Landmark Trees

REVISED ARBORICULTURAL METHOD STATEMENT FOR:

87 Avenue Road

London

NW8 6JD

REPORT PREPARED FOR:

Pantelli Associates

Charter House

157-159 High Street

London N14 6BP

REPORT PREPARED BY:

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MSc ARB MICFor FArbor A MRICS C Env

Ref: PAN/87AR/AMS/02

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Contents

Appendices

1.0 Introduction

1.1 Purpose & Use of the Method Statement

1.1.1 This addendum method statement has been prepared for Pantelli Associates for assistance with the discharge of planning condition 12 at 87 Avenue Road, London, NW8 6JD, London Borough of Camden planning permission no.: 2012/4594/P. The document updates the previous AMS that discharged conditions 8 and 9 to include the recent revisions to the location of the Plant Enclosure (condition 12). The external plant has had to be moved for 87 Avenue road because the original position was not practically feasible. For this reason we need to revise the original AMS in accordance with conditions 8 and 9, in addition to the need to address condition 12.

Condition 8

Prior to the commencement of any works on site, details demonstrating how trees to be retained shall be protected during construction work shall be submitted to and approved by the Council in writing site. Such details shall follow guidelines and standards set out in BS5837:2012 "Trees in Relation to Construction". All trees on the site, or parts of trees growing from adjoining sites, unless shown on the permitted drawings as being removed, shall be retained and protected from damage in accordance with the approved protection details.

Condition 9

Prior to the commencement of works on site, evidence in the form of a report and photographs demonstrating that tree protection measures have been implemented in accordance with the approved details, shall be submitted to and approved in writing by the Local Planning Authority.

Condition 12

Prior to the commencement of the relevant part of the development details of the plant enclosure, including plans and elevations, shall be submitted to and approved in writing by the local planning authority.

1.1.2 This document lays down the methodology for any proposed works that may have an effect upon the trees on and adjacent to the site, including the new location for the plant enclosure. It is essential within the scope of any contracts related to the development proposals that this method statement is observed and adhered to. It is recommended that this document form part of the work schedule and specification issued to the building contractors and can be used to form part of the contract.

1.1.3 Copies of this document will be available for inspection on site. The developer will inform the local planning authority within twenty-four hours if the arboricultural consultant is replaced.

1.2 Terms of Reference

1.2.1 We (LT) are instructed by Pantelli Associates Ltd to prepare an updated method statement for proposed development based on the above planning application with reference to BS 5837:2012 Trees in Relation to Design, Demolition and Construction. This revised AMS incorporates all of the information from the previous AMS (Ref: PAN/87AR/AMS/01b) to ensure that a comprehensive document is available to the contractor/site manager.

1.2.2 For this purpose, the client has supplied us with the latest plans for the plant enclosure as follows:

- 2016-04-06 Plant Enclosure S-00-05
- 70 C Plant Enclosure
- 71 A Site Plan 1_100
- Design of proposed screw piles (39068-Model)

1.2.3 The proposals for the plant enclosure have been overlaid onto our original Tree Protection Plan (TPP) for the whole site. The original AMS incorporated data from the site lay-out plan (94854-01 Site Survey), the current proposals plan (5625/02 Proposed Site Plan) and services plans (CSK-12 to CSK-26). We are also reliant upon our original impact assessment report PAN/87AR/AIA/01c and plan overlays of tree constraints contained therein.

1.3 Development Proposals & Potential Impacts

1.3.1 The proposed plant enclosure will be constructed on a low-invasive foundation comprising supporting beams and screw piles. The screw piles location is indicative on the plans, allowing some degree of flexibility to avoid significant roots. The plant enclosure will have an open roof and vented voids and rainwater is to be collected and discharged below the building floor. The ground beneath the beams is to be covered with a weed suppressant membrane and stone mulch.

1.3.2 The principle impact of the relocated plant enclosure is the felling of the category C tree T13, which has been rated as low and should be mitigated with replacement planting. The potential impact from the screw piles within the RPAs of category C tree T14 and category B trees T15, T16 and T17 will be mitigated by hand excavating trial pits and some flexibility in the location of the screw piles to avoid pits with significant roots. Any rainwater that is effectively removed from the RPA is allowed back into the ground by the vented voids, with the permeable surface and open roof ensuring some rainwater peculates through to the RPAs affected by the enclosure. A maximum of 14% of an RPA (T14) will be affected in theory, although the mitigation measures and roofless structure will effectively reduce the area affected. The trees T14 - 16 have at least a 4m ground clearance so no tree works are envisaged providing a mini-rig is used to install the piles:

1.3.3 The principal primary impacts in the consented scheme are the removal of 8 category 'C' trees (T4, T5, T6, T8, T9, T10, T11 & T12). New landscaping is to be provided to mitigate the removal, thus the impact is rated low. Trees to the rear of the property will only experience very low RPA encroachment from the lower ground floor (LGF) to the RPA's of T16 – T18 (0.8% - 2.3%).

1.3.2 To the front of the property, the LGF has been withdrawn so that it is in line with the previously consented scheme, thus reducing the impact on the RPA of T7 to 7.9% RPA and increasing the distance from the base of the tree. The building encroachments below the canopies of T2 & 7 will require a limitation of rig size to < 7m operational height / the use mini-rigs. Otherwise there should be adequate site clearance. Where the LGF piling line passes through any RPA, it should be manually pre-excavated to a min. 600mm depth and root-pruned (as applicable) under arboricultural supervision. Roots found within these pits will be pre-emptively pruned, with roots over 25mm pruned under arboricultural supervision. It is recommended that an arborist is on-site during the pre-excavation for T7. No-dig construction techniques are to be used to mitigate the impact of the new drive.

