

OMC Associates

BS 5837 Arboricultural Report for Development

CLIENT: Adam & Christine Ohlson

SITE: 115 Chetwynd Road, London, NW5 1DA

OUR REF: 01618D/CJO/1403

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CONTENTS

EXECUTIVE SUMMARY

- 1.0 Introduction
 - 1.1 Brief
 - 1.2 Background, planning proposal & documents
 - 1.3 Site description
- 2.0 Trees
 - 2.1 Tree data
 - 2.2 Trees and the law
 - 2.3 Tree schedule and summary of trees
- 3.0 Tree Related Site Constraints
 - 3.1 Constraints to development posed by tree crowns/canopies
 - 3.2 Longer term implications of retained trees on quality of life
 - 3.3 Indirect damage (subsidence/heave)
- 4.0 Arboricultural Implications Assessment (AIA)
 - 4.1 Effect of development on trees - General
 - 4.1.1 Direct/ mechanical damage (D-1)
 - 4.1.2 Ground compaction (D-2)
 - 4.1.3 Changes in ground level (D-3)
 - 4.1.4 Severance of roots by ground works (D-4)
 - 4.1.5 Contamination of ground (D-5)
 - 4.1.6 Change in ground surface (D-6)
 - 4.2 Effect of development on trees specific to this site
 - 4.2.1 Tree removals
 - 4.2.2 Facilitation pruning
 - 4.2.3 RPA encroachment
 - 4.3 Other potential impacts
 - 4.3.1 RPA encroachment of underground services
 - 4.3.2 General construction activity within RPAs
 - 4.4 Issues to be addressed by the AMS
- 5.0 Arboricultural Method Statement - Required details
 - 5.1 Tree work necessitated by the scheme
 - 5.2 Ground protection outside the CEZ but within the RPA
 - 5.3 Construction Exclusion Zone (CEZ)
 - 5.4 Treatment of roots
 - 5.5 Foundation design
 - 5.6 Mixing and use of concrete near trees
 - 5.7 Additional Precautions outside the Tree Exclusion Zone
- 6.0 Sequence of events and site inspection/monitoring
 - Appendix A tree schedule
 - Appendix B key to tree schedule and
 - Appendix C a cascade chart explaining tree quality assessment;
 - Appendix D photographs;
 - Appendix E a tree survey plan;
 - Appendix F a tree constraints plan (TCP) indicating root protection areas (RPAs) of retained trees
 - Appendix G tree protection plan;
 - Appendix H illustrative example of ground protection;
 - Appendix I illustrative example of protective fencing;
 - Appendix J information posters to attach to protective fencing;
 - Appendix K record of inspection/monitoring

EXECUTIVE SUMMARY

This report comprises an arboricultural impacts assessment to assist a planning application at 115 Chetwynd Road to construct a garden room on top of an existing concrete slab but founded on micro piles placed through holes in the concrete. The site comprises a semi-detached property with a rectangular garden extending approximately 30m to the rear boundary with a series of terraced sections. 10 trees and groups are noted. Those along the rear boundary are off-site and C grade. The majority within the site are B grade. No trees will be removed to accommodate the scheme but foundation design will be adapted significantly to allow for retention of T6 by cantilevering over the front right corner. No facilitation pruning is required though trimming back the cypresses T1-T3 is advised to reduce needle drop. RPA encroachments are negligible and the most likely impact on trees derives from compaction arising from construction activity and access and from the need to dig a trench to accommodate a new waster/soil pipe. Other services already exist. We have specified a route for the pipe that is informed by the position of RPAs and, in consequence, has minimal impact on RPAs. A detailed arboricultural method statement is provided in sections 5 & 6 to address the noted potential impacts and illustrated via the tree protection plan. The arboricultural method statement will need to be incorporated into the construction method statement. All site staff will need to be fully inducted into tree protection matters and regular arboricultural monitoring will be detailed.

1.0 INTRODUCTION

1.1 Brief

OMC Associates are instructed to provide an arboricultural report to assess the implications on trees/vegetation of a development at 115 Chetwynd Road and detail a protection scheme to mitigate any impacts on trees. 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).

These details are provided to assist the planning authority in determining the application. Opinions expressed in this report in relation to the physical or aesthetic quality and value of trees are made on an impartial and non-prejudicial basis, based on observations made during the site survey.

This report incorporates an assessment of the trees in the vicinity of the proposed scheme and those potentially affected by it; an arboricultural impact assessment (AIA) demonstrating how they may be affected by the proposed development and a detailed arboricultural method statement (AMS) and tree protection plan. The report is supplemented by a Tree Survey Plan showing the site as it currently exists, a Tree Constraints Plan (TCP) that illustrates the extents of the tree's RPA and proposed structures within it and a Tree Protection plan that illustrates the protective measures described within the AMS.

1.2 Background, planning proposal and documents

It is proposed to erect a studio at the end of the garden on a raised area. The room will contain plumbing facilities for a shower, WC and kitchenette.

The structure will be founded on micro piles but paced on an existing large concrete slab and holes will be punctured into the concrete to allow for the micro piles.

1.3 Site Description

The site comprises a four storey Edwardian, semi-detached property with a rectangular garden extending approximately 30m to the rear boundary. The garden has a series of terraced sections so that the ground level at the end of the garden is significantly higher than that of the house. The surface of each terraced area varies changing from grass to block paving to decking.

Properties to the north east of the garden are approximately 1.5m higher and are supported by a retaining wall.

Domestic gardens lie to all three sides of the site.

Off-site trees are located along the rear boundary and a number of trees are noted within the garden.



Figure 1 - Site of planning application (Google Earth aerial image)

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.

The inspection assesses the height of the crown and suitability to develop near to it.

This survey does not include a detailed assessment of the health of the trees, but clear faults are factored into structural and physiological categories.

2.2 Trees and the law

This report does not formally identify whether planning restrictions apply to the trees.

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 back of any of these trees.

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.

Section 15 of the National Planning Policy Framework adopted in July 2019 states that, "Planning policies and decisions should contribute to and enhance the natural and local environment" and Section 12 states that, "Planning policies and decisions should ensure that developments are.....visually attractive" and "sympathetic to the local landscape".

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

2.3 Tree schedule and summary of trees

Please refer Appendix A for the tree schedule.

