OMC Associates

BSi 5837 Report for Development

CLIENT:	Adam and Manda Greenblatt
SITE:	Flat 2 – 92 Greencroft Gardens, London NW6 3PH
OUR REF:	1329DCS180430
DATE OF REPORT:	30th April 2018

Prepared by: Christian Sheldon ND (Arb), QCF L4 Dip (Arboriculture)

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EXECUTIVE SUMMARY

Development in the form of a small single-storey detached building (garden studio) is proposed, at the (western) end of the rear garden of 92 Greencroft Gardens. The new structure would be sited where a large shed currently exists on a concrete slab; its introduction would not necessitate the removal of pruning of any trees. Theoretically the new structure would encroach upon the Root Protection Area (RPA) of two trees (T2 and T3), although the structure will be founded on a steel frame mounted on small-diameter piles and will sit above existing ground level with a void beneath. The pile holes will be excavated with a hand-operated auger and will be lined with heavy-duty polythene to protect tree roots from contamination by wet concrete. Utility services would be run to the building; they will be routed to avoid encroachment upon RPAs.

1.0 INTRODUCTION

1.1 Brief

We are instructed to provide an arboricultural report to demonstrate the feasibility of a new detached building on the western boundary of the property's rear garden and provide recommendations for the protection of the trees surrounding the proposed structure during its construction. Recommendations are consistent with the most recently revised version of the British Standard on this subject, "Trees in relation to design, demolition and construction - Recommendations", BS 5837 (2012).

1.2 Scope of Report

This report incorporates an assessment of the trees potentially affected by the proposed structure; an arboricultural impact assessment (AIA) that accounts for the various types of damage that may be inflicted by the introduction of the new structure, its construction and the and potential negative effects on tree health and stability; and an arboricultural method statement (AMS) providing the details necessary to ensure that damage is minimised during the construction work.

The report is supplemented by a Tree Survey Plan showing the site as it currently exists and Tree Constraints Plan (TCP) and Tree Protection plan (TPP) that illustrate the extents of the trees' RPAs and proposed structures within them, and the protection measures described within the AMS.

The report contains the following appendices:

Appendix 1: **A Tree Survey Plan** showing the site as existing, with canopy spreads and indicative girth of all retained trees and trees proposed for removal. All trees are represented according to their designated BS 5837 retention category colour (see Appendix 6);

Appendix 2: **A Tree Constraints Plan (TCP)** indicating root protection areas (RPAs) of retained trees with the proposed scheme superimposed to indicate location and extent of encroachment;

Appendix 3: **A Tree Protection Plan (TPP)** that clearly illustrates the trees in relation to every aspect of the proposed scheme and every aspect of required protection. Where this is phased, multiple TPPs will be provided for each phase for clarity;

Appendix 4: Default specification for protective fencing;

Appendix 5: Specification for temporary ground protection;

Appendix 6: A cascade chart explaining tree quality assessment;

Appendix 7: Photographs

1.3 Documents

We have been provided with various plans of the footprint, elevations and foundations of the proposed structure by Rooms Outdoor Ltd.

1.4 Site Description

The site comprises the rear garden of the property, specifically, the western end where a large shed currently stands.

1.5 Planning Proposal

It is proposed that a small single-storey garden room be constructed in the shed's location.

2.0 TREES

2.1 Trees Data

Dimensions relating to height, crown spread (at four cardinal points where considered necessary), girth at 1.5m as well as age class, structural and physiological condition and BS 5837 (2012) category are noted.

This survey does not include a detailed assessment of the health of the trees, but clear faults may be factored-in to structural and physiological categories where they are deemed to influence retention categories.

2.2 Trees and the Law

The existence of any statutory controls protecting trees (e.g. Tree Preservation Order (TPO), Conservation Area status or historic 'in-perpetuity' planning conditions) has not been established.

Please note that no works around trees should be carried out without the approval of the Local Planning Authority (since it is likely to incur large fines) unless planning permission has been granted that indisputably necessitates the removal or pruning of any of the trees included within this report.

Section 197 of the Town & Country Planning Act 1990 states that it shall be the duty of the local planning authority to ensure whenever it is appropriate, that in granting planning permission, "adequate provision is made, by the imposition of conditions, for the preservation or planting of trees" Even when no specific legal protection exists it may be necessary to obtain a felling license from the Forestry Commission if the volume of timber removed exceeds felling license quotas.

The Planning (Listed Buildings and Conservation Areas Act) (1990) in conjunction with English Heritage empowers local authorities to designate areas of special architectural or historical interest as 'Conservation Areas', to preserve their character and appearance. Trees can form an intrinsic part of the character and appearance of such areas and the Act prohibits any works to trees within them with a stem diameter measuring in excess of 75mm at a height of 1.5 metres from ground level.

Prior written notice must therefore be given to the local authority of the intention to carry out works to trees in Conservation Areas and the authority's formal response obtained within the statutory timeframe before works can commence. Penalties for carrying out works to trees in Conservation Areas without a formal response from Local Planning Authority raising no objection to the Notice are the same as those for unauthorised work to trees protected by TPO.

Section 11 of the National Planning Policy Framework adopted in March 2013 "Conserving and enhancing the natural environment" states, "*the planning system should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes, recognizing the wider benefits of ecosystem services and minimising impacts on biodiversity*". It also stresses the importance of "*protection, enhancement and management of green infrastructure*".

The Council's Local Plan also contains policies relating to the protection and retention of trees and

landscape.

The Wildlife & Countryside Act 1981, the Conservation (Natural Habitats etc.) Regulations 1994 and the Countryside & Rights Of Way Act 2000 are all of relevance.

2.3 Site Specific Tree Comments

One single tree exists within the property's garden (T1), a mature bay laurel of fair overall condition.

Above: T1

Two lime trees (T2 and T3) are located close to the property's southern boundary in the neighbouring garden (no. 90 Greencroft Gardens). T3 is maturing regrowth from a historically removed tree, the degraded stump of which is still present.

Above: T2 (foreground) and T3 (behind)

TREE NO.	SPECIES	HEIGHT (M)	DIA. @1.5M (mm)	CROWN RADIUS N	S	E	W	AGE CLASS	SULE	CONDITION STRUCTURAL	CONDITION PHYSIOLOGICAL	BS 5837 CATEGORY	TREE WORK	SPACE BELOW CROWN (M)	RPA RADIUS (M)	GENERAL COMMENTS
T1	Bay laurel (*Laurus nobilis*)	7	160	2.0	1.5	2.0	0.5	M	10-20	Fair	Good	C1	-	N/A	1.9	Clipped back to west over garden and shed. Maturing basal shoots. Small diameter stem originating from base, entwines trunk and rubs against crown stem at 1.5m.
T2	Common lime (*Tilia x europaea*))	11	430	4.1	2.8	3.6	3.0	M	20-40	Fair	Good	B1	-	N/A	5.2	Recent wall collapse across base to east; foundation remains. Matured basal shoot to east. Historic crown reduction.
T3	Common lime (*Tilia x europaea*))	10	250	1.5	3.0	2.0	3.0	MA	20-40	Good	Good	B1	-	N/A	3.0	Matured regeneration from historically felled tree. Good overall form and high vitality.

3.0 TREE RELATED SITE CONSTRAINTS - GENERAL

3.1 Crowns/Canopies of Retained Trees

While it is desirable to retain as many trees as is practicable within sites of proposed development (especially where dense populations of high quality trees exist), misplaced retention of lower quality trees should be avoided, to avoid overcrowding and minimise post-development pressure to remove trees on nuisance grounds e.g. because of falling leaves and/or fruit, or shading. This is most applicable to residential development where the presence of trees may impact on living conditions and the future residents' enjoyment of their property.