1.3.3 The services for the plant enclosure can be surface / wall mounted, although if they are to be placed underground in any part of the RPA then BS5837:2012 and NJUG VOLUME 4 provisions should be employed. If it is deemed necessary, further arboricultural supervision will be employed during these operations. Any excavations related to services within the RPA will follow the provisions of BS5837:2012 and NJUG VOLUME 4 for hand-digging through the root zone under arboricultural supervision.

1.4 Sequence of Works

1.4.1 The sequence of works will be as follows:

- initial tree works – felling and stump grinding.
- installation of Tree Protection Barrier (TPB) & ground protection
- demolition of existing building & landscaping
- installation of supplementary ground protection
- installation of underground services
- main construction
- removal of TPB
- soft landscaping

These works and their arboricultural implications are outlined in sequence below

1.5 Site Supervision

1) Site supervision – an individual e.g. the Site Agent, must be nominated to be responsible for all arboricultural matters on site. An agent must be nominated for each phase of work, if demolition and construction contracts are to be awarded separately. The agent(s) must:

- be present on site for the majority of the time
- be aware of the arboricultural responsibilities - to this end, a site briefing / meeting between the agent and arboricultural consultant must be held before the commencement of each phase of works.
- have the authority to stop any work that is causing, or has the potential to cause harm to any tree
- be responsible for ensuring that all site operatives are aware of their responsibilities toward trees on site and the consequences of the failure to observe these responsibilities.
- Make immediate contact with the local authority and/or a retained arboriculturalist in the event of any tree related problems occurring, whether actual or potential
- Contact details for Landmark Trees are provided on the cover to this report.
- Contact details for the Local Authority Tree Officer are as follows:

Nick Bell
Arboricultural Officer
London Borough of Camden
5th Floor Town Hall Extension
Argyle Street
London
WC1H 8ND

E-mail: nick.bell@camden.gov.uk
Telephone: 020 7974 5939

1.6 Site Monitoring

1.6.1 Landmark Trees are to be retained as Arboricultural Consultants responsible for site monitoring for the duration of the development. Key personnel are in the main Adam Hollis MSc (Arb) and occasionally James Bell Tech Cert, subject to any new staff intake. Site monitoring will be undertaken by a qualified and experienced arboriculturalist at pre-determined and agreed time intervals.

1.6.2 In accordance with Condition 9, the arboriculturalist will arrive on site prior to the commencement of works, to inspect the tree protection measures that have been implemented in accordance with

this method statement. Evidence of these measures, in the form of a report and photographs, shall be submitted to and approved in writing by the Local Planning Authority. The arboriculturalist will arrive at the site, check in at the site office and be safely escorted around the site by the site agent.

1.6.3 Monitoring will involve a schedule of routine visits (monthly for the first 6 months and quarterly thereafter, including both site-setup and sign-off inspections) and reports to ensure contractor compliance with tree protection measures and to provide ongoing liaison with all personnel involved in the site development (including the LPA). Any defects requiring rectifying must be notified to the Site Agent and the Client and copied to the LPA by email. Emergencies will be notified to the LPA by phone. Appropriate records will be kept and be made available to the LA if required to show evidence of site monitoring (Appendix 3).

1.6.4 Supervision will not require the arboriculturalist to be present throughout all operations to ensure tasks are carried out as per the approved methodology, but certainly, during the key elements of proposed incursions into the protection areas including the basement line and the trial pits for the screw piles to support the plant enclosure beam foundations (and any other unplanned incursions subject to LPA agreement and for whatever reasons). Such supervision would require the arboriculturalist to attend site, if not the whole task, to ensure the arboricultural objectives were met. However, where tasks are ongoing, provided the arboriculturalist is satisfied, and after an appropriate briefing, the supervision may be reduced to telephone and email contact between the site foreman/ contractor and arboriculturalist.

1.6.5 A site logbook will be kept by the Site Agent to record all stages of the development from the installation of the fence protection, to daily checks of the fencing through to the completion of the project. This should be made available to the LA if required to show evidence of site monitoring. Site monitoring should include:

- Pre-Development Site Inspection (S.2.3 & Condition 9)
- Construction Site Agent Briefing (S.1.5)
- Installation of site facilities (S.3.3)
- Demolition of hard surfaces / structures within RPA's (3.6)
- Construction of new of hard surfaces / structures within RPA's (3.7)
- Site completion meeting (S.5)

1.6.6 The LPA's Arboricultural Officer will have free access to the site and report on any problem areas directly to the developer's Project Arboriculturalist, who will then visit the site and make recommendations to the developer on how best to rectify the situation and ensure implementation. A final sign-off visit will be carried out at the end of the development and a formal letter sent to both

the client and LPA indicating an end to the monitoring period. It is the client's duty to notify LT that the project has been completed, in order to facilitate such an inspection.

1.6.8 N.B. Landmark Trees will only be responsible for providing monitoring in so far as they fully instructed to do so and regularly paid for such services by the client. In the absence of routine payment (as per our business terms), routine monitoring will cease (temporarily or permanently) and the LPA will be informed of the cessation of monitoring. The client will also reserve the right to dismiss Landmark Trees and replace with another arborist, but must inform the LPA.

