposal	
T1	Crataegus monogyna	Hawthorn	Retain	
T2	Taxus baccata	Yew	Remove this yew topiary as the garden will be much more informal in character	
T3	Magnolia	Magnolia	Retain - we would like to explore with the arboriculturalist slighly lowering the front garden beds and how this would impact on the Magnolia. This will be achieved using an air spade and arboricultural supervision to assess the roots that could be impacted and viable solutions to works around them if pruning is not an option.	
~~T4~~	Liquidambar styraciflua	Sweet Gum	~~Replace with a large holm oak to provide substantial evergreen tree and mirror those on the other side of the garden.~~ T4 RETAINED	RETAINED
T5	Liriodendron tulipifera	Tulip Tree	Replace with a large holm oak to match neighbouring trees	
T6	Tilia x europaea	Common Lime	Retain	
T7	Pyrus	Pear	Retain	
T8	Laurus nobilis	Bay	Retain but shape - pruning to reduce width and lightly clip back height	
T9	Corylus avellana	Hazel	Neighbour's tree	
T10	Sambucus nigra	Elder	Remove for new potting shed - if required replace with an elder on opposite side of the garden	approx height: 3-5m
T11	Ficus carica	Fig	Retain	
T12	Malus	Apple	Retain	
T13	Betula pendula	Silver Birch	Replace with large Laurus nobilis - Bay tree	approx height: 4m
T14	Malus	Apple	Retain	
T15	Prunus avium	Wild cherry	Remove and replace with a mature multi-stemmed Magnolia soulangeana in the rear of the garden	
T16	Robinia pseudoacacia	Locust tree	Retain	
G1	Carpinus betulus	Hornbeam	Replace with Taxus baccata yew hedging and espaliered Magnolia grandiflora on each side of the garden.	
G2	Quercus ilex	Holm Oak	Retain	
G3	Tilia x europea	Common Lime	Retain	
G4	Carptinus betulus	Hornbeam	Possible retention or replacement with holm oak hedging - Quercus ilex.	approx height: 2-3m
G5	Carptinus betulus	Hornbeam	Remove to allow more light in the first instance onto boundary hornbeams	

1.2.1

A pre-commencement inspection by the supervising arborist will take place to ensure the protective measures are understood and a schedule of arboricultural site monitoring is formulated at the start of the project, this will consist of a visit by a suitably qualified arborist once a month for the duration of the project. Any excavation work within the RPA will have arboricultural supervision present. A log of these visits and any actions required will be available to the council on request and kept on site.

1.2.2

Protective fencing as shown in **diagram 1** or similar that demonstrates that it is fit for purpose, will be placed in the locations as shown on the tree protection plan in **Appendix 5**, prior to works commencing on site. Where scaffolding is required to be erected within the confines of the RPA, it will be set up as shown in **diagram 2**.

The informatives provided will be attached to the fencing to highlight its importance at a height of 1.5m and at 5m intervals along the line of fencing, or in locations that can demonstrate they are clearly visible to identify the purpose of the fencing in relation to the project

1.2.3

If access is required within the RPA on soft ground, ground protection will be in place, this will be installed as set out in 1.7 before access into the protected area is allowed.

The placing of tree protection measures works within the construction timescale will not be altered and it is re-emphasised that this is to take place prior to any other activities.

1.2.4

All personnel inducted on site will be made aware of the tree protection measures and will be responsible for their own actions in maintain these and ensuring that they do not cause any damage to the trees.