Where trees are retained within areas of proposed development or the canopies of trees on neighbouring land overhang a development site's boundaries, careful assessment of the potential implications must be made where trees would exist close to planned buildings and other structures, to ensure conflicts do not arise during the construction phase or develop once the development is complete. Where tree canopies would obstruct building work (including erection of scaffolding) or where contact between branches and the new build is foreseeable, skilful pruning can help to accommodate the development. This may simply involve appropriate crown lifting (removal of lower limbs) or some judicious trimming back of lateral branches. While some careful tree surgery can help to create separation between trees and new structures, heavy pruning would not be appropriate when considering development close to trees. Schemes requiring excessive and inappropriate crown reduction should ideally be avoided, because such work destroys natural tree form and adversely affects tree health and longevity. Such pruning will also necessitate regular long-term cutting back to alleviate conflict with the new structures, which can be a source of nuisance to future residents in the case of residential development.

3.2 Indirect Damage (Subsidence)

This is applicable where a shrinkable substrate prevails. Where applicable an appropriate foundation compliant with NHBC guidelines must be designed to ensure that tree and building co-exist for the long term and longer term pressure to is not applied to remove nearby trees because of indirect damage. The website of the British Geological Survey (BGS) describes the substrate as being London Clay, a soil type with a high shrinkage potential. The fact that the entire building will be founded on piles and will substantially exist above ground level mitigates the risk of soil shrinkage-related subsidence in this instance.

3.3 Root Protection Area (RPA)

The RPA is defined in BSi 5837 (2012) as "*the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree*".

The 2012 British Standard calculation has been used to determine the extents of RPAs. Existing site conditions having the potential to influence the morphology and disposition of tree roots has also been taken into account when determining shape of RPAs, such as the presence of roads, structures and underground infrastructure, site topography, drainage and prevailing soil type.

Upon assessment, the site conditions will not have affected the trees' root spread. The trees' RPAs are illustrated within the Tree Constraints Plan at Appendix 2.

Though encroachment upon the RPA should always be avoided, (see section 4 for reasons) it can be acceptable under certain conditions. This involves assessment of the tolerance levels of the tree based on a variety of factors, including age and species.

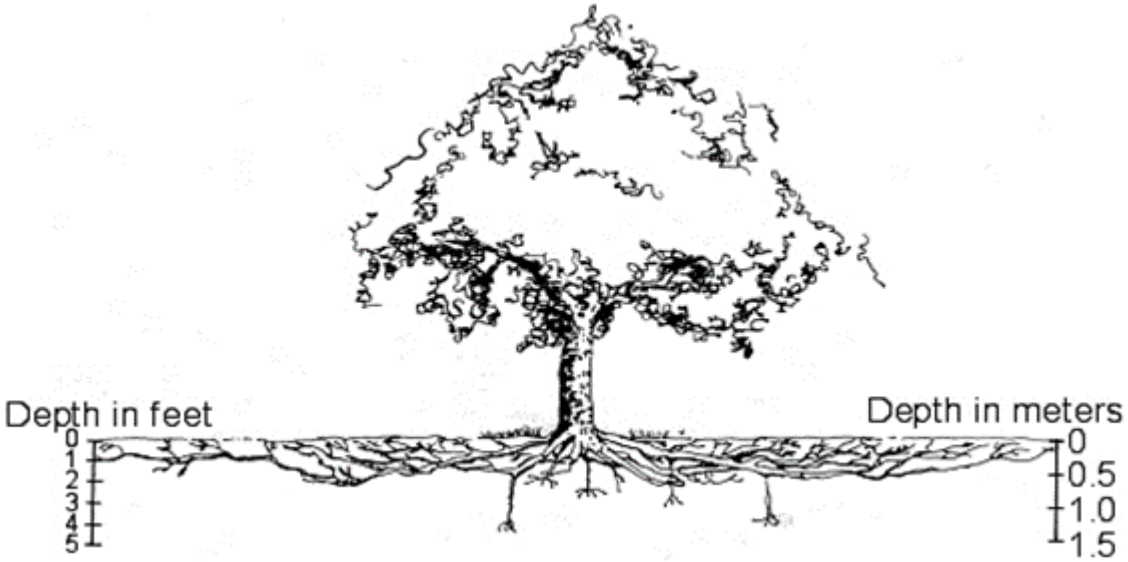
4.0 ARBORICULTURAL IMPACT ASSESSMENT (AIA)

4.1 Affects of Development on Trees - General

The objective of this report is to identify and evaluate the extent of potential direct and indirect damage to existing trees that may otherwise result if the proposed development were implemented without appropriate guidance.

A tree may take a century to reach maturity but it can be irretrievably damaged in a few minutes, often because of a failure to appreciate their vulnerability. *Irreparable damage is frequently inflicted on existing trees in the first few days of a contractor's occupation of a site.*

Trees on development sites are particularly vulnerable to damage, particularly to their root systems. It is a common misconception that tree root architecture mirrors that of the tree's above-ground structure and that roots penetrate deep into the soil. Damage is, therefore, often unintentionally inflicted due to a failure to appreciate that the majority of roots occur in the upper 0.5m of soil where conditions are most conducive to their growth and healthy function.



Typical formation of tree root architecture

This report seeks to provide guidance on how worthy trees in the immediate vicinity of the proposed development can be protected during its construction.

It is important to be aware that the effects of tree damage may not be apparent for some time.

There are a multitude of activities that can kill or damage trees on construction sites and there is a need to be mindful of these activities and why they may be so harmful to trees. These are briefly summarized below.

4.1.1 Direct mechanical damage (*Referred to as D1 in this report*)

Direct damage suffered by trees on construction sites commonly occurs in the form of bark wounding through scuffs and tears e.g. by impact of vehicles or plant machinery, poorly executed branch removal carried out by unskilled operatives, or the accidental snapping, ripping or tearing away of branches/stems struck by high-sided vehicles or machinery. The fragile bark covering shallow roots is also extremely vulnerable to scuffing and tearing, even by pedestrian activity. Although each incidence of damage must be judged according to the individual tree and set of circumstances, such damage is unlikely to cause death unless extensive, but will invariably cause significant disfigurement and initiate long-term degradation of internal tissues, either by weathering or colonisation of wood decay fungi. Such damage often occurs as a result of construction activities taking place too close to trees without protection or appropriate pre-construction tree surgery.

4.1.2 Ground compaction (*Referred to as D2 in this report*)

This is likely to be the most common cause of tree death or decline on a building site, yet the least appreciated due to the root systems' lack of visibility. The vast majority of tree roots are located in the upper soil horizons where soil conditions are most favourable for root growth. It is these upper horizons that are most vulnerable to ground compaction. Compaction destroys soil structure and this prevents soil moisture absorption into the ground and loss of natural aeration. This process deprives tree roots of moisture as well as giving rise to root asphyxiation and is often fatal to trees.

4.1.3 Changes in ground level (*Referred to as D3 in this report*)

The majority of a tree's root system is generally located in the upper 0.6m of the ground. The bulk of these roots comprise hair-fine, delicate 'feeder' roots, essential for the absorption of oxygen, water and minerals from the soil to facilitate healthy growth and function. Reductions in ground level such as soil stripping can therefore have catastrophic consequences for a tree's health. Conversely, oxygen depletion caused by increases in ground level can result in root asphyxiation and be just as damaging.

4.1.4 Severance of roots by ground works (*Referred to as D4 in this report*)

Excavation of ground to remove old foundations and hard standing, construction of conventional concrete footings, new hard standing or the installation of services such as water/sewerage pipes, gas/electricity cables, TV/telephone cables using open trenching within the drip-lines of trees severs any roots present, potentially leading to destabilization, decline or death of trees. It May also have implications for local soil hydrology.