The garden is characterized by a number of mature and early-mature deciduous trees in generally good health that are located sporadically throughout the site.

Three poorly managed, off-site Leyland cypress grow along the rear boundary and are in need of some restorative pruning.

3.0 TREE RELATED SITE CONSTRAINTS – GENERAL

3.1 Constraints to development posed by tree crowns/canopies

Where crown/canopies of trees to be retained overhang a development site, careful assessment of the implications must be made. This may be deemed a constraint where it/they obstruct building work - including erection of scaffolding.

This is not applicable.

3.2 Longer term implications of retained trees on quality of life

New structures and parking spaces close to trees may give rise to long term resentment of the trees through a variety of causes, some real and some perceived, resulting on pressure to remove the trees. These can include loss of ambient light or sunlight, leaf/needle litter and other debris from trees accumulating in gutters and gardens, sticky residues (honeydew) on surfaces and cars, provision of perches for birds - particularly pigeons - and consequent bird droppings and anxiety stemming from the presence of large trees close dwellings.

Debris in terms of profuse needle drop onto the roof and in gutters from T1-T3 throughout the year must be anticipated. This would need to be cleared from the roof at least twice a year to allow for a green roof and ensure gutters do not get clogged up. Pruning back the cypresses by 2.5m would reduce this.

3.3 Indirect damage (subsidence/heave)

All new buildings must be cognisant of the shrinkability of the ground and ensure foundations are designed in full compliance with Chapter 4.2 of the NHBC guidelines "Building near trees", 1992, to ensure future co-existence with trees and new buildings.

This should also take account of the potential of significant heave related movement should trees be removed close to proposed new structures.

4.0 ARBORICULTURAL IMPLICATIONS ASSESSMENT (AIA)

4.1 Effect of development on trees - General

The objective of the report is to identify and evaluate the extent of direct and indirect damage on existing trees that may arise as a result of the implementation of the proposed development 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 the vulnerability of trees and particularly the root systems. *Irreparable damage is frequently done to existing trees in the first few days of a contractor's occupation of a site.*

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.

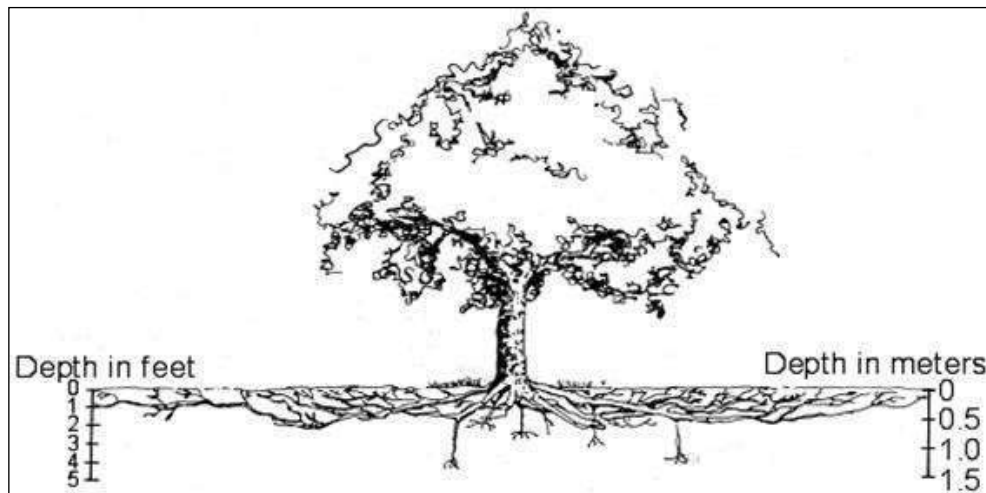


Figure 1 Typical root distribution of tree roots

4.1.1 Direct mechanical damage (*Referred to as D-1 in this report*)

Direct damage to the crown or stem is unlikely to kill a tree unless it is significant but may disfigure it and result in long-term decay setting in. This 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 D-2 in this report*)

This is likely to be the most common cause of tree death or decline on a building site. 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 D-3 in this report*)

The majority of a tree's root systems are generally located in the upper 0.6m of the ground and the bulk of these roots happen to be very small, delicate and essential feeder roots. Reductions in ground level such as soil stripping can be catastrophic for a tree's health. Conversely increases in ground level can result in root asphyxiation.

4.1.4 Severance of roots by ground works (*Referred to as D-4 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 D-5 in this report*)

Spillage of petrol, diesel, paint removers, wood preservatives and many other toxic liquids regularly used on building sites can kill roots.

4.1.6 Change in ground surface (*Referred to as D-6 in this report*)

Covering surfaces with impermeable materials – especially areas that were previously open ground can prove fatal for tree roots. Trees derive moisture from regular moisture recharge of the ground and nutrients generated by the nutrient cycle from decomposing leaf litter. Impervious surfaces can also prevent gaseous interchange between the ground and the atmosphere creating a build-up of toxic waste gases such as carbon dioxide and a deprivation of oxygen.

4.2 Effect of development on trees specific to this site

4.2.1 Tree Removals

The proposed scheme does not require the removal any trees; foundation design will be adapted to ensure T6 can be retained.

4.2.2 Facilitation pruning

Facilitation pruning is not required but further crown lifting and pruning back of T2 & T3 is advisable.

4.2.4 RPA Encroachment

An 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 formula for calculating the RPA has been used in conjunction with prevailing existing site conditions that can affect root morphology and dispositions such as the presence and type of hardstanding, structures and underground apparatus; topography and drainage; tree health and vitality; species type of root severed; disposition of incursion and the soil type and structure to determine likely RPAs. The resultant RPAs are shown at Appendix F.

The British Standard states that incursion "should not exceed 20% of any existing unsurfaced ground within the RPA". This is guidance; though encroachment upon the RPA should be avoided, it can be acceptable in certain conditions and this involves assessment of the tolerance levels of the tree based on a variety of factors.

All encroachments upon RPAs of retained trees as a result of the proposed scheme have been identified and shown on the tree constraints plans at Appendix F.

The structure is to be placed over the existing concrete slab and founded on piles placed through holes punctured into the slab. The garden room will make no difference, therefore, to the level of RPA surface area that is lost to development since it replicates and is placed on the existing concrete slab. No increased footprint will result.