Diagram 1

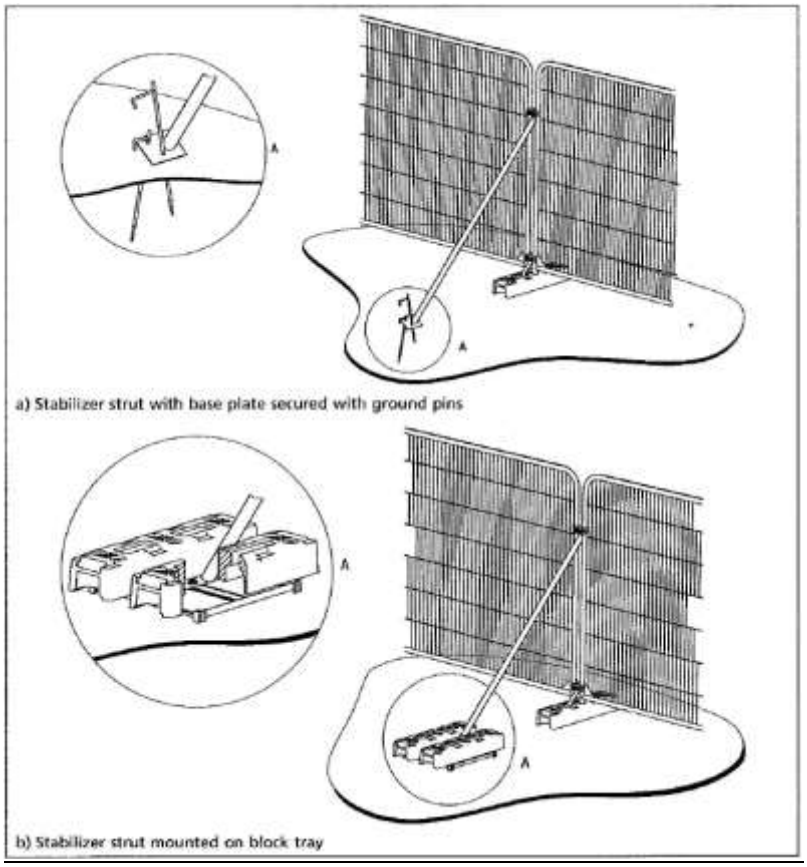
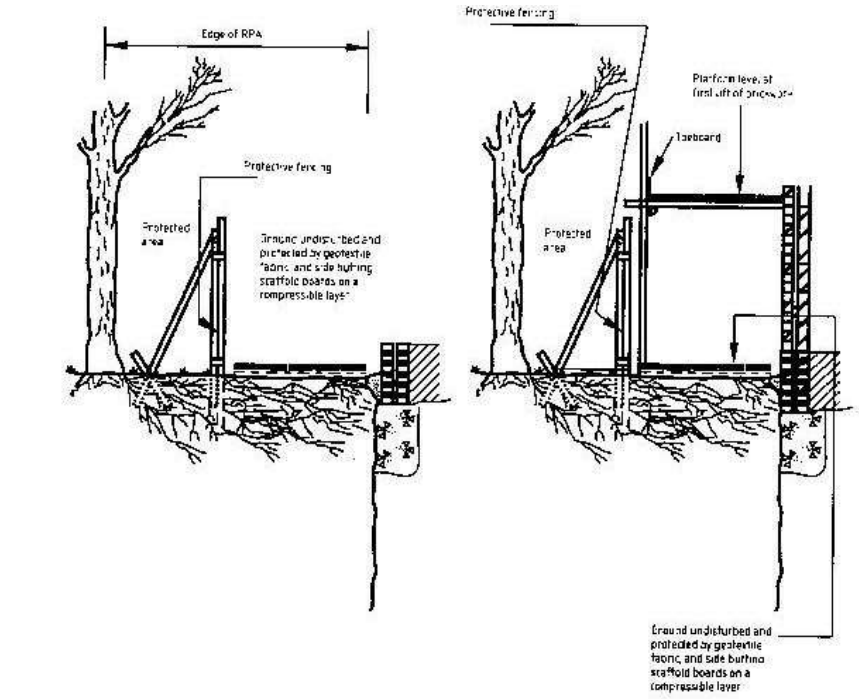


Diagram 2



1.3 Forbidden activities within RPA

1.3.1 Within the root protection area, the following activities will be prohibited, unless the local authority in writing grants specific permission:

No storage of chemicals or other substances likely to leach and cause harm to the trees to be stored.

No storage of heavy plant or materials likely to cause further soil compaction. The piling rig will sit outside the RPA at all times.

No ground disturbance works, apart from what has been approved by any planning permissions or specifically form the council.

No activities that could indirectly affect the trees such as bonfires etc.

1.3.2 No ground disturbance works apart from those granted in the planning permission is to be undertaken within the confines of the RPA without the written permission of the local authority.

The protected area is not to be breached at any time, unless the local authority has granted permission and a qualified arborist has been consulted and supervises any work activities that need to take place.