4.1.5 Contamination of ground (*Referred to as D5 in this report*)

Spillage of petrol, diesel, paint removers, wood preservatives and many other toxic liquids regularly used on building sites can kill roots. Concrete or cementitious (mortar, cement, slurry) washout wastewater is caustic and considered to be corrosive with a pH over 12, essentially the same as ammonia or other household cleaning detergents. The primary ingredient in ready mixed concrete is Portland cement, which consists of Portland cement clinker, calcium sulphate, calcium and magnesium oxide, heavy metals and potassium and sodium sulphate compounds, chromium compounds and nickel compounds. In cases where tree roots have been exposed to the high pH of cement products, the effects may include inhibited growth and dieback of portions of the crown due to cellular damage from the uptake of toxic compounds, and substantial alteration of the soil and plant chemical composition even after the source of pollution is gone.

4.2 Affects of Development on Trees – Specific to This Site

Removal of Existing Concrete Shed Base (*Damage type – D4*)

A risk of potentially ripping and/or tearing roots exists when breaking-out the existing concrete slab; particularly for those roots that may have grown to adhere to its underside. Care will need to be exercised during this work to ensure any damage of this sort is kept to a minimum. Any roots that become exposed during this work will also need to be protected from desiccation.

Excavations for Foundations and use of Concrete (*Damage types – D2, D4 & D5*)

The new structure would be supported upon a steel frame, founded on piled foundations of 300mm diameter. The pile holes would be excavated with a hand-auger. Five of the piles at the southern end of the structure would be located within the RPA of T2 and T3. Given the narrow diameter and isolated nature of the pile excavations, the risk of root damage is deemed negligible. In cases where large woody roots are encountered which are deemed too important to be severed, the pile holes will need to be moved slightly to accommodate them.

The potential for root poisoning is high where concrete will be used for the piles. Measures will,

therefore, need to be implemented to ensure the protection of exposed roots from desiccation through exposure to air and poisoning by concrete.

4.3 Issues to be Addressed by the AMS:

- Installation of tree protection fencing and temporary ground protection;
- Excavation of pile holes within RPAs and treatment of exposed roots;
- Mixing and use of concrete around tree roots;
- Additional precautions.

5.0 ARBORICULTURAL METHOD STATEMENT (AMS)

5.1 Introduction

Successful avoidance of any damage can be achieved through appropriate tree protection details, correct implementation of these details and close liaison with the council's tree officer and the appointed arboriculturist.

These details and procedures are provided in the arboricultural method statements outlined below and illustrated in the Tree Protection Plan (TPP) at Appendix 3. All key site personnel must fully familiarise themselves and understand this method statement and tree protection plan. A copy of the method statement must be kept on site at all times. A large (not less than A3 size) copy of the TPP must also be kept to hand throughout the construction process.

To ensure the efficacy of tree protection scheme the following principals must be adhered to:

- All relevant aspects of this method statement must be incorporated into the construction method statement to avoid any conflicts.
- No building work or other activity associated with development can take place until the approved protection measures are in place and secure.
- Details of key site personnel will be submitted to the Council's arboricultural officer prior to the commencement of site works.
- All key site personnel must fully familiarise themselves and understand this method statement and tree protection plans.
- A copy of this method statement must be kept on site at all times. A large (not less than A3 size) copy of the TPP must also be available at all times for reference.

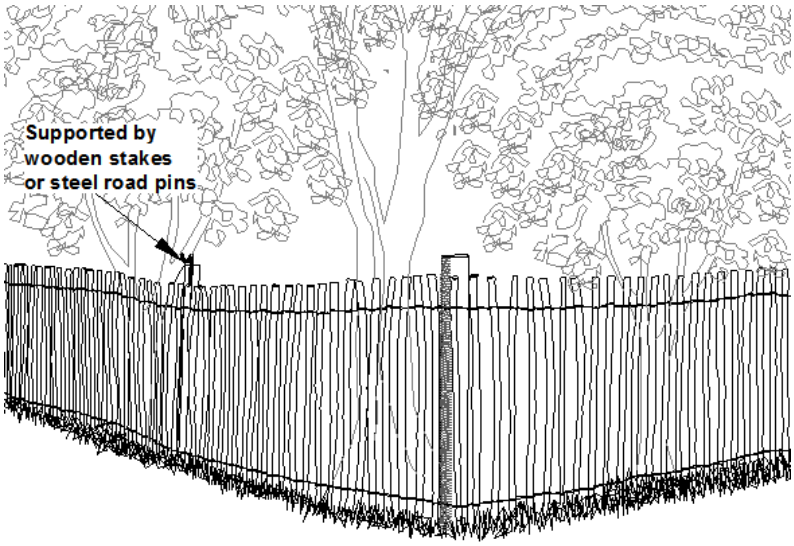
5.2 Project Contacts

Contact	Name	Email address	Telephone no.
Property owner	Mr Greenblatt	-	020 8515 5843
Project manager	Mr J. Keenan	johnkeenan@roomsoutdoor.co.uk	020 7607 0088
Arboriculturist	Mr C. Sheldon	christian@omc-associates.co.uk	07713 137025
L.B. Camden	Mr N. Bell	nick.bell@camden.gov.uk	0207 974 4444

5.3 Installation of Protective Barriers to Create a Construction Exclusion Zone (CEZ)

All damage types can be avoided through the establishment of Construction Exclusion Zones (CEZ) with the use of protective barriers; all protection measures must be fit for purpose. The default protective barrier specification within BS 5837:2012 is weld mesh (Heras)-type panels secured firmly to a scaffold framework (scaffold clamps are recommended) and braced with diagonal stabilizer struts. Heras-type panels mounted on rubber feet and diagonal stabilizer struts is also acceptable, secured to the ground with metal pins.

In this instance, given that no machinery will be used during construction, the need for robust Heras-type barriers is not deemed necessary, although some form of barrier should be installed (e.g. 4ft cleft chestnut paling supported by wooden stakes or steel road pins), to prevent minor impacts and deter materials being stored beneath the trees.



An illustrated specification is attached at Appendix 4. The positioning of the protective barriers is clearly illustrated within the Tree Protection Plan at Appendix 3.

5.4 Installation of Temporary Ground Protection

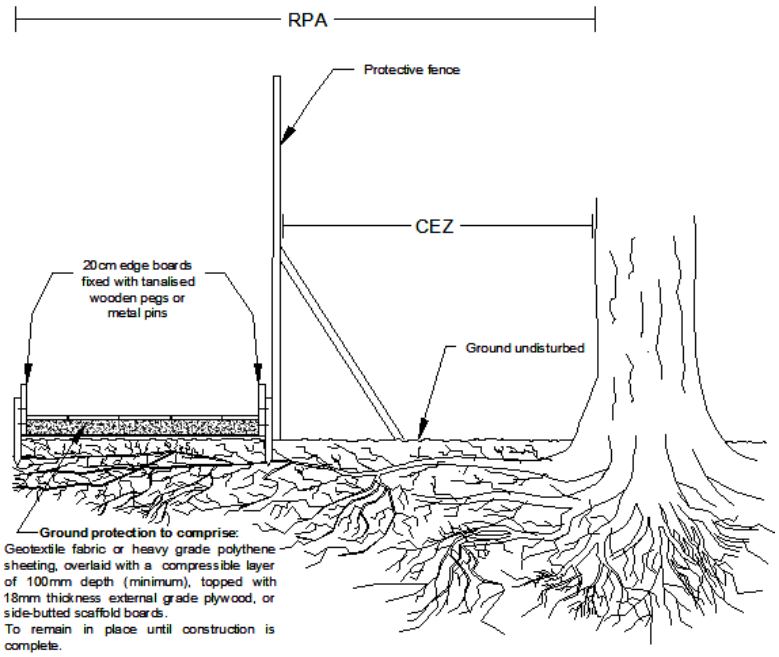
Temporary ground protection will be necessary to ensure the sensitive ground within the RPA of T2 and T3 is protected from compaction damage.