1.7 Statement Adoption

1.7.1 It is recommended that, in due course, acceptance of the recommendations in this report is demonstrated by, for example, the architect specifying in writing to the building contractor that tree care conditions apply in execution of the contract, and by an estimate or written undertaking from the contractor to the architect demonstrating that the practical aspects of tree protection recommendations have been priced in to the job. If conflicts between any part of a tree and the building arise in the course of development these can often be resolved quickly and at little cost if a qualified arboriculturist is consulted promptly. Lack of such care is often apparent quickly and decline and death of such trees can spoil design aims and can of course affect saleability, and reflects lack of best practice. Trees that have been the recipients of careful handling during construction add considerably to the appeal and value of the finished development.

2.0 Pre- Development Site Preparation

2.1 Arboricultural Works

2.1.1 All works must be carried out by a competent arborist in accord with BS 3998: 2010 and any other prevailing good professional practice.

2.1.2 Specific works recommended to facilitate development are the removal of trees of 9 category 'C' trees (T4, T5, T6, T8, T9, T10, T11, T12 & T13). These specific works to facilitate development and any other husbandry works are listed in Appendix 1.

2.2 Installation of Tree Protection Barriers

2.2.1 Tree Protection Barrier [TPB] will be erected on site, comprising a combination of steel mesh panels of 2.4m in height ('Heras') and boxed hoarding, as shown on the Tree Protection Plan (TPP) in Appendix 5. The Heras panels will be mounted on a scaffolding frame as shown in Figure 1 below (this is also Figure 2 of BS5837: Trees in Relation to Design, Demolition and Construction in paragraph 6.2.2.2).

2.2.2 These TPBs are to be erected before any work commences on site, are to remain 'in situ' undamaged for the duration of all work or each phase, and only to be removed once all work is completed. If any work is deemed necessary prior to the erection of fencing/hoarding, a Landmark Trees representative should be informed to enable their presence to oversee the work being carried out.

2.2.3 The only other exception is the completion of soft landscaping but if any excavations, however minor, are to be carried out as part of soft landscaping within RPAs, an arboricultural assessment must be carried out beforehand and any arboricultural protection measures incorporated. The TPB should carry waterproof warning notices denying access within the RPA.

2.2.4 The Tree Protection Plan in Appendix 5 illustrates where the protective fencing will be located to form the boundary of the Construction Exclusion Zone (CEZ). The CEZ is an exclusion zone and suitable steps will be taken to prevent access by pedestrians and vehicles and the storage of any works materials and equipment will be located outside of the CEZ. Where areas of the RPA lie outside the CEZ, ground protection measures will be required. **Restricted access only will be provided to position the plant enclosure within the CEZ of T14 – T17.**

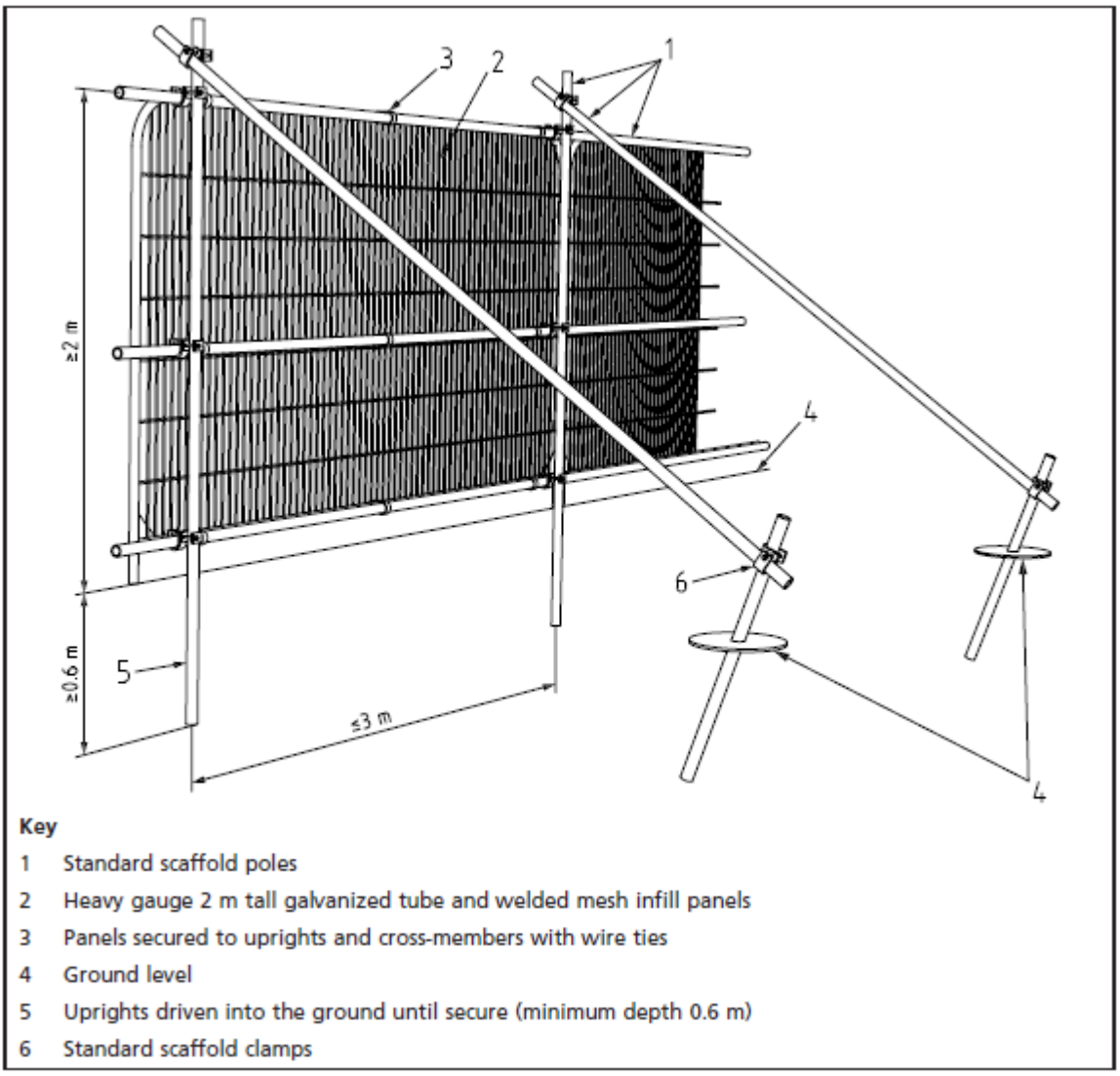


Fig. 1 Tree Protection Barrier Specification
(Source: Figure 2 from BS5837 - Default specification for protective barrier)