1.4 Storage of chemicals / mixing of materials

1.4.1 Storage of chemicals will be placed in a sealed bund / area, with no discharge allowed onto the ground or watercourses. The area containing these materials will have an impervious surface and stored **if possible** 10m away from the RPA. If accidental spillage of chemicals or other damage to the trees takes place the local authority is to be notified as soon as possible and a suitably qualified arborist is consulted as to the best actions to take to mitigate any damage that may have occurred as a result of the accident and these works to be undertaken to mitigate the situation as soon as possible.

1.5 Works in the RPA

1.5.1 **No excavation / ground disturbance works will take place within the RPA unless permission is granted by the local authority to do so. Where excavation works are needed in the RPA of T6, then the arboricultural hand dig method statement provided will be strictly adhered to as far as practically possible. The working method for excavation works will be agreed with the relevant contractors and will work in a fashion that starts closes to the tree and works backwards.**

1.5.2 The existing foundation will remain in situ and all ground disturbance will take beyond this where it is unlikely roots will not be present. The supervising arborist will be on hand to ensure if any roots are encountered, they will be pruned clear and suitably covered. The overall foundation design for the buildings will demonstrate how it is fit for purpose to ensure that the trees will not indirectly impact on the structure, resulting in pressures to remove the trees in the future.

1.5.3 If access across the RPA is required on the soft ground, or when hard surfacing has been removed to facilitate construction, suitable ground protection will be laid down as detailed in section 1.7 below.

1.5.4 All excavation works that are required in this protected area, will have the permission from the council approved for this type of operation.

1.6 Material storage / site parking

1.6.1 Particular attention will be made to the type of materials to be stored and the type of machinery needed to move them, ensuring that sufficient protection measures in accordance with this method statement and space are provided to prevent damage to the trees to remain. The details outlined in 1.4 above will be adhered to.

1.6.2 If possible, material storage, deliveries, contractor parking etc. will be focused to the eastern end of the site well away from the tree.

1.6.3 **At no point will plant or materials be allowed to be parked or stored within the RPA. This will be strictly policed by the site manager**.

1.7 Ground Protection

1.7.1 Where access across the RPA is required, the following ground protection measures will be implemented as required.

For pedestrian traffic:

A single thickness of scaffold boards placed on top of a scaffold frame so as to form a suspended walkway (similar to diagram 2), or boards laid on to a geotextile membrane with a layer of wood chips 100m in thickness.

For pedestrian operated plant, up to 2 tonnes:

Interlinked ground protection boards of plywood or similar at least 2.5cm thick, laid onto a geotextile membrane on a bed of wood chip 150mm in depth.

For wheeled or tracked traffic exceeding 2 tonnes gross weight:

Metal tracking designed and fit for purpose, pre-cast concrete slabs or similar, laid to an engineering specification on a compression resistant layer e.g. wood chips that will likely spread the weight of the load and prevent compression of the soil underneath.

1.7.2 **AT NO POINT WILL THE GROUND WITHIN THE RPA BE LEFT UNPROTECTED IF ACCESS IS REQUIRED IN THIS AREA**.

1.8 Completion

1.8.1 Once all the construction activities on the site have been completed and a suitably qualified arborist will assess the condition of the trees and liaise with the local authority accordingly if any works are considered necessary. Any proposed landscaping works will be discussed with the supervising arborist, to ensure this will not conflict with the protection measures set out.

2 HAND DIG METHOD STATEMENT

PROJECT: 12 Keats Grove, Hampstead, London

2.1 The area to be excavated will be inspected by a professional arborist to assess the likely proximity of root activity and concentration prior to the commencement of any works. All relevant authorized personnel to be informed and required permissions gained before work commences.

2.2 If hand digging is not possible/practicable a method of excavation will be agreed and undertaken by a suitably qualified person for example air spading or a competent digger operator etc., in the presence of a qualified arborist.

2.3 During excavation great care will be taken to minimize damage to retained roots, including the bark around the roots.

2.4 All roots greater than 25mm diameter should be retained and worked around. Where clumps of smaller roots (including fibrous roots) are found these are to be retained.

2.5 Roots with a diameter in excess of 25mm must not be severed without permission from an Arborist.

2.6 If roots are encountered, the Arborist must conduct the root pruning and inform the relevant person to suggest mitigation works to the tree(s) if required. If severance is unavoidable roots must be cut back using a sharp tool, leaving the smallest wound possible.