Temporary ground protection must comply with British Standard Recommendations, as below:

a) **For pedestrian movements only:** a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;

b) **For pedestrian-operated plant up to a gross weight of 2t:** proprietary, inter-linked ground protection boards placed on top of a compression resistant layer (e.g. 150mm of woodchip), laid onto a geotextile membrane;

c) **For wheeled or tracked construction traffic exceeding 2t gross weight:** an alternative system (*e.g. proprietary systems of pre-cast reinforced concrete slabs*) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.



In this instance it is anticipated that the ground protection will only need to withstand pedestrian activity, therefore the protection will comply with (a) and the illustration above. The extents of the ground protection are illustrated in the Tree Protection Plan at Appendix 3.

Once all tree protection is in place and secure, excavation of foundations may commence.

5.5 Root Pruning and Protection of Exposed Roots

Encountering tree roots is highly likely when excavating within RPAs, even at distance from the parent tree(s). This may be anticipated during the excavation of the pile holes within the RPAs of T2 and T3.

During this process the following guidelines must be adhered to:

- Where roots can be carefully moved to one side, this should be carried out rather than severing.
- If the cutting of root(s) is deemed unavoidable it must be done cleanly using sharp bypass secateurs or loppers, pruning preferably back to a side branch. To prevent desiccation the cut root(s) must immediately covered with damp, clean, hessian sacking (in summer months) which must be continually dampened so long as the roots remain exposed, or dry hessian sacking in winter to protect from rapid temperature changes and lower the chances of freezing.
- Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded with sharp sand (builders' sand should not be used because of its high salt content which is toxic to roots) or other granular fill, before soil is replaced.

These procedures **must** be followed. In this instance, given the low risk of potential root damage occurring, an arboriculturist need not oversee the foundation excavations, so long as he/she remains in contact with the builders and can access photos taken in the course of their excavation.

5.6 Removal of Existing Shed and Concrete Base

The existing shed will be dismantled with the use of hand tools, using the existing concrete base within the RPA of T2 and T3 as ground protection. Once the shed is removed, breaking-up of the concrete base may commence using hand-operated tools (including electric of pneumatic breaker), working from outside the RPA inwards towards the southern boundary. To ensure any significant roots (those of 25mm diameter or above and clumps of fibrous roots) that may be adhering to the underside of the slab are not torn while removing the slabs the following precautions will be taken:

- The broken-up fragments of concrete will be manually lifted, working from outside the RPA or from wooden boards and not from soft exposed ground.
- The concrete will be carefully eased out without tearing any of the larger (25mm dia. or greater) roots that may have grown under or around them. If this has occurred the root(s) will be gently prised away and cleanly cut with sharp bypass secateurs or hand saw.
- At the point when too little of the slab exists to work from, work will proceed from temporary scaffold boards to avoid compaction and rutting from the use of wheelbarrows.
- All roots exposed in the course of the slab's removal will be protected from desiccation in accordance with the method described at Section 5.5 until they can be covered with soil.

5.7 Mixing and Use of Concrete Around Trees

Wet concrete (including washout water) is toxic to trees, therefore protection to prevent it coming in contact with exposed roots is extremely important, to limit the potential for harm. Such protection will need to be impermeable, such as heavy-grade polythene sheeting.

It is just as important not to mix concrete in the vicinity of trees in order to avoid the risk of it soaking into the soil; therefore, no mixing or dispensing of concrete will be undertaken within 10 metres of any RPA. Where lack of space precludes this (e.g. in a confined site with a dense tree

population), mixing would need to be carried out in a bunded area to contain spillages and runoff. A proprietary mixing tray would suffice where only small quantities are required, but mixing of larger quantities (e.g. requiring a mechanical mixer) would require more substantial protection, constructed out of timber sheeting and edged 200mm boards, covered in heavy-grade polythene sheeting. In this instance, the decking at the rear of he house is deemed an acceptable location for mixing concrete. Prior to pouring, all pile holes will be lined with heavy-grade polythene sheeting to prevent the leaching of concrete into the surrounding soil and contamination of roots.

5.8 Removal of Protective Measures

All tree protection must remain in place and secure for the entirety of the works, only removing once all works are complete.

5.9 Additional Precautions outside the Tree Exclusion Zone.

- Materials that will contaminate the ground such as diesel oil and concrete mixings will not be discharged within the RPA or within 10m of any of the tree stems.
- Notice boards, telephone cables or other services should not be attached to any part of the trees.
- No fires that have the potential for flames to extend to within 5m of any point of the tree are to be lit.

6.0 SEQUENCE OF EVENTS AND SITE INSPECTION/MONITORING

All key site personnel must fully familiarise themselves and understand this method statement and tree protection plan. A copy of the method statement must be kept at all times on site. A large (not less than A3 size) copy of the TPP must be placed on the site office notice-board. The general sequence of events should be as follows:

6.1 Sequence of Events

Stage 1 Dismantle the shed and remove the concrete shed as described at Section 5.6;

Stage 2 Install the specified fencing and temporary ground protection according to the positions shown on the TPP;

Stage 3 Undertake excavations following the procedure described at Sections 5.5 of this report;

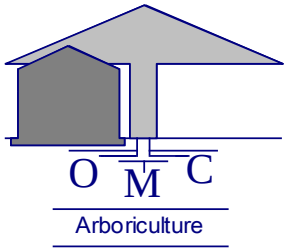
Stage 4 Maintain efficacy of tree protection measures throughout the construction process;

Stage 5 Remove fencing once all works are complete.

Given the low risk of damage represented by the works, monitoring is not deemed necessary in this instance. Contact with appointed arboricultural consultant must however be maintained, to provide ad-hoc advice as necessary on matters relating to tree protection.

7.0 CONTINGENCY MEASURES / UNFORESEEN DEVELOPMENTS

Provision of advice relating to unforeseen developments beyond the considerations of this report, or resolution of unforeseen matters relating to the protection of trees, can be sought by contacting the arboricultural consultant or local authority tree officer via the details in the table at Section 5.2.