2.3 Pre-Development Site Inspection (As required by Condition 9)

2.3.1 Upon completion of the tree works the LT representative will meet the relevant local authority member on site to check the standards of the work. If there are any amendments to either the tree works or additional protection measures, they will be agreed at this meeting and confirmed in writing. A written report and photographs will be provided, based on the site monitoring sheet contained in Appendix 3.

3.0 Development Phase

3.1 The following general precautions will apply:

- No fires shall be made on any part of the site, or within 20m of any tree to be retained.
- No spilling or pouring of fuels, oils, solvents, tar shall be made on any part of the site.
- No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within 10 metres of the trunk of a tree that is to be retained.
- No spillage or discharge of wet mortar or concrete shall be made on any part of the site.
- No storage of materials shall be made within the protective fences.
- No breaching or moving of the protective fences without the approval of an arboriculturist.
- Alterations in levels within the tree protection fence areas shall be avoided.

3.2 Root Protection Areas (RPA)

3.2.1 The Root Protection Area (RPA) is a desirable zone of protection around the trees' rooting system and these have been marked on the plan in Appendix 5. As much as possible, the RPA's will lie within the CEZ and therefore, be fully fenced off. However, this degree of protection is not entirely possible on the site: it is necessary to perform some works (in part) within the RPA i.e. demolition of the existing building and hard landscaping, installation of services and construction of new building and new drive.

3.2.2 All involved parties will need to be made aware of the deficiencies. In these instances, careful and supervised working, as described in sections, S. 3.4 (routing of services) and S. 3.6 (demolition of surfaces) and S. 3.7 (construction) will be required.

3.2.3 Ground outside the CEZ must be protected from site traffic and not left exposed during construction. It is envisaged that the largest vehicle to access the site for purposes of construction will be 10m rigid lorry. Other large and regular vehicles to access the site shall include a concrete mixer vehicle and a rigid delivery vehicle (both measuring 8.5m in length). Plant that will be required on site is likely to include a mini-piling rig and mobile crane. It is anticipated that the various plant that is necessary to construct the scheme can be delivered using a 10m rigid transport vehicle.

3.2.4 As far as practical, existing hard surfaces should be retained as initial ground protection (where fit for purpose for anticipated loading) until the landscaping phase and / or substituted / supplemented with appropriate materials (e.g. Infraweb, Ground Guards etc.), capable of withstanding anticipated loads. Existing tarmac will not be adequate ground protection for heavy plant use. To this end, a concrete crossover and intensive ground protection area has been specified for the main delivery access. Crossovers for HGVs will have 150mm concrete slabs temporarily installed to protect services and tree roots.

3.3 Site Access, Accommodation & Storage

3.3.1 Site access and accommodation will be as per the layout within our Tree Protection Plan (Appendix 5). An allocated "on street compound" outside the property will be provided for skip, plant and material storage (see Construction Management Plan prepared by RPS NB/PJ/sb/JNY7709/01-B). A conveyor will be used to remove spoil from the site into the skip/lorries.

3.3.2 Pedestrian access will run parallel, but separate to vehicular access.

3.3.3 On-site plant will be excluded from RPA's by tree protection fencing and ground protection were possible, with additional ground protection employed where this is not possible. Adequate allowance must be made for vehicle heights and ground clearance, where tree canopies overhang access routes. Any further pruning for working clearances must be discussed first with the arboriculturalist. Materials will be unloaded onto the street compound and then transported to protected ground within RPA's or stored throughout the interior of the site(s) away from protected trees. The amount of storage required will be controlled by weekly forecasting detailing the daily profile of deliveries proposed for the upcoming week.

3.3.4 Many site activities are potentially damaging to trees e.g. material storage, parking, soil compaction and the use of plant machinery. In this latter example particular care is required to ensure that the operational arcs of excavation and lifting machinery, including their loads, do not physically damage trees in use.

3.4 Routing & Installation of Services

3.4.1 Final service routes and provision for the house and the plant enclosure are to be determined, but in the main existing routes will be used and those required for the plant enclosure unit will potentially run above ground. In general, where any underground service routes should enter an RPA, then the provisions of BS5837 and NJUG VOLUME 4 will be employed (e.g. radial trenching and /or mole trenching) under arboricultural supervision.

3.4.2 The sewer diversion is yet to be resolved with Thames Water, but the proposed options have in common a number of deep manholes as shown in CSK-21 & CSK-24. Their locations have been marked on our protection plan in Appendix 5. Any excavations within the RPA will follow the provisions of BS5837:2012 and NJUG VOLUME 4 for hand-digging through the root zone under arboricultural supervision.