The only potential impact on RPAs are the highly localised, small points where the micro piles are proposed. This is negligible and can be addressed through suitable methodology.

The percentage of the RPA encroachments represented by the existing concrete slab is calculated at 27% of T6's RPA, 8% of T3's RPA and 5 % of T2's RPA. This is pre-existing and will not change.

The RPA incursion represented in practise, therefore, is negligible.

4.3 Other potential impacts

4.3.1 RPA incursion of underground services

OMC associates has been asked to plot the optimum route for a soil/waste pipe - we understand other services are already installed -. This is shown on the TCP and TPP and its route is informed by RPAs.

As a result, RPAs are avoided or only peripherally encroached upon.

Where this is applied, little impact will result on tree roots but where RPA incursion is unavoidable, trenchless techniques such as Microtunnelling or Surface-launched directional drilling will be used and fully detailed in the arboricultural method statement.

4.3.2 General construction activity within RPAs

Construction activity associated with the proposed works can be severely damaging to trees and include demolition and levelling; movement of heavy plant; mixing of cementitious substances; fires, storage of materials etc.

Such activities can be a notable factor in assessing damaging impacts to such a tree populated site.

This can be avoided by the creation of Construction Exclusion Zones (CEZ) and the use of ground protection and can be detailed in an arboricultural method statement, ideally in association with site contractors.

4.4 Issues to be addressed by the AMS:

- Protection of root zones
- Installation of tree protection and ground protection
- Ground Services layout
- Foundation design
- Facilitation tree-work (possibly)
- Phasing of tree protection
- Detailed arboricultural monitoring

5.0 ARBORICULTURAL METHOD STATEMENT

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 Plans at Appendix G. 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. The general sequence of events should be as follows:

- 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, and a site meeting between involving the contractor, architect, arboricultural officer and consultant has taken place.
- 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 be placed on the site office notice-board.

The garden room is to be built on an existing concrete slab with minimal impact on trees, none of which need to be removed. A methodology is provided to address insertion of the micro piles through punctured holes in the concrete slab where these may be located within likely RPAs. No piles will be inserted within 2m of the ash T6, however, and foundations will be designed to cantilever this small front right corner section. Exclusion zones are detailed to safeguard the RPAs of trees within the garden and, where access to the site is required through the garden, ground protection plates are specified to protect the integrity of the RPAs of adjacent trees.

5.1 Tree work necessitated by the scheme

It is advisable that the overhang of the poorly managed off-site cypresses T2-T3 is reduced back by 3.5m to minimise overhang over the new garden building.

Any tree work will be carried out in full compliance with BS 3998 (2010) and by suitably skilled contractors.

5.2 Ground protection outside the CEZ but within the RPA

Protection of the ground within RPAs is essential to ensure the potentially harmful effects of construction activity on ground conditions (compaction and the absorption of potentially toxic materials) are avoided. Creation of a Construction Exclusion Zone (CEZ) using protective fencing is the optimum means of protecting Root Protection Areas but where access within RPAs is required, protection of the ground is essential. (See Appendix H for an illustrated example).

In this instance ground guards will be required to mitigate compaction damage resulting from the access required to the site that has to follow a route within the RPAs of T8-T10.

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; or 18mm 2400x1200mm plyboard.
- 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 around the extension will need to comply with (a) above.

5.3 Construction Exclusion Zone (CEZ)

All damage types can be avoided through the establishment of Construction Exclusion Zones (CEZ) with the use of protective fencing. The use of a CEZ prevents or limits RPA incursion by segregating all trees vulnerable to construction activity.

The positioning of all tree protection fencing is clearly illustrated within the Tree Protection Plan.

The barriers used to secure the CEZ must be installed prior to commencement of any construction activity. Once erected and secured the Exclusion Zone must not under any circumstances be altered or removed without advice from the arboriculturist and/or approval of the local planning authority.

BS 5837:2012 recommends weld mesh (Heras)-type panels secured firmly to a scaffold framework (scaffold clamps are recommended) and braced with diagonal stabilizer struts all secured to the ground with metal pins, see Appendix I.

NOTE: In the event the fencing becomes damaged it must be repaired or replaced as soon as is reasonably practicable to preserve its efficacy.

Tree protection posters as shown at Appendix J should be secured to the fencing to serve as explanation for its presence.

Only once the protective fencing is in place and secured, (as well as any other protection measures detailed below) construction may commence. The fencing will remain in place and secured until such time that all construction is complete, and materials/equipment have been removed from the site.

5.4 Treatment of roots

Where any excavation is carried out within identified RPAs, roots may be encountered or exposed. This may occur when:

- Digging the trench for the new service pipe.
- Digging the upper 600mm of the exploratory holes for the piles to be inserted in the areas shown as hatched orange

In these locations the following methodology must be adhered to:

1. Digging shall be cautious, manual and mindful of the potential presence of roots.
2. Upon discovering roots measuring 25mm diameter or greater, preference must be given to carefully moving them to one side rather than severing.
3. No roots greater than 25mm diameter or dense clusters of fine roots must be cut without prior consultation with the appointed arboriculturist; this may be done by way of email or telephone communication.
4. All roots of lesser diameter may be severed but this must be done so cleanly, using sharp secateurs or loppers, preferably back to a side-root. Upon exposure, all roots will immediately be covered with damp, clean, hessian sacking and remain covered for the duration of their exposure. Dampened hessian will be used in the summer months, but dry hessian sacking must be used during winter to protect from rapid temperature changes and prevent from freezing.
5. Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded with sharp sand or other granular fill, before soil is replaced. Unwashed builder's sand is not to be used because of its high salt content which is toxic to roots.
6. Where concrete is to be poured for the new foundation, an impermeable membrane must be placed along the exposed face of the foundation trench to prevent contact with and scorching of roots, and to ensure leachates do not contaminate the immediate rooting area in the future.
7. No mixing of concrete must be undertaken within 10 metres of any RPA.

These procedures must be followed and liaison with the arboriculturist be maintained at all times. The arboriculturist must oversee excavation deemed to be in highly sensitive areas. Where areas are deemed less sensitive the arboriculturist need not attend site so long as he/she remains in contact with the builders and can access photos during the excavation period.