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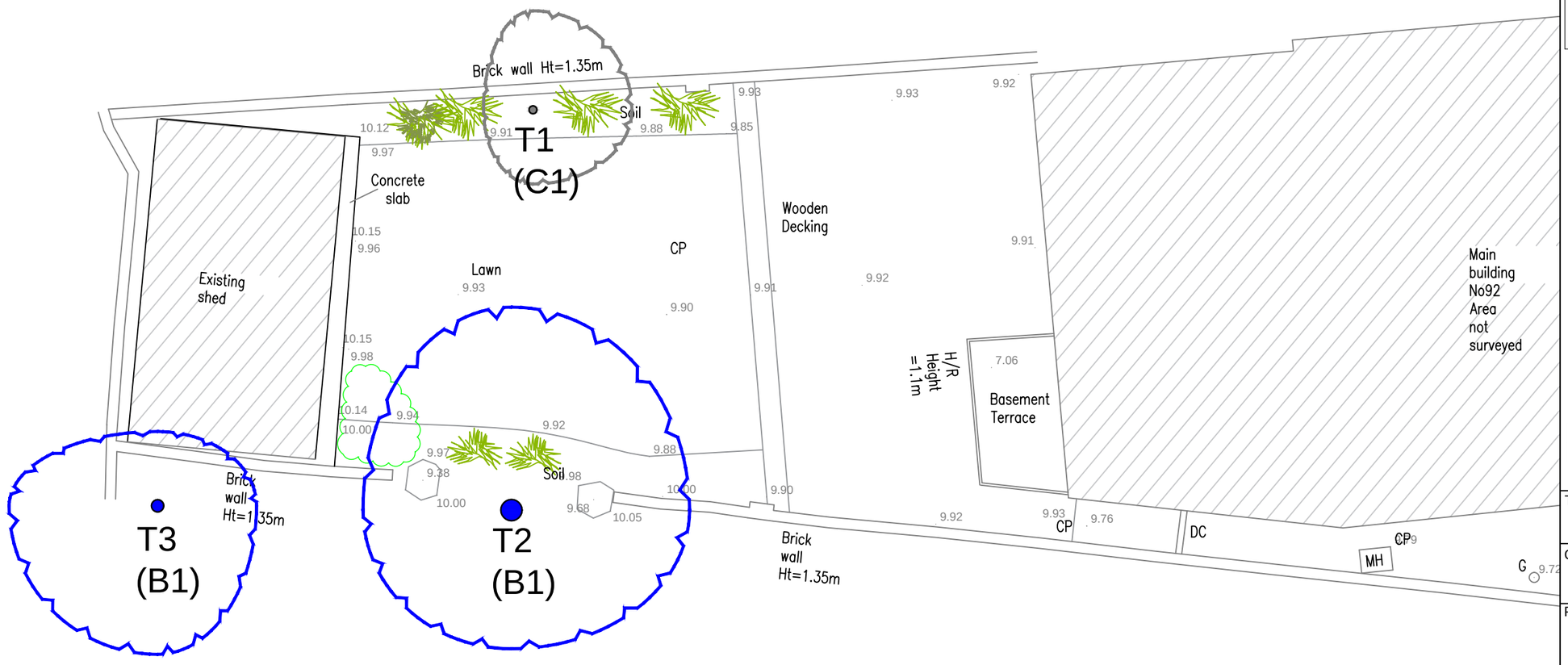
Appendix 1 Tree Survey Plan

North
(Indicative)

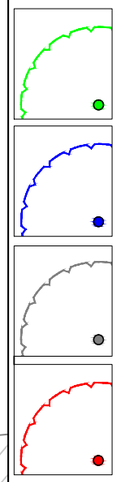
No. 94 Greencroft Gdns



No. 90 Greencroft Gdns

DO NOT SCALE - Use only figured dimensions
To be read in colour

BS 5837:2012 TREE RETENTION CATEGORIES



Category A
Trees of high quality and value: in such a condition as to be able to make substantial contribution (a minimum of 40 years is suggested)

Category B
Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20years is suggested)

Category C
Trees of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10years is suggested), or young trees with a stem diameter below 150mm.

Category U
Trees in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

REVISIONS

Title
Tree Survey Plan

Client
Adam and Manda Greenblatt

Project
Flat 2 -92 Greencroft Gdns, London NW6 3PH

Date	Drawn by
April 2018	CS
Project Ref. 1329_TSP	Scale 1:100 @ A3

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Arboriculture

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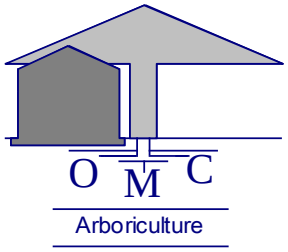

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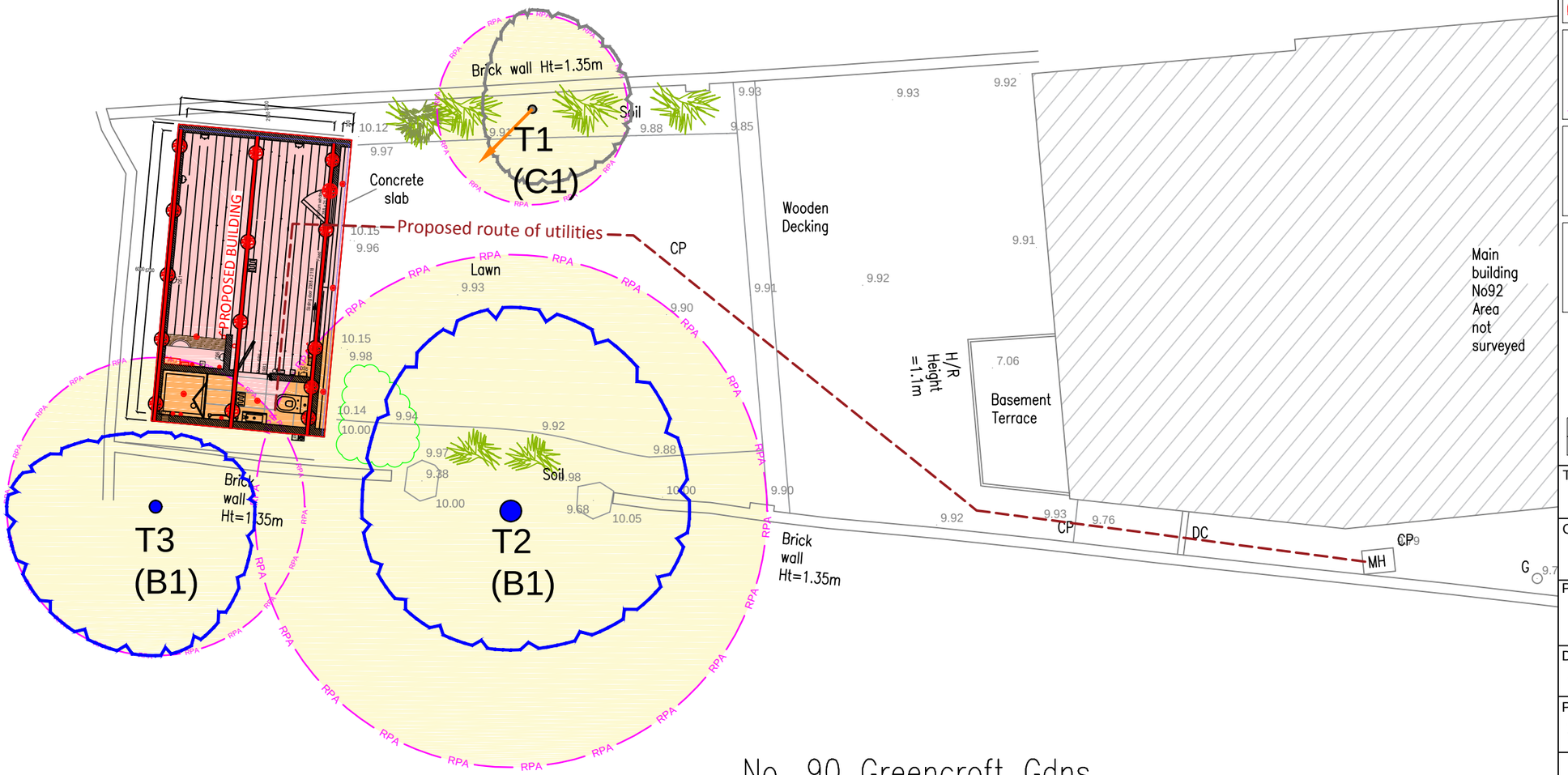
Appendix 2 Tree Constraints Plan

North
(Indicative)

No. 94 Greencroft Gdns



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Trees of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10years is suggested), or young trees with a stem diameter below 150mm.