3.5 Changes in Grade

3.5.1 If ground levels need to be marginally altered within the RPA of any retained tree, prior agreement must be sought and given by either a local authority tree officer or a LT Consultant. The upper

layer of top soil contains the majority of a tree's roots and if this is disturbed by a reduction in ground level, serious damage can be caused. If such soil is to be disturbed within the CEZ/ RPA, it will be done only with hand tools and the supervising arborist will be informed if roots are exposed.

3.5.2 If the ground level requires raising, this will be achieved using coarse, granular material such as pebbles.

3.6 Demolition Measures.

3.6.1 During the demolition phase, materials and spoil will be removed from the site using a combination of conveyor, skip and grab lorry. Skips would be located within an on-street compound and used to store construction waste. The existing low level boundary at the frontage of the property would also be removed by hand as part of the Phase 1 works to facilitate the movement of plant and materials to and from the site. Additional ground protection will be provided as necessary and the foundations of the wall retained.

3.6.2 It is unlikely that access facilitation pruning will be required. However if deemed necessary once works start on site, to prevent injurious contact between demolition plant and the tree(s), any such pruning will be undertaken in accordance with British Standard 3998: Recommendations for tree works (See Section 2.1 / Appendix 1).

3.6.3 Demolition of structures within what would otherwise be an RPA will proceed with due caution to avoid unnecessary damage to trees. **Such measures apply in particular to T7.**

3.6.4 All plant and vehicles engaged in demolition works (removals only) will either operate outside the RPA, or work from within the existing built structure and hard standing, near trees. Where trees stand adjacent to structures scheduled for demolition, it will be necessary to undertake demolition inwards within the footprint of the existing building (often referred to as "top down, pull back"). Such measures apply to T1, 2, 3 & 7.

3.6.5 Specifically, the demolition of the main structure will be carried out by use of a 360^0 excavator, fitted with a grapple/bucket and, where necessary, a hydraulic impact hammer.

3.6.6 The roof timbers will be lifted from the house using the grapple, and lowered to the ground where they will be further processed, prior to being loaded onto the conveyor and into the skips/lorries located in the on-street compound. Where possible, these materials will be recycled or removed to a local landfill facility.

3.6.7 Having completed the removal of all materials, the main structure i.e. brickwork/blockwork of the house will be demolished using a 360^0 excavator. The walls will be pulled over in small increments and allowed to free fall in to the confines of the building, where they will be gathered into a stockpile. Where possible, these materials will be sorted for recycling or taken away from site to a suitable landfill facility.

3.6.8 Having taken the structure down and removed from site the ground floor slabs/foundations will be broken up by a 360^0 excavator equipped with, if necessary, the hydraulic impact hammer, but if the concrete is not too difficult to break, it will be done with the excavator bucket, the quieter option being preferred, the concrete will be broken into manageable size pieces.

3.6.9 Throughout all mechanical operations a banksman will be present at all times. Dust generated by the works will be suppressed using water sprays. Hoarding at the site entrance will also be used which, along with reducing the visual impact and providing protection for the construction workers and public, will also act as a barrier for dust and dirt originating from within the site.

3.6.10 If the weather is "dry," the site will be watered down to reduce dust travelling to adjacent properties. Where levels of dust build-up on trees occur, it may be necessary to seek the advice of Landmark Trees on remedial measures, e.g. hose down the tree(s) immediately following any significant accumulation of dust.

3.6.11 Heavy plant used to remove imported materials and grade the surface will be deployed in one operation. This will be achieved by siting necessary machinery on top of the existing grade level and working systematically away from retained trees. The aim is to ensure that spoil is removed away from RPAs but it is very important that their original soil levels are only lowered under consultant supervision as roots will be close to the surface and can be easily damaged.

3.6.12 The hard standing within the tree's RPA's will be first broken up with manual power tools and then carefully removed with plant by a skilled machine operator. Soil beneath the structure will not be scraped away, but preserved in situ and protected with replacement ground protection (as per para 3.2.1) for post-development treatment (as per para 3.8.1).

3.6.13 Where replacement or supplementary ground protection is required following the removal of hard standing, it will be installed prior to the continuance of operations

3.7 Construction Measures

Detailed method statements and risk assessments will be obtained from all specialist subcontractors involved in the new build and these will be scrutinised by the site agent to ensure the AMS requirements have been considered therein.

3.7.1 The outline of the proposed building and its piling holes will be established by the site engineer with Netlon fencing and trial holes. The arboriculturalist will be consulted on the possible pinch points where the retained tree canopies and RPA's are in close proximity to the basement construction (i.e. T1, 2, 7, 16, 17 & 18). The limits of the basement piling line within the RPA will be manually pre-excavated to a min. 600mm depth and root-pruned (as applicable) under arboricultural supervision. Roots smaller then 25mm diameter may be cut cleanly with a sharp pruning saw or secateurs back to a junction. Roots larger then 25mm diameter may only be cut in consultation with an arboriculturalist.

3.7.2 Thereafter, JCB type excavator to come onto site via existing entrance off Avenue Road and excavate site down to a level appropriate for establishing a stable datum and for a piling "mat" to be installed (say 400mm below existing ground level) over whole area **outside tree protection zone**. JCB to spread delivered hardcore. Hardcore to be compacted as required to achieve suitable base for piling rig.

3.7.3 The piles will be installed with a mini piling rig (e.g. Klemm MR701) with no more than a 3.5m rig. Canopy clearance of T2 and T7 is greater than 3.5m. The rig will operate as far possible from outside of the RPA's trees T1-3, 7, 16-18, but moving either side of the southern build line on protected ground within those RPA's.