5.5 Foundation Design

The garden room is to be founded on micro piles that will be driven into the ground through holes punctured through the existing concrete slab. This is regarded acceptable subject to the methodology detailed in Section 5.4 where they are inserted within likely RPAs.

Piles driven within 2m of the ash T6, however, is likely to be too damaging to potentially quite large roots. For this reason a triangular section to the front right corner of the building, determined by a 2m distance from the stem of T6, will be cantilevered and no disturbance to the ground below the slab will occur.

5.6 Mixing and use of concrete near trees

Concrete or cementitious (mortar, cement, slurry) washout wastewater is caustic with a pH over 12 and is, therefore, highly toxic to trees and other vegetation.

Where any structures cast from concrete below ground level near to root systems of retained vegetation are required, the incorporation of protection (e.g. sheathing with an impermeable membrane such as heavy-grade polythene sheeting) is extremely important to prevent it coming into contact with roots.

It is vital that concrete is not mixed in the vicinity of trees in order to avoid the risk of it leaching into the soil. Additionally, regardless of the presence of trees, the integrity of the ground must be protected for future planting.

If the concrete is to be mixed on site and not supplied by a mobile pumping truck the use of a bunded area for this purpose is recommended, to contain spillages and runoff, and to protect the integrity of the ground for future landscaping. A proprietary mixing tray would suffice where only small quantities are required.

5.7 Additional precautions outside the Construction Exclusion Zone

- All-weather notices should be erected on the barrier with words such as “Exclusion Zone – Not to be moved without appropriate consent”. Copies of such notices are attached at Appendix J.
- 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 tree.
- 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 PHASING OF INSPECTION/MONITORING

6.1 Introduction

Section 5 provides all the details relating to tree protection specific to this development. Critical to its implementation is a clear understanding of when and how the protection is implemented, what action must be taken when there is a breach of the approved protection and how to implement any changes in the approved protection necessitated by unanticipated events/changes in design.

6.2 Site Arboriculturalist

An arboriculturalist should be appointed at the outset whose role will be to ensure full compliance of the approved tree protection measures through regular monitoring and maintenance of a progress sheet that shall be signed off by the arboriculturalist and site manager (or equivalent) on completion of the development and submitted to the LPA.

6.3 Stage 1 - Pre-commencement meeting

This will involve the arboriculturalist, the site manager and other relevant site personnel and optionally the local authority arboricultural officer. He/she must be given sufficient advance warning of the meeting. This meeting could be viewed as a form of induction and will ensure:

1. A full understanding exists of what and where the tree protection comprises - if necessary, the site can be marked out to indicate the positioning of protection.
2. If and when arboricultural supervision is required.
3. Exchange of all relevant contact details and distribution of an arboricultural site monitoring record.
4. That all parties are happy with what is agreed and that it is deemed practical. Any tweaks/changes made at this stage that vary to the approved details must be agreed by the LPA Tree Officer and a means of ensuring this is appropriately recorded with the LPA determined.

There is no reason why the tree protection can't be installed prior to this meeting so long as the opportunity remains for adjusting or improving it according to advice from the site arboriculturist.

6.4 Stage 2 - Monitoring

The arboriculturist will monitor the development through periodic site visits or in accordance with an agreed schedule. Regularity will be determined by the impact of the scheme on trees, the complexity of protection and the significance of trees. The inspection record will be completed and signed off after each visit.

Any discrepancies to the approved, implemented protection shall be highlighted and the site arboriculturist recommended course of action implemented immediately, if necessary, stopping all development until resolved. A re-inspection will be organised to ensure satisfactory resolution.

The site manager will contact the arboriculturist immediately if damage to trees or root zones occurs.

6.5 Stage 3 - Supervision

The arboricultural method statement (AMS) may specify sensitive works within Root Protection Areas that require arboricultural supervision. These will be clearly shown in the AMS. The site manager will contact the site arboriculturist when this is ready to be carried out.

This will be required during the groundworks necessary for the extended hardstanding into existing RPAs.

6.6 Stage 4 - Completion

On completion of all works on site, the site arboriculturist will be called to site to carry out a final inspection of the trees and the integrity of the RPAs. A Record of Completion will be signed by the site arboriculturist and the site manager and submitted to the LPA for discharge or complete discharge of outstanding conditions.

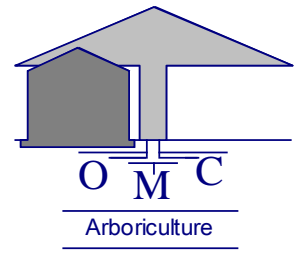
This will not be completed where damage to trees or RPAs is noted at this final inspection until remedial measures as agreed between the site arboriculturist and the LPA Arboricultural Officer are fully implemented.