2.7 If there is a possibility of infection being passed from one specimen to another, tools will be sterilized in an appropriate method to reduce the risk of cross contamination.

2.8 When backfilling an inert granular material mixed with topsoil or sharp sand (not builder's sand) is to be used around the retained roots. Unless an alternative backfill substrate has been agreed with in writing by the appropriate authorized personnel.

2.9 If roots are to be left exposed for a period of longer than 1 hour (dependent on weather conditions), then a covering of dampened Hessian or similar material is to be used to cover the exposed roots. Any changes to this practice are to be authorized by a qualified arborist.

2.10 All levels are to be returned to the original plane after any excavation, unless specific design and relevant permission has been authorized.

2.11 A qualified Arborist is to be on site to supervise during any operations within the protection zone.

ANDREW DAY
ARBORICULTURAL CONSULTANCY LTD

REDUCING COSTS BY DELIVERING PRACTICAL SOLUTIONS

TREE PROTECTION ZONE

DO NOT CROSS WITHOUT PERMISSION

BREACHING THIS BARRIER CAN RESULT IN THE FOLLOWING:

- **SHUT DOWN OF THE JOB**
- **FINANCIAL IMPLICATIONS**
- **CRIMINAL PROCEEDINGS**

ARBORICULTURAL SITE CONSIDERATIONS

THIS NOTICE IS TO BE DISPLAYED IN THE SITE OFFICE OR A SUITIBLE LOCATION WHERE IT IS CLEARLY VISIBLE AND ISSUED TO ALL PERSONNEL INDUCTED ONTO SITE

The following site considerations must be observed at all times during the development process, from site preparations through to completion.

- The protected area of the RPA must be regarded as sacrosanct and not breached except where to implement the planning permission granted, without prior consultation with either the local planning authority or the supervising arborist.
- Ground protection must not be lifted or removed without prior consultation with either the local planning authority or the supervising arborist.
- Damage caused to ground protection must be reported to the site manager to ensure suitable repair or actions are taken.
- No materials, chemicals, machinery or vehicles to be stored within the RPA (root protection area) as defined on the tree protection plan and on site by fencing and ground protection.
- No materials etc. must be rested against or machinery chained to trees.
- No pruning of trees may be undertaken by anyone other than a qualified arborist and approved by the supervising arborist and local authority tree officer.
- Any physical damage caused to a tree to be retained must be reported to the site manager immediately so that suitable remedial works can be commissioned without delay.
- Builder's sand (which contains high levels of salt) must not be used to back fill excavations within or in close proximity to tree roots, as it has a toxic effect and can cause root desiccation. Sharp sand must be used under such circumstances.
- Soil contaminants such as concrete mixings, diesel oil and vehicle washings must be kept suitably contained, preferably within bunded areas. Any spillages within 2m of a fenced area must be reported to the site manager and supervising arborist immediately so that suitable mitigation works can be commissioned.
- Fires must not be lit in positions where their flames can extend to within 5m of foliage, branches or trunks. Wind direction and size of fires will impact on this.
- Notice boards, telephone cables or other services etc. must not be attached to any part of a tree.

Remember the tree officer can turn up at any time or neighbours may report any poor practice or threats to the trees.

Site Personnel Contact Information

As far as I am aware the only personnel associated with this site at the time of writing this report is the site owner and project architect. Table 1 shows the contact details of the project architect who is to be contacted if any enquires relating to this project need answering.

Table 2

Name	Relation to Site	Contact Details
Chris Dyson Architects LLP	Project Architect	0044 20 7247 1816

LIMITATIONS AND QUALIFICATIONS

LIMITATIONS AND QUALIFICATIONS

Unless specifically mentioned the report will only be concerned with ground inspections. No below ground inspections will be carried out without prior confirmation from the client that such works should be undertaken. This report is for the purposes of identifying the potential impact construction activities could have on the trees and is not a health and safety assessment of the trees. A cursory assessment of the trees health and condition will be recorded, but this is not to be taken as a detailed assessment of its structural condition, health and management recommendations in relation to this. A separate tree inspection regime focusing on these aspects will need to be undertaken if this is required.