3.7.4 Piling rig (proposed CFA Piling 16.5m rig) to come on site via same access and install assumed contiguous 450mm piled wall to perimeter of proposed new building. Power Pack for rig to be "silent type" and to be positioned on road. Design of system to be approved by engineer. Piles to finish approximately 200mm below proposed ground floor of new building or garden level as required. It should be noted that this method of work will retain all the existing ground around the piles, without any ground movement or collapse, thereby ensuring the health of the trees is maintained.

3.7.5 JCB to excavate to required depth. All spoil to be loaded onto the conveyor and into the skips in the site compound on Avenue Road.

3.7.6 Construction materials will generally be delivered in accordance with the daily schedule on lorries with mechanical off load. In general, the materials will be unloaded in the on-street compound and brought into site by all terrain forklift.

3.7.7 In order to facilitate the piling process it is likely that the Contractor will use a stationary concrete pump during this phase. The stationary pump would be positioned in the designated on-street compound. Concrete will be delivered to site pre-mixed in 8.5m rigid concrete mixer lorries.

3.7.8 Continuous wailings to be installed to the concrete piles.

3.7.9 The location for the screw piles for the plant enclosure should be tested with trial pits. Where significant roots are found, there should be sufficient flexibility to allow the pile to be relocated to a position determined by further trial pits. Ground protection must be installed within the working area shown on the TPP, with restricted access for construction of the plant enclosure only.

3.7.10 During the construction phase and throughout dry periods on site regular hosing down will be carried out to control dust pollution. In the event of dust build up on trees occurring arboricultural advice will be sort and if necessary remedial measures such as hosing down the trees will be taken.

3.7.11 Where scaffolding needs to be installed within the RPA of any retained tree, the following ground protection should be followed / adapted to site needs:

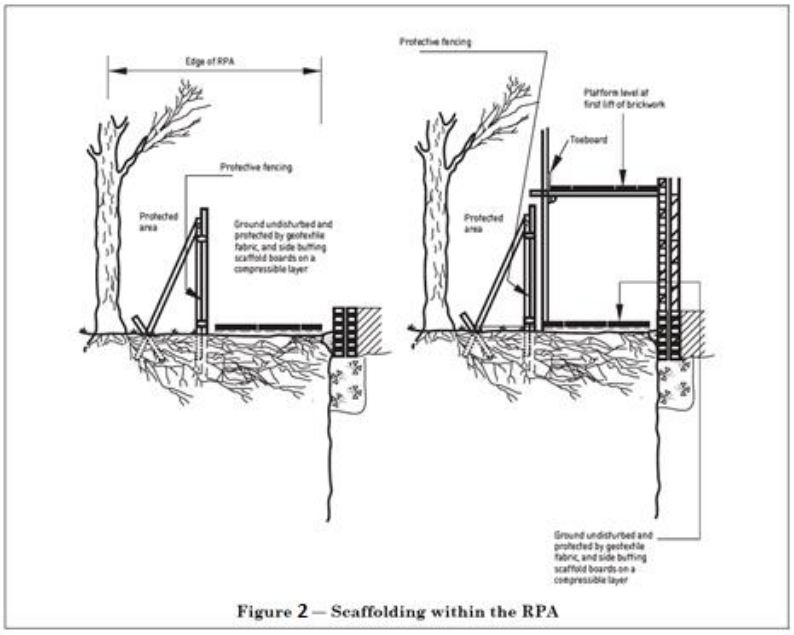


Figure 2 — Scaffolding within the RPA

3.7.12 A sample specifications for no dig drive construction within the RPA's of T1, 2, 3 and T7 is as follows:

i. The Construction should ideally be undertaken between May and October when the ground is sufficiently dry to prevent compaction occurring. Any surface vegetation should be removed by hand or with suitable herbicide.

ii. Fill any hollows in the exposed ground with sharp sand or 4/20mm or 40/20mm clean angular stone.

iii. Place Permatex 300 Geotextile over the area to be protected ensuring laps are a minimum of 300mm. The geotextile should not be trafficked across at any time.

iv. The Infraweb system is available in 5 depths for varying traffic loadings but each site should have a specific design detailed to ensure the correct depth of product is used. However, unless the existing ground conditions are very soft and have a low CBR then the following can apply:

- 50mm deep InfraWeb for Pedestrians and Cycleways, non-vehicular traffic;
- 75mm deep InfraWeb for Pedestrians, Cycleways and vehicles up to 1.5 tons;
- 100mm deep InfraWeb for Cars, 4 Wheel Drives, Vans etc up to 6 tons;
- 150mm deep InfraWeb for Fire Tenders, Removal Vehicles and Dust Carts up to 20 to 20 tons;
- 200mm deep InfraWeb for construction vehicles, cranes etc 40 tons and above.

v. The system components are as follows:

- InfraWeb 3 Dimensional Cellular Confinement System
- Permatex 300 Separation Geotextile
- Permatex 200 Separation Geotextile (depending on surface finish)
- InfraWeb Staking Pins
- InfraWeb Stapler and Staples

- 4/20mm or 40/20mm Clean angular stone to Bs EN 13242 and 12620.

vi. Place the collapsed panel on the geotextile and pin through 3 cells across the 2.42m orientation using InfraWeb staking pins. Expand the panel to its full length of 8.7m and pin across the opposite panel end using InfraWeb staking pins. Pin along the length of the panel with 2 pins on each side using InfraWeb staking pins. If full panels are not being used then ensure the cells have been expanded to their full dimension. Staple any adjacent panels together using the Infraweb stapler and staples. The InfraWeb panels can be cut to shape if required with a heavy duty Stanley Knife.

vii. The correct specification of the granular infill is vital to the long term performance of the system. Use only 4/20mm or 40/20mm clean angular stone to Bs EN 13242 and 12620 (depending on cell depth being used). Fill the pockets of the InfraWeb with a 4/20mm or 40/20mm clean angular stone. Allow for any settlement of the stone in the cells and top up if necessary. **If the system requires trafficking immediately after installation for construction purposes then a 50mm sacrificial surcharge of the 4/20mm or 40/20mm granular material shall be placed on top of the InfraWeb.**

viii. The Infraweb TRP system can be surfaced with the materials listed below. Porous systems will be of greater benefit for the trees, however it is understood that this is not always possible.