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Appendix A Tree Schedule

ID	SPECIES	HEIGHT (m)	DIA. AT 1.5M (MM)	CROWN				AGE CLASS	SULE	CONDITION STRUCTURAL	CONDITION PHYSIOLOGICAL	RPA RADIUS (M)	QUALITY CATEGORY (BS:5837)	SPACE CROWN	BELOW CROWN	TREE-WORK	COMMENTS
				N	S	E	W							Y/N/NA	POSITION 1ST BRANCH		
T1	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	8	420	4	2	5	5	M	>40	F	F	5.04	C2	Y	3-NW	N	Good health, historically topped but not pruned to the sides; dominant specimen of row of 3 on rear boundary; visible; undistinguished form; off-site
T2	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	7.5	190	4	2	5	2	M	>40	F	F	2.28	C2	Y	3-NW	N	Good health, historically topped but not pruned to the sides; part of a row of 3 on rear boundary; visible; undistinguished form; off-site
T3	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	280	190	4	5	5	2	M	>40	F	F	2.28	C2	Y	2-NW	N	Good health, historically topped but not pruned to the sides; part of a row of 3 on rear boundary; visible; undistinguished form; off-site
T4	<i>Prunus cerasifera</i> Atropurpurea (Purple Plum)	7	403	4	5	6	5	M	20-40	G	F	4.84	C2	Y	3.3(S)	N	Off-site; atop a near 1m retaining wall; multi stemmed; good vitality; high, significant overhang over site
T5	<i>Platanus X hispanica</i> (London Plane)	4	450	3	3	3	3	M	20-40	G	F	5.4	C2	N/A	N/A		Off-site; pollarded specimen
T6	<i>Fraxinus excelsior</i> (Ash)	9.3	330	3	8	5	8	EM	>40	G	G	3.96	B2	Y	3.4(W)		Good health and vitality; further growth potential; asymmetric form due to adjacent trees; good amenity
T7	<i>Robinia pseudoacacia</i> (Locust Tree)	8.9	280	4	5	4	5	EM	>40	G	G	3.36	B2	Y	3.8(W)		High vitality; significant further growth potential; good health; good amenity
T8	<i>Betula utilis</i> (Himalayan Birch)	10.7	230	4.2	2	3.9	3	EM	>40	G	G	2.76	B1/2	N/A	N/A		High vitality; further growth potential; good health; good amenity; fine form
T9	<i>Malus sylvestris</i> (Crab Apple)	4	140	3.1	2.7	2.9	3	EM	>40	G	G	1.68	C2	N/A	N/A	N	Significant further growth potential; good health and form
T10	<i>Betula utilis</i> (Himalayan Birch)	12	380	4.5	4.5	4.5	4.5	M	>40	G	G	4.56	B1/2	N/A	N/A		Good health and form; excellent amenity
G1	<i>Betula utilis</i> (Himalayan Birch) Copse	Ave. 4	Ave.50	Ave. 0.7	Ave. 0.7	Ave. 0.7	Ave. 0.7	Y	>40	G	G	0.9	C2	N/A	N/A	N	Off-site; copse of young birch



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Appendix B – Key to tree schedule

KEY TO TREE SCHEDULE REFERENCES

Prefix: T – Tree S – Shrub/Climber TG/SG – Group/Hedge of Trees or Shrubs **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"

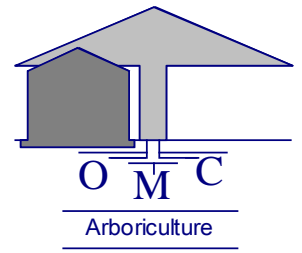
B.S. Category: See Appendix 2

Physiological Condition:	Good: Healthy tree with no symptoms of significant disease	Structural Condition:	Good: No significant structural defects
	Fair: Some disease noted and/or vitality is below what would be expected		Fair: Defects noted but not sufficient to warrant immediate work
	Poor: Significant disease noted and/or very low vitality		Poor: Significant defects. Monitoring and/or remedial works required
	Very Poor: Tree is in severe decline		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:	B.S. Category:	A - Those of high quality and value i.e. make a substantial contribution;
	H High priority. For trees to be retained and where work required to make safe		B - Those of good/moderate quality and value, might be Cat. "A" but slightly impaired
	L No urgent work required but would benefit from some intervention		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
	N No treework identified as necessary in the foreseeable future		U - Those of such poor condition that any existing value would be lost within 10 years
	P Facilitation tree surgery advised		1 - Mainly Arboricultural value 2 - Mainly Landscape value 3 - Mainly Ecological value
	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		

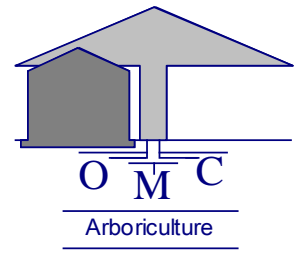


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Appendix C - Cascade chart explaining tree quality assessment

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							
<p>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.</p>	<ul style="list-style-type: none"> • 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. <p>NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve.</p>			DARK RED			
<table border="0" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%; text-align: center;">1 Mainly arboricultural qualities</td> <td style="width:33%; text-align: center;">2 Mainly landscape qualities</td> <td style="width:33%; text-align: center;">3 Mainly cultural values, including conservation</td> </tr> </table>					1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation					
Trees to be considered for retention							
<p>Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years</p>	<p>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)</p>	<p>Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features</p>	<p>Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)</p>	LIGHT GREEN			
<p>Category B Trees of moderate quality with an estimated contribution of at least 20 years</p>	<p>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)</p>	<p>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</p>	<p>Trees with material conservation or other cultural value</p>	MID BLUE			
<p>Category C Trees of low quality with an estimated contribution of at least 10 years, or young trees with a stem diameter below 150mm</p>	<p>Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories</p>	<p>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</p>	<p>Trees with no material conservation or other cultural value</p>	GREY			



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Appendix D - Photographs



Photo 1

- Site looking north
- T6 & T7 to the right
- T1-T3 to the left



Photo 2

- Base of T6 on right
- T4 in background



Photo 3

- T8 – T10 looking south
- G1 to the right



		<p>Photo 4</p> <ul style="list-style-type: none">• T7 looking north• T6 and camellia in the background
		<p>Photo 5</p> <ul style="list-style-type: none">• T9• G1 in the background