Category U
Trees in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

BS 5837 Root Protection Areas
Adjusted to reflect the likely distribution of roots, as influenced by existing site conditions

Extents of Encroachment Upon RPA's
Shaded in Orange

Direction of First Significant Branch

-	-	-

REVISIONS

Title
Tree Constraints Plan

Client
Adam & Manda Greenblatt

Project
Flat 2 -92 Greencroft Gdns, London NW6 3PH

Date	Drawn by
April 2018	CS
Project Ref.	**Scale**
1329_TCP	1:100 @ A3

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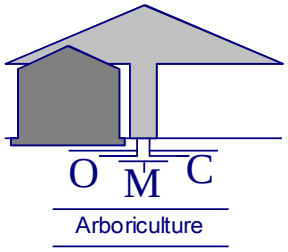

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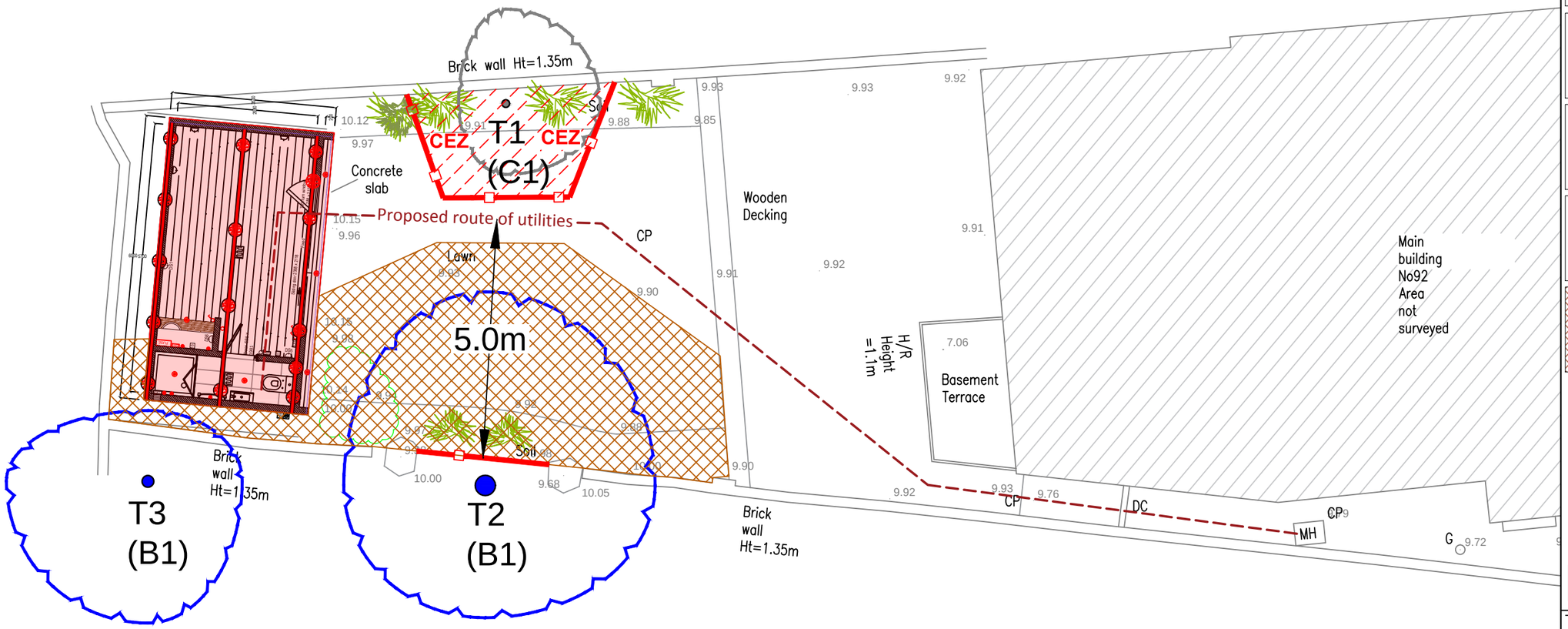
Appendix 3 Tree Protection Plan

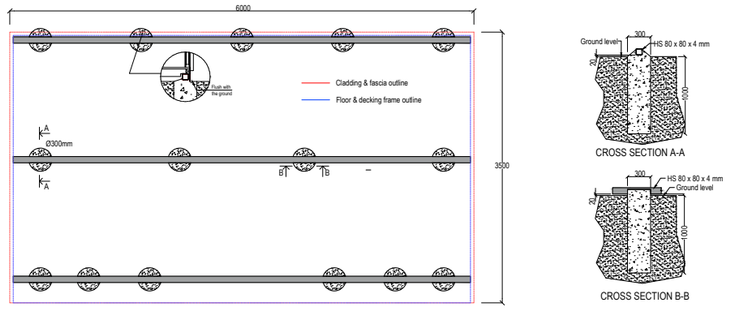
No. 94 Greencroft Gdns

North
(Indicative)



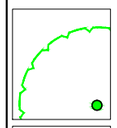
No. 90 Greencroft Gdns

PILED FOUNDATION DETAIL FOR NEW STRUCTURE

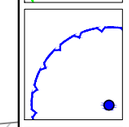


DO NOT SCALE - Use only figured dimensions
To be read in colour

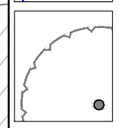
BS 5837:2012 TREE RETENTION CATEGORIES



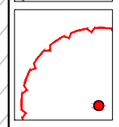
Category A
Trees of high quality and value: in such a condition as to be able to make substantial contribution (a minimum of 40 years is suggested)



Category B
Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20years is suggested)

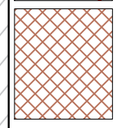


Category C
Trees of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10years is suggested), or young trees with a stem diameter below 150mm.



Category U
Trees in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

BS 5837 Tree Protection Fencing
(refer to Section 5.3 and Appendix 4 of the Arboricultural Method Statement for description and specification)



BS 5837 Ground Protection
(refer to Section 5.4 and Appendix 5 of the Arboricultural Method Statement for description and specification)

REVISIONS		

Title
Tree Protection Plan

Client
Adam & Manda Greenblatt

Project
Flat 2 -92 Greencroft Gdns, London NW6 3PH

Date	Drawn by
April 2018	CS
Project Ref.	**Scale**
1329_TPP	1:100 @ A3

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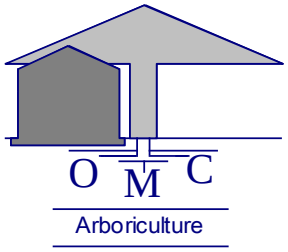