Block Paving:

- Place Permatex 200 separation fabric over the filled InfraWeb.
- Lay sand / gravel bedding material as per manufacturer's recommendations.
- Place porous / standard blocks as per manufacturer's instructions.

Porous and Standard Asphalt:

- Slightly surcharge the InfraWeb with 25mm of 4/20mm or 40/20mm clean angular stone.
- Place hot Asphalt as per manufacturer's instructions.

Resin Bound Gravels:

- Place Permatex 200 separation fabric over the filled InfraWeb.
- Lay Asphalt carpet and resin bound gravel to the required thickness and as per manufacturer's instructions.

Loose Gravels:

- Option 1 is to slightly overfill the InfraWeb with the clean angular stone.
- Option 2 is to place a 25mm thick decorative stone above the filled InfraWeb.

Slimblock Gravel Retention System

- Place Permatex 200 separation geotextile over the filled InfraWeb.
- Place 20mm bedding layer of 5mm single sized stone and lightly tamp.

- Lay Slimblock units and fill with a 10 to 14mm decorative gravel.

Slimblock Grass Protection System.

- Place Permatex 200 separation geotextile over the filled InfraWeb.
- Place 50mm of Rootzone (60% sand/40% soil) bedding layer and lightly tamp.
- Lay Slimblock units and fill with Rootzone mix and seed accordingly. (Please allow for 4 to 6 weeks for seed germination)

Tree Mulch

- Place Permatex 200 separation geotextile over the filled InfraWeb.
- Lay mulch to desired depth.

Concrete

- Place Permatex 200 separation geotextile over the filled InfraWeb.
- Cast the concrete slab over the geotextile.

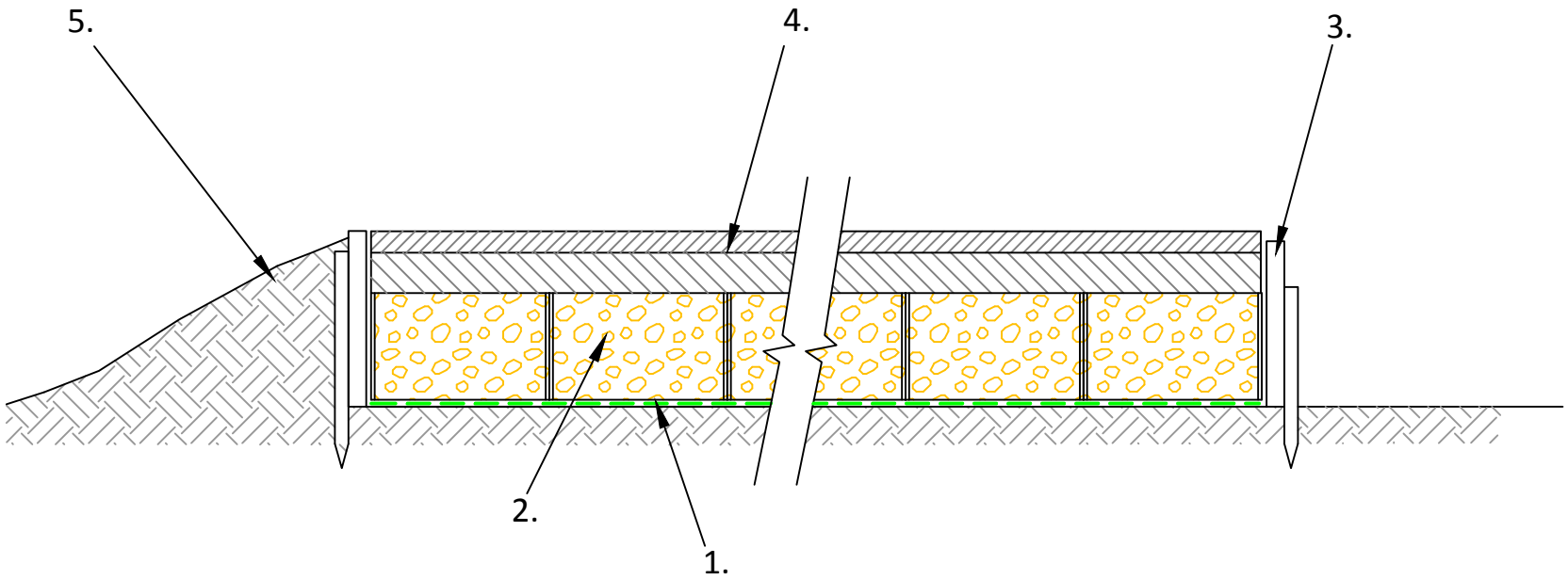
3.7.13 See cross-sectional diagram below for further explanation. For technical data on the Geotextile membrane and the Infraweb cellular confinement system always refer to the manufactures guidelines for design and implementation. Further technical advice can be gained from the manufacturer:

Infra Green Limited
Warrington Business Park
Long Lane
Warrington
WA2 8TX
Tel. 01455 617139
www.infragreen-solutions.com

3.7.14 At the end of the construction period, the wall at the front of the property will be reinstated. Similarly, the footway and driveway accesses into the site would be reinstated to ensure that any damage that may be incurred during the construction period is redressed.