Photo 6

- T10 and T9



Photo 7

- T1 – T3 looking north west

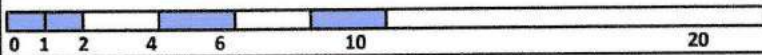
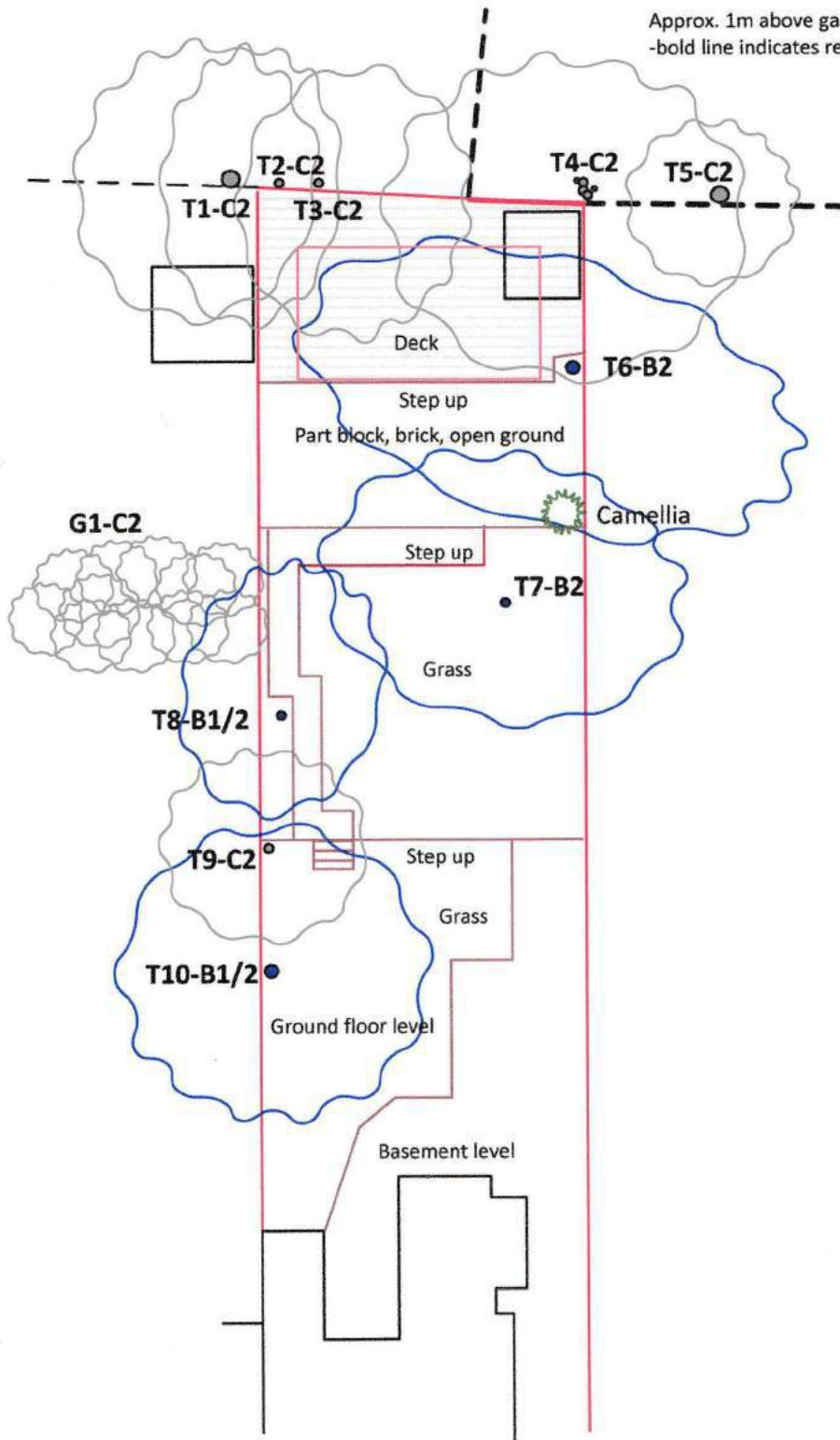


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Appendix E - Tree Survey Plan







Approx. 1m above garden level
 -bold line indicates retaining wall




To be read in colour

Dripline and stem - colour denotes BS 5837 category

-  A Grade
-  B Grade
-  C Grade
-  U Grade

 Proposed scheme

Where crown line is broken, indicates removal

 Shrub



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 CLIENT: Ohlson
 DATE: March 2020
 SCALE: 1:100 on A3
 REV:

TREE SURVEY PLAN

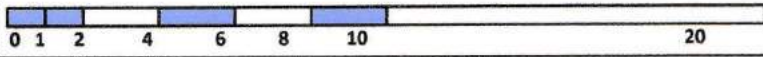
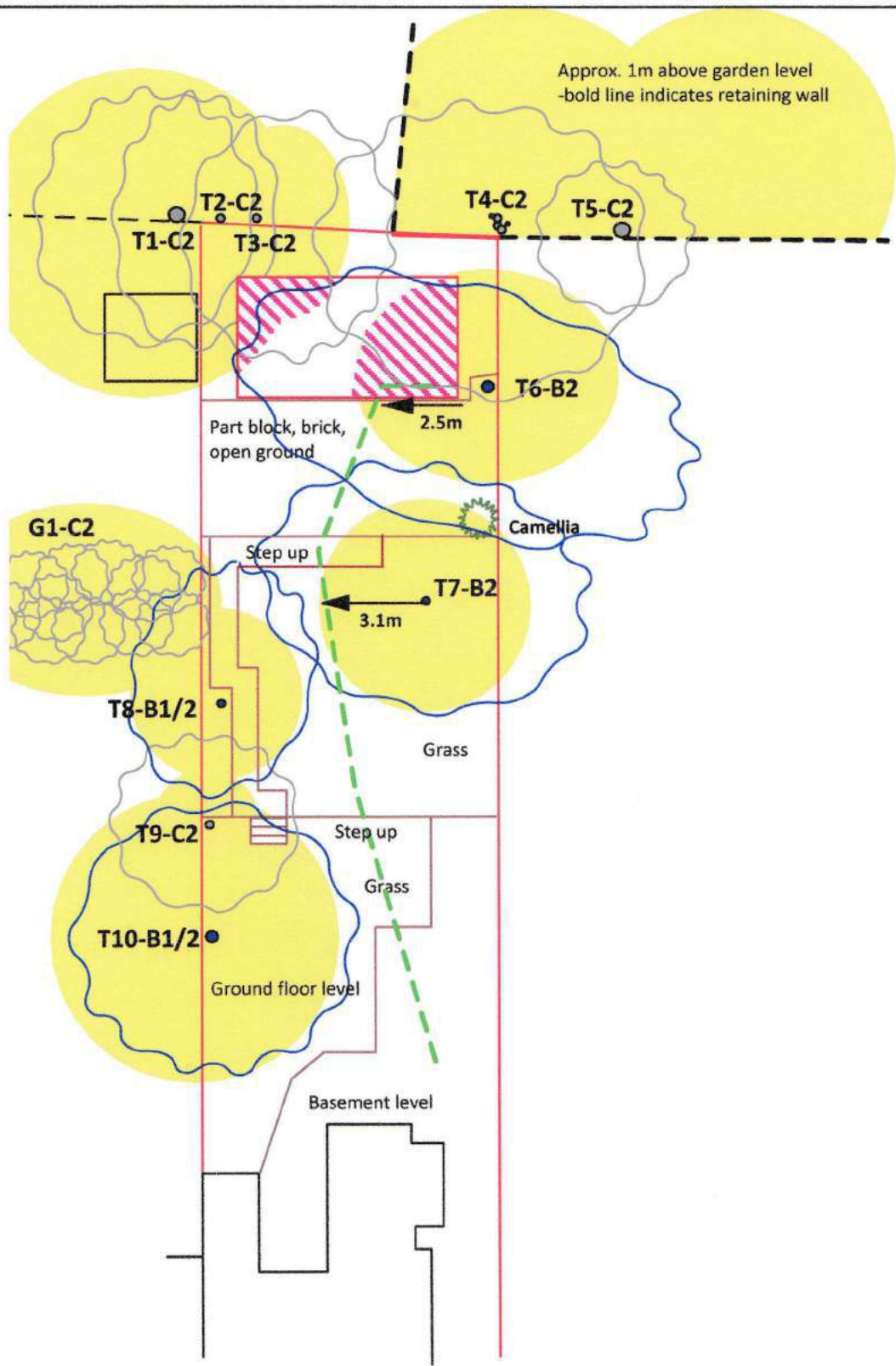