The validity, accuracy and findings of this report will be directly related to the accuracy of the information made available during the inspection process. No checking of independent data will be undertaken, Andrew Day will not be responsible for the recommendations within this report where essential data are not made available or are in accurate.

This report will remain valid for one year from the date of inspection but will become invalid if any tree works not recommend within the report are undertaken, soil levels around the trees are altered in any way, and extreme weather conditions are experienced or if any building works that could impact on the tree are undertaken or not disclosed.

If any of the above occurs, then it is strongly recommended that a new tree inspection is carried out.

It will be appreciated, and deemed to be accepted by the client that the formulation of the recommendations for the management of the trees will be guided by the following:

1. The need to avoid reasonable foreseeable damage
2. The arboricultural considerations – Tree safety, good Arboricultural practise and aesthetics.

The client is deemed to have accepted the limitation placed on the recommendations by the sources quoted in the attached report. Where time constraints or the client limits sources, this may lead to an incomplete quantification of the risk.

TREE PROTECTION PLAN

(This plan is for reference only; please refer to the separate A3 plan for scaling if required)

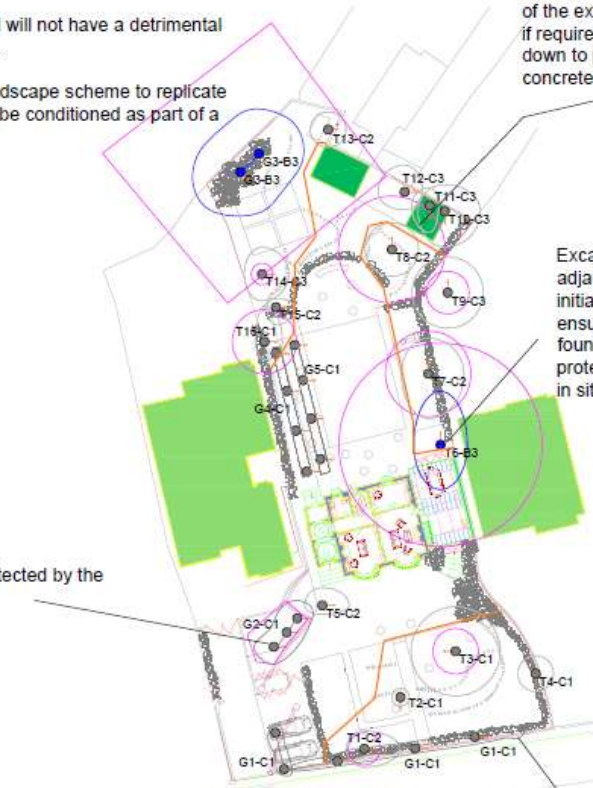
Trees to be removed to implement layout and landscaping:

G1, G4, G5, T2, T4, T5, T10, T11,T12, T13 & T15.

All low quality trees whose removal will not have a detrimental impact on the wider public amenity.

New planting is proposed in the landscape scheme to replicate and enhance the site, and this can be conditioned as part of a planning consent.

Base of garden room in this location to be on top of the existing ground level, with minimal leveling if required. A non porous membrane will be laid down to prevent leaching of toxins from the concrete into the soil.



Excavations within the footprint of the building adjacent to the existing foundation line to be initially opened using hand tools to 600mm, to ensure any roots growing parallel to the foundation are recorded and suitably protected. The existing foundation will remain in situ.

G2 retained and protected by the existing wall.

G1 will be removed and replaced with espalier magnolia grandiflora and protected, which will screen the property and not change the perspective from the street scene.

KEY

Tree Position with Canopy Spread plus BS5837 Category A1, A2 or A3

Tree Position with Canopy Spread plus BS5837 Category B1, B2 or B3

Tree Position with Canopy Spread plus BS5837 Category C1, C2 or C3

Tree Position with Canopy Spread plus BS5837 Category U

Root Protection Area (RPA) - Based on Simple Radius from Tree

- First significant Branch direction (FSB)

- Protective Fence Line

TREE PROTECTION PLAN

CLIENT: Chris Dyson Architects

PROJECT: 12 Keats Grove, Hampstead, London.