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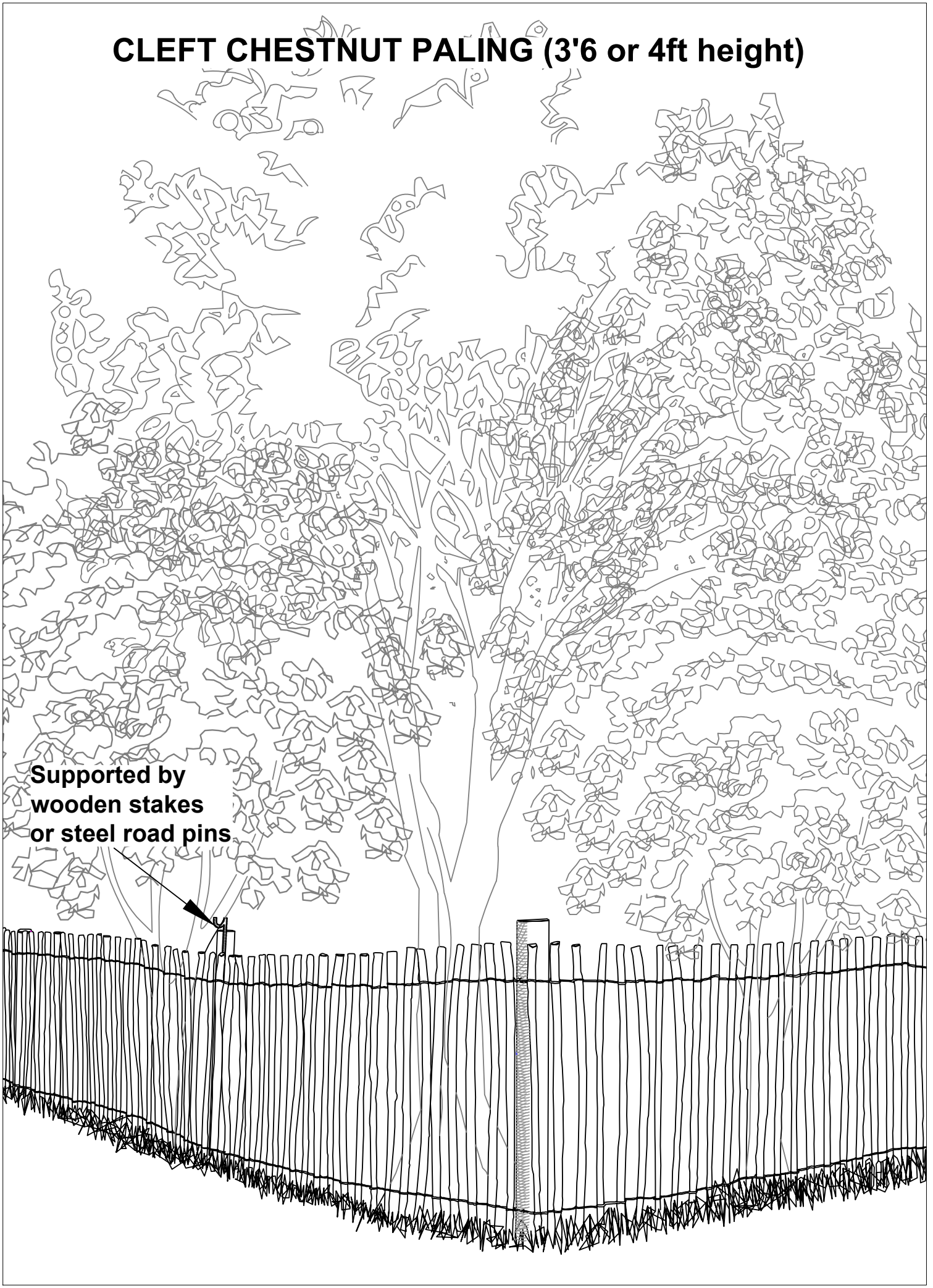
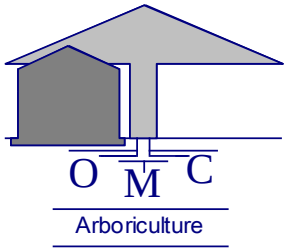
Appendix 4 Specification for Protective Fencing (chestnut paling)

CLEFT CHESTNUT PALING (3'6 or 4ft height)





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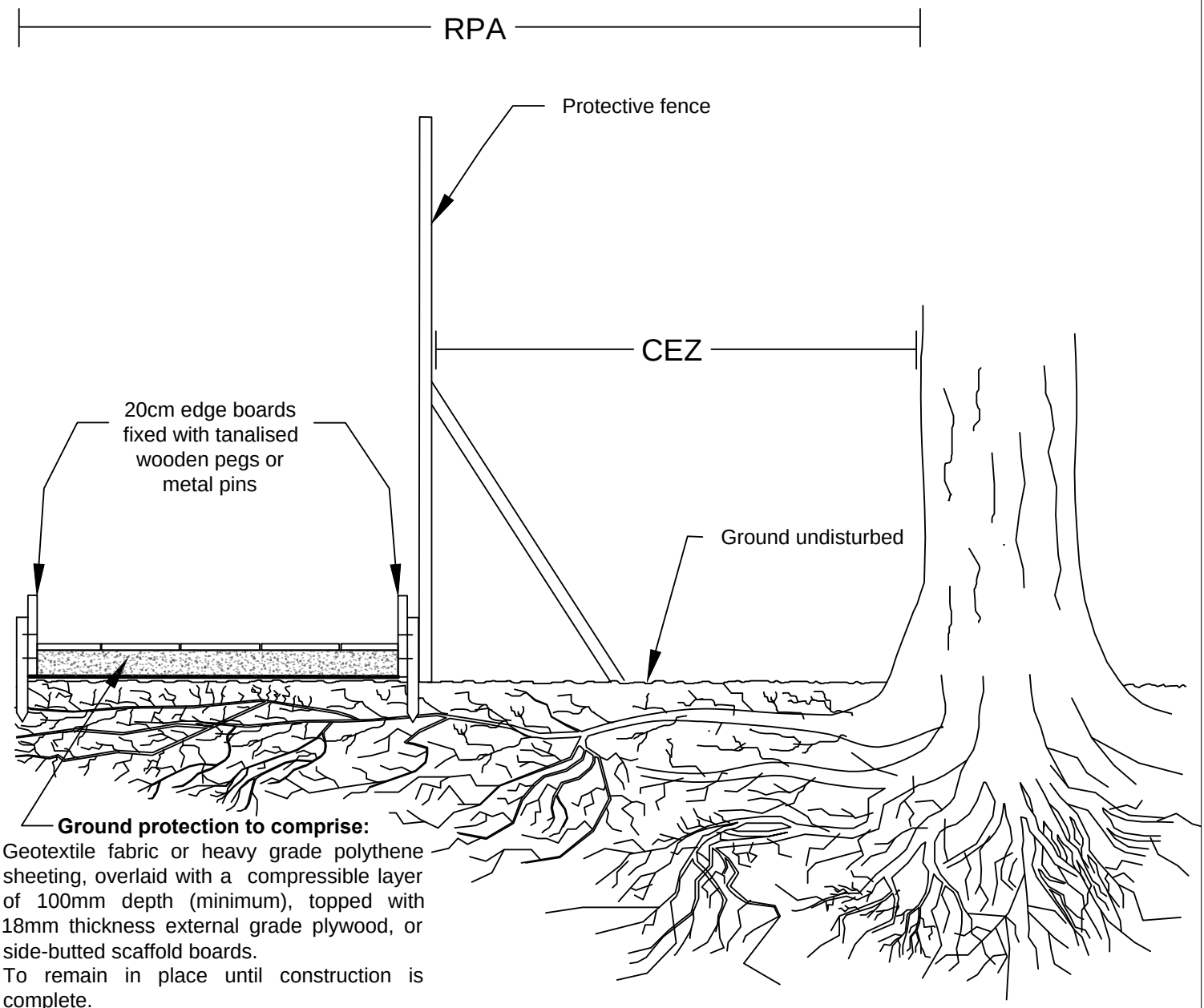
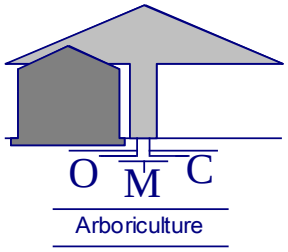
Appendix 5 Specification for Temporary Ground Protection

Ground Protection for Pedestrian Use within Tree Root Protection Areas

To avoid damage to roots and soil structure outside the CEZ but within the RPA, temporary ground protection will be installed using hand tools and wheelbarrows only. Wheelbarrows will only be used on boards or on retained/completed hard surfacing to avoid rutting.