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Appendix F - Tree Constraints Plan



Approx. 1m above garden level
-bold line indicates retaining wall



To be read in colour

-  Root Protection Area (RPA)
-  Incursion of footprint upon RPA
-  Proposed footprint
-  Optimal position of new soil pipe to minimise presence within RPAs

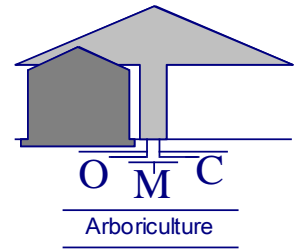


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TREE CONSTRAINTS PLAN

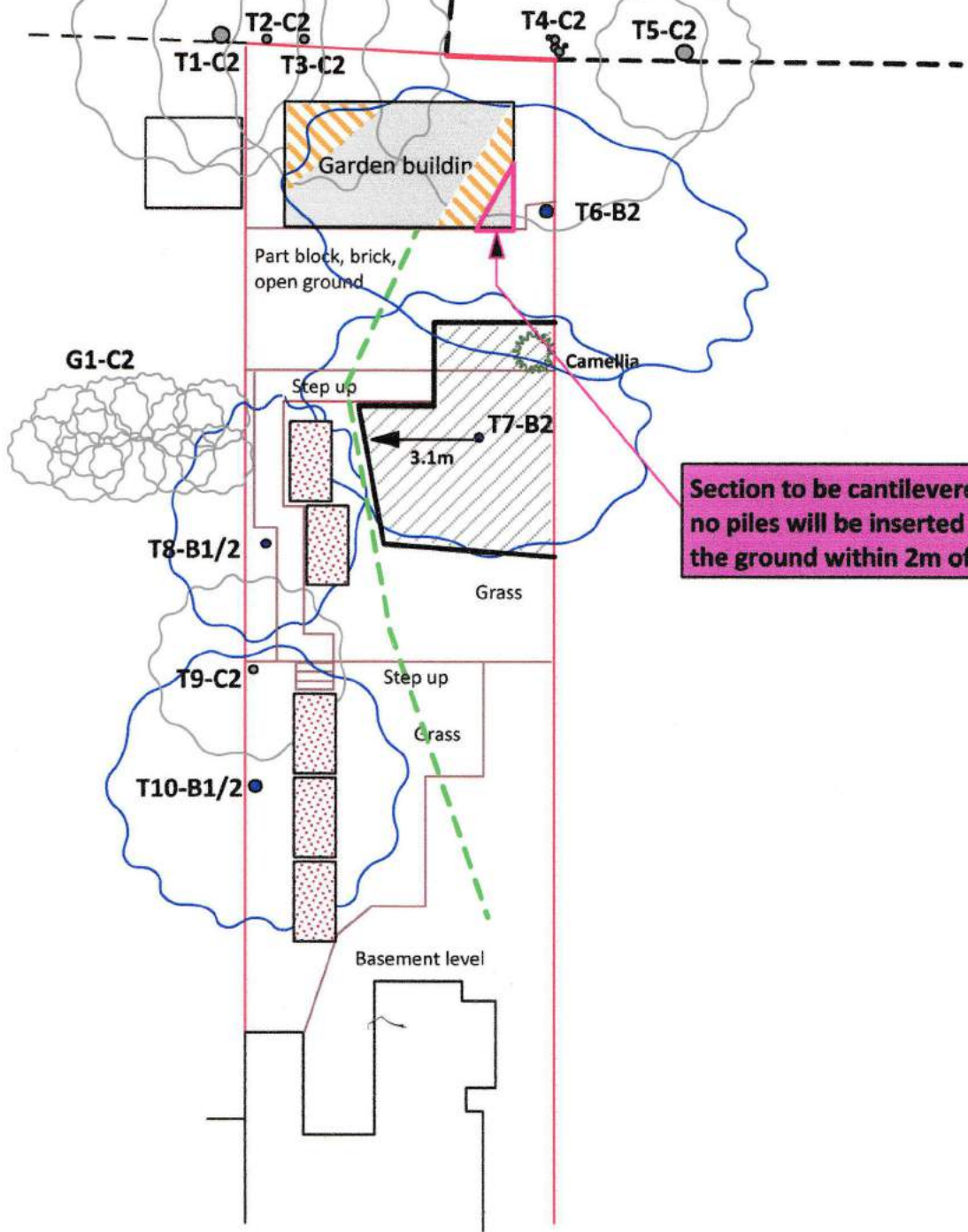


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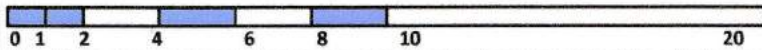
Appendix G - Tree Protection Plan



Approx. 1m above garden level
-bold line indicates retaining wall



Section to be cantilevered -
no piles will be inserted
into the ground within 2m of T6



To be read in colour



Ground protection - See Section 5.2 of the AMS



Construction Exclusion Zone (CEZ) - See Section 5.3 of the AMS for details



Excavation for piles to 600mm - See Section 5.4 of the AMS



Optimal position of new soil pipe to minimise presence within RPAs



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REF: 1618_tpp

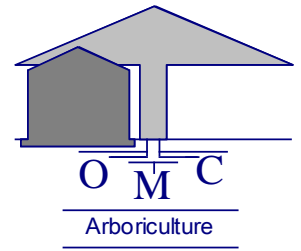
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DATE: March 2020

SCALE: 1:100 on A3

REV:

TREE PROTECTION PLAN



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Appendix H - Illustrative example of ground protection



“When you’ve got a tough job to do...”