DATE: 7th October 2019

SCALE: 1:500 A3

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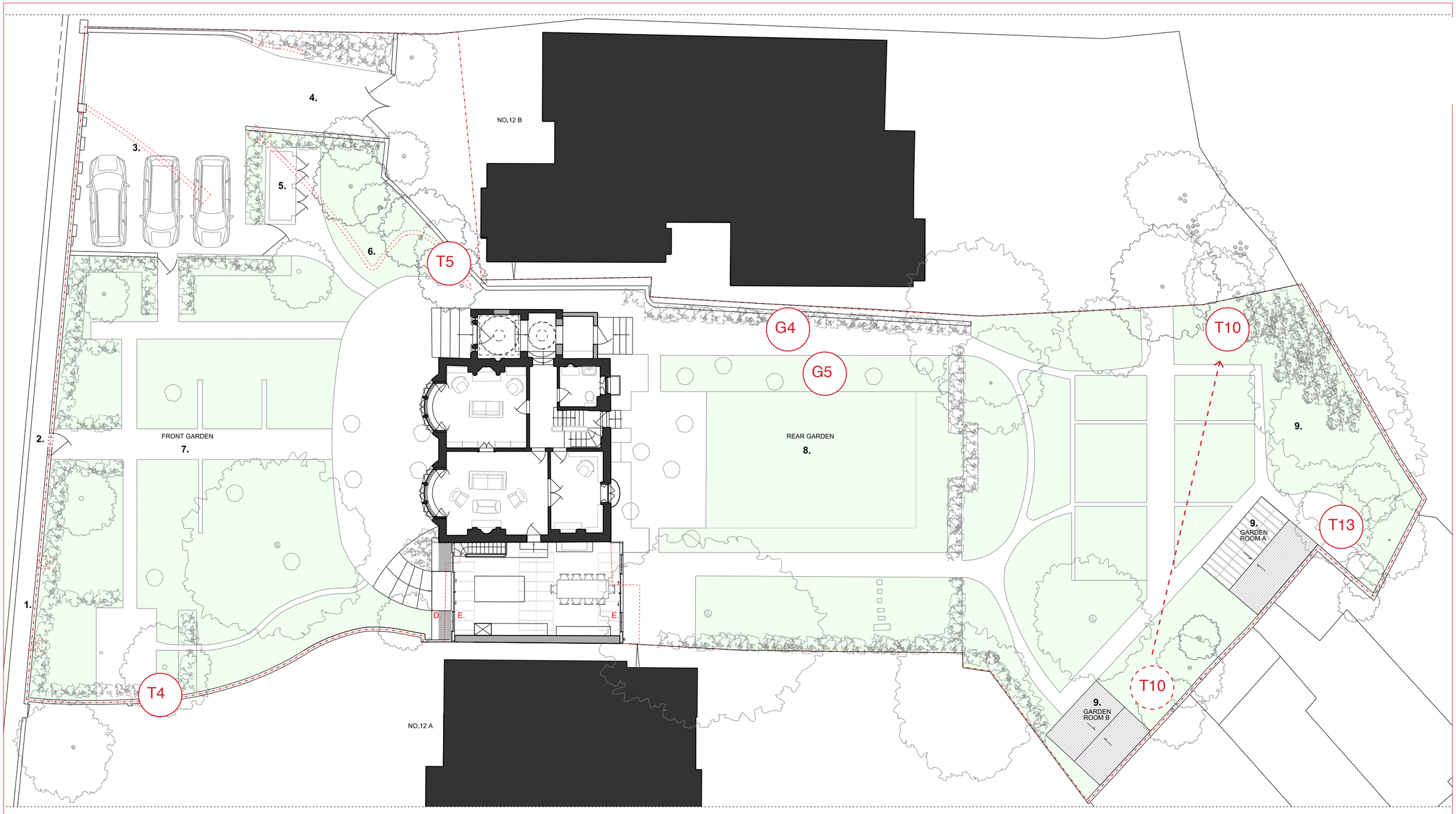

Application No: 2020/5065/P - Condition 06 - Details of Location and Size of Replacement Trees

T4	=	Retained - Sweet Gum
T5	=	Replaced - Quercus Ilex Trees or Holm Oak - Height 3.7m - 4.5m
G4	=	Replaced - Holm oak hedging - 2-3m height
G5	=	Removed
T10	=	Replaced - Elder - 3-5m height
T13	=	Replaced - Large Bay Tree - 4m height

Studio Dera

12 Keats Grove
London
NW3 2RN

Application No: 2020/5065/P

Condition 06 Details of tree protection required by condition 6 planning permission 2019/5443/P dated 26/02/2020 (as amended by 2020/3584/P dated 26/11/20) for excavation of basement and extensions with external alterations.