KEY

1. Permatex 300 geotextile
2. 150mm deep InfraWeb tree root protection System infilled with 4/20 Clean angular Stone to BS EN 13242 / EN 12620
3. Treated timber edging (Or other Edging detail acceptable)
4. Asphalt surface to engineers details
5. Soil graded to edging (if required)



InfraGreen solutions
Warrington Business Park
Longfield Road
WA2 8TX
T: 01925 630976
E: info@infragreen-solutions.com

TITLE

InfraWeb Section - Tree Root Protection c/w Asphalt Surface

DRAWN BY	SCALE	DATE	CHECKED BY
PP	1:10	01/14	RP
DRAWING NO		REVISION	APPROVED
IG-SD-IW-AS-150			

3.8 Removal of Ground Protection & Post Construction Landscaping & Treatment

3.8.1 The tree protection may be removed upon completion of the construction phase and when all drainage and service runs have been installed and any site machinery has been removed from the RPA.

3.8.2 Following the developing phase, impacted trees within the site boundary, identified for such treatment, will receive remedial soil remediation treatment: deep root fertiliser / mycorrhizal injection and surface mulching

3.8.3 Any further landscaping works should avoid the changing of ground levels or deep digging. Mechanised cultivation such as rotovation must not be used within the RPA's of existing trees.

3.8.4 Heavy machinery should not be used in the vicinity of any retained trees.

3.8.5 If herbicides are to be used they should be appropriate to their purpose and not in such a way as to damage any retained trees or vegetation.

3.8.6 Ideally, retained trees should be within a shrub area as this reduces the chances of compaction and disturbance of root systems.

3.8.7 Any new planting schemes adopted should consider aspects of the site such as current design, layout and future use. Consideration should also be given to the soil type, climate and overall character of the landscape.

4.0 Summary of Proposed Methods

4.1 Table of Impacts and Mitigation

4.1.1 The table below summarises the main areas where trees could become damaged by the proposed development and the methods that need to be adopted in order to prevent such damage:

Impact	Mitigation	Reference	Trees Affected
General site access, material storage etc.	Ground protection to acceptable standards.	Paras 2.2.1 & 3.3.3 Tree Protection Plan in Appendix 5	All retained trees
Demolition & construction within existing canopy	Tree surgery/felling	Section 2.1	T4, T5, T6, T8, T9, T10, T11, T12 & T13.
Demolition of existing build within RPA	Pull down technique within RPA	Section 3.6	All retained trees
Damage to roots caused by building foundation / manhole excavation within RPA.	limits of excavation within the RPA will be manually pre-excavated to a min. 600mm depth and root-pruned (as applicable) under arboricultural supervision Post development remedial treatment	Section 3.7 & 8	T1, 2, 7, 16 - 18
New drive within RPA	No-dig construction	Section 3.7	T1, 2, 3 & 7
Screw piles for plant enclosure within RPA	Position with hand-dug trial pits	Section 3.7	T14 – T17

5.0 Completion

5.1 Completion Meeting

5.1.1 Following completion of the works listed above, a Landmark Trees consultant will meet with a local authority representative and agree upon any remedial works deemed necessary. It is the client's duty to notify LT that the project has been completed, in order to facilitate such an inspection.

5.1.2 A separate LT post-development tree inspection (with specific reference to trees identified in the Appendix 1 schedules) is recommended to facilitate a constructive meeting and to monitor the health of some of the more senescent trees on site.

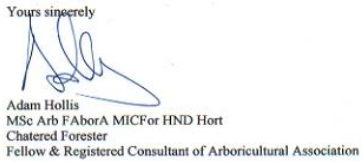
5.1.3 Any works agreed in the above meeting will be confirmed in writing and will be performed to BS 3998: 2010 Tree Works.

5.1.4 Landmark Trees recommend that any work proposed post development is checked to avoid penalty for performing illegal work on a protected tree.

5.1.5 As noted at 1.7 above, it is recommended that, in due course, acceptance of the recommendations in this report is demonstrated by, for example, the architect specifying in writing to the building contractor that tree care conditions apply in execution of the contract, and by an estimate or written undertaking from the contractor to the architect demonstrating that the practical aspects of tree protection recommendations have been priced in to the job.

5.1.6 If conflicts between any part of a tree and the building arise in the course of development these can often be resolved quickly and at little cost if a qualified arboriculturist is consulted promptly. Lack of such care is often apparent quickly and decline and death of such trees can spoil design aims and can of course affect saleability, and reflects lack of best practice. Trees that have been the recipients of careful handling during construction add considerably to the appeal and value of the finished development.

Signed



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Adam Hollis MSc ARB MICFor FArbor A

12th May 2016

For and on behalf of ***Landmark Trees***

Web: www.landmarktrees.co.uk
e-mail: info@landmarktrees.co.uk
Tel: 0207 851 4544

London Office: 20 Broadwick Street, London, W1F 8HT
Registered Office: Grange Cottage, All Cannings, Devizes, Wiltshire, SN10 3NR
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APPENDIX 1: ARBORICULTURAL WORKS

Notes for Guidance:

1, 2, 3 - Urgent (ASAP), Standard (within 6 months), Non-urgent (2-3 years)

RP - Pre-emptive root pruning of foundation encroachments under arboricultural supervision.
CB - Cut Back to boundary/clear from structure.
CL# - Crown Lift to given height in meters.
CT#% - Crown Thinning by identified %.
CCL - Crown Clean (remove deadwood/crossing and hazardous branches and stubs).*
CR#% - Crown