“Ground-Guards will help you do it safely & profitably”

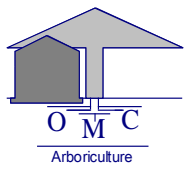


Ground-Guards
A member of the Unimog Group

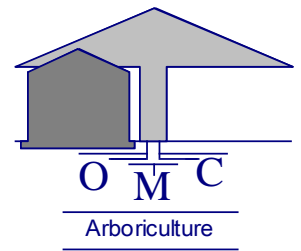
“The best investment we have made in along time. The money we have saved since the purchase of our Ground-Guards has been a big bonus.”

Ground-Guards
A member of the Unimog Group

Tel: 0113 267 6000
Fax: 0113 267 2222
Email: info@ground-guards.co.uk
www.ground-guards.co.uk

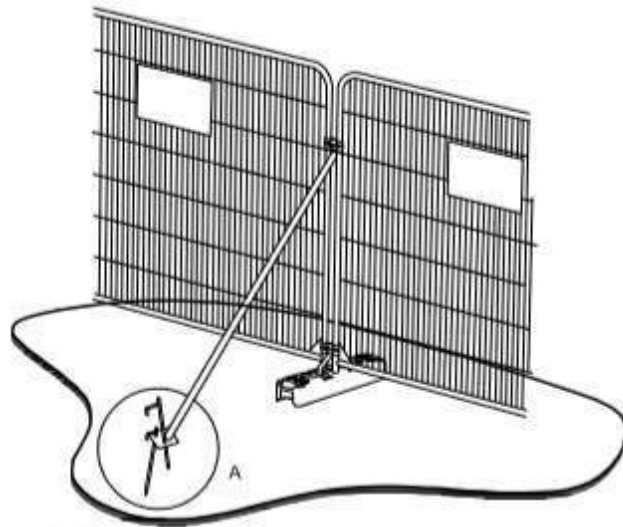
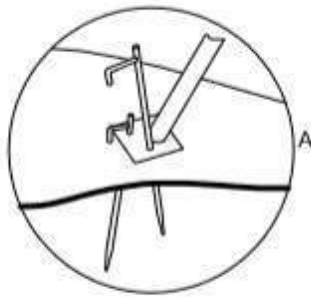


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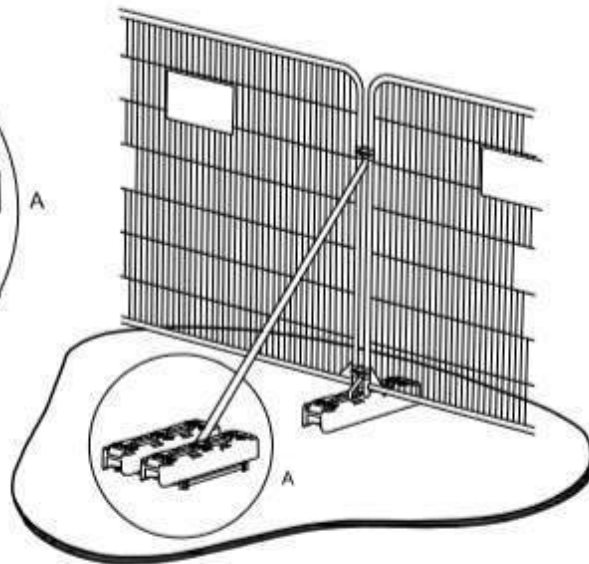
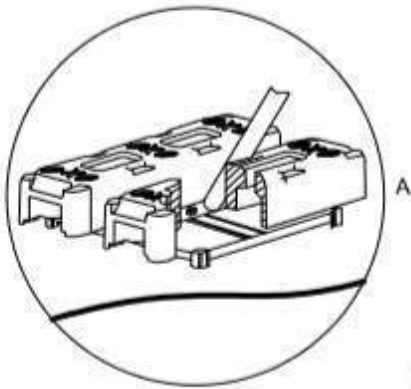


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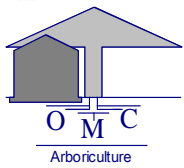
Appendix I - Illustrative example of protective fencing



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray



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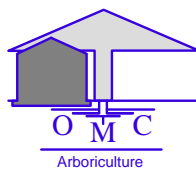


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Appendix J– Information posters to attach to protective fencing



PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.





TREE PROTECTION AREA KEEP OUT!

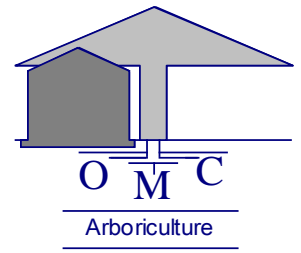
(TOWN & COUNTRY PLANNING ACT 1990)

**TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING
CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE
PRESERVATION ORDER.**

**CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO
CRIMINAL PROSECUTION.**

**ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH
WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY.**





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Appendix L - Record of inspection/monitoring

PURPOSE OF VISIT	TIMING	PERSONNEL PRESENT	REMOTE - PHOTO BASED	OBSERVATIONS AND RECOMMENDATIONS	COMPLETE Y/N
1. Appoint arboriculturist to oversee all arboricultural issues on site.	Pre-commencement				
2. On-site tree protection induction with construction team, arboriculturist & tree officer (if attending); mark out tree protection if necessary*	Pre-commencement				
3. Erect tree protection fencing, ground protection as detailed in AMS and shown in on TPP1; carry out facilitation pruning*	Pre-commencement				
6. Monitoring site visits by arboriculturist to ensure compliance. Maintain monitoring record	During construction: Visit 1				
	Visit 2				
	Visit 3				
7. Final, completion inspection and identification of any remedial actions.	Completion of scheme				

* Tree protection may be put in place and inspected at the same time as the site induction/meeting in some circumstances

Project Contacts

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Site Manager:	TBA		
Arboriculturist:	Christopher Overbeke (CO) (OMC Associates)	01223 842253	chris@omc-associates.co.uk

Notes