Maintenance Plan for replacements including:

- Laurus nobilis - Bay tree
- Large holm oak
- Magnolia grandiflora
- Taxus baccata yew hedging and espaliered

General Maintenance Guide:

Watering
- Quantity: Wet to field capacity. Minimum 10-15 litres per tree
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to rootzone.
- Frequency: As schedule and when instructed.

Disposal of arisings
- General: Unless specified otherwise, dispose of arisings as follows:
- Biodegradable arisings: Remove to recycling facility.
- Grass cuttings: Remove to recycling facility.
- Tree roots and stumps: Remove from site.
- Shrub and tree prunings: Remove to recycling facility.
- Litter and nonbiodegradable arisings: Remove from site.

Protection of existing grass
- General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

Cleanliness
- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at completion and after any maintenance operations.

Pruning generally
- Pruning: In accordance with good horticultural and arboricultural practice.
- Removing branches: Do not damage or tear the stem or bark.
- Wounds: Keep as small as possible and cut cleanly back to sound wood.
- Cutting: Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.
- Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridgemor branch collar as a pruning guide.
- Appearance: Thin, trim and shape each specimen appropriately to species, location,mseason, and stage of growth, leaving a well balanced natural appearance.
- Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
- Disease or infection: Give notice if detected.
- Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

Formative pruning of young trees
- Standard: Type and timing of pruning operations to suit the plant species.
- Time of year: Do not prune during the late winter/ early spring sap flow period.
- Young trees up to 4 m high:

- Crown prune by removing dead branches and reducing selected side branches by onethird to preserve a well balanced head and ensure the development of a single strongleader.
- Remove duplicated branches and potentially weak or tight forks. In each case cut back
- to live wood.
- Whips or feathered trees: Do not prune.
- Operatives: Member of the Arboricultural Association.

Trimming rapidly establishing hedges

- General: Allow to reach planned height as rapidly as possible.
- Form: Trim back lateral branches moderately.

Trimming slowly establishing hedges

- Operations:
- Timing: Cut back hard in June and September to encourage bushy growth down to
- ground level.
- Form: Allow to reach planned dimensions only by gradual degrees, depending on growth
- rate and habit.

Removal of dead plant material

- Operations: At the end of the growing season, check all shrubs and remove all dead
- foliage, dead wood, and broken or damaged branches and stems.

Digging over

- General: Dig over beds. Do not damage existing plants, bulbs and roots.
- Depth of dig (minimum): 150 mm.

Summary of Maintenance Operations Required To Tree, Hedge & Shrub Planting Generally

- Frequency of maintenance visits: weekly throughout the construction Contract maintenance and establishment period.
- Plants/trees/shrubs that have failed to thrive (unless due to theft or malicious damage after completion) during the defects liability period stated above are to be replaced with equivalent plants/trees/shrubs.
- Replacements are to match size of adjacent or nearby plants of same species or match original specification (allowing for growth of originally planted stock) whichever is the greater size.
- Timing of making good: within 8 weeks of notification of failure (subject to planting season restrictions).
- Weed control: Maintain weed free area around each tree and shrub, minimum diameter the larger of 800mm or the surface of original planting pit. Keep planting beds clear of weeds, by hand and mechanical means.
- Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
- Staking: Check condition of stakes, ties, guys and guards. Replace broken or missing items. Adjust if necessary to allow for growth and prevent rubbing of bark. Frequency of checks: 4 weeks.

Trees:

- Spray crown when in leaf during warm weather. Carry out in the late afternoon / evening.
- Prune at appropriate times, to remove dead or dying and diseased wood and suckers, to promote healthy growth and natural shape.
- Prune trees to favour a single central leading shoot, unless type and form is of a multi stemmed or pleached nature.
- Watering: As necessary depending on weather conditions and season, to ensure establishment and proper development at the discretion of the Contractor.

Conclusions:

The proposed replacement trees will:

- Fit sensitively and aesthetically with the historic context
- Have adequate soil and the conditions to grow and flourish
- Will add to the ecological conditions of the site
- Will add to the biodiversity of the site