Ground protection to comprise:
Geotextile fabric or heavy grade polythene sheeting, overlaid with a compressible layer of 100mm depth (minimum), topped with 18mm thickness external grade plywood, or side-butted scaffold boards.
To remain in place until construction is complete.



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Appendix 6 Cascade Chart Explaining Tree Quality Assessment

Key to Tree Schedule References

BS 5837:2012 Cascade chart for tree quality assessment (Table 1)

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Those in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected to collapse, including those that will become unviable after removal of other U category trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or stability of other nearby trees (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality. **NOTE:** Category U trees can have existing or potential conservation value which it might be desirable to preserve.			DARK RED
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are of particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN
Category B **Trees of moderate quality** with an estimated contribution of at least 20 years	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	MID BLUE
Category C **Trees of low quality** with an estimated contribution of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	GREY

KEY TO TREE SCHEDULE REFERENCES

Prefix: **T –** Tree **S** – Shrub/Climber **TG/SG** – Group/Hedge of Trees or Shrubs **H** - Hedge **Dia.:** **N/A -** Tree less than 100mm (for shrubs: young, semi-mature or mature)

***** Estimated

Age Class:

Young:	Generally less than 10 years old and high life expectancy
Semi-mature:	Within first 30% of life expectancy and significant growth to be expected
Early-mature:	Typically 30-60% of life expectancy, full size almost reached
Mature:	Typically 60% or more of life expectancy, full size reached with very gradual, slight further increases in size
Veteran	A stage of development where intervention/management may be required to ensure the tree remains safe
Over-mature:	Where a tree is so senescent that management is not worthwhile

Life Expectancy: How many years before tree is likely to need removing (subject to human intervention)

Crown Radius: If crown is symmetrical, one dimension is given for the radius followed by "S"

B.S. Category: **See Appendix 2**

Physiological Condition:

Good:	Healthy tree with no symptoms of significant disease
Fair:	Some disease noted and/or vitality is below what would be expected
Poor:	Significant disease noted and/or very low vitality
Very Poor:	Tree is in severe decline

Structural Condition:

Good:	No significant structural defects
Fair:	Defects noted but not sufficient to warrant immediate work
Poor:	Significant defects. Monitoring and/or remedial works required
Very Poor:	Significant defects requiring immediate work or tree removal

Space Below Crown: A useful indicator to determine the practicality of developing below the crown. Rather than a measurement which can be misleading and open to interpretation.

Y	Potential to develop below the dripline with either no treework or removal of limbs that will not adversely affect the health and appearance of the tree
N	No scope to develop below the dripline of the tree
N/A	Tree to be removed

Treework: This is general since the report is not a tree-work specification. It indicates:

H	High priority. For trees to be retained and where work required to make safe
L	No urgent work required but would benefit from some intervention
N	No treework identified as necessary in the foreseeable future
P	Facilitation tree surgery advised
R	Remove – tree identified to be removed because “U” category tree
RA	Tree removed to accommodate development
WA	Treework to accommodate development
IV	Sever and remove ivy

B.S. Category:

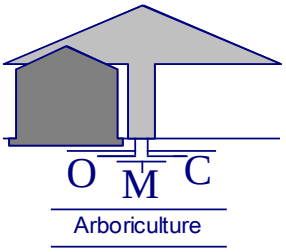
A - Those of high quality and value i.e. make a substantial contribution;

B - Those of good/moderate quality and value, might be Cat. “A” but slightly impaired

C - Those of low quality i.e. adequate to remain until new planting is established or young trees with a stem diameter less than 150mm at 1.5m height

U - Those of such poor condition that any existing value would be lost within 10 years

1 - Mainly Arboricultural value **2 - Mainly Landscape value** **3 - Mainly Ecological value**



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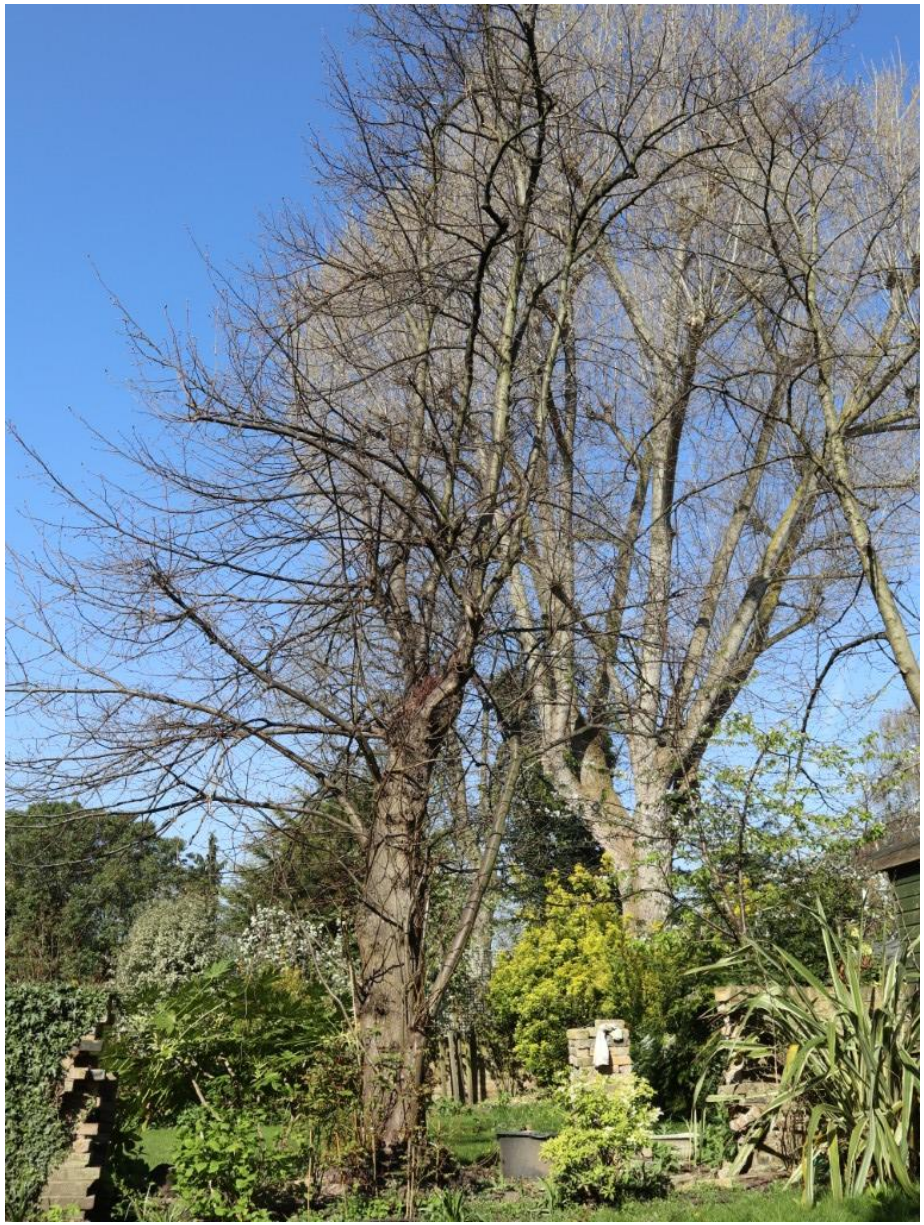
Appendix 7 Photographs

Above: Area where building will be constructed, currently occupied by a large shed. T2 and T3 are to the left.

Above T1



Above: T2

Above: southern boundary where proposed service trench will be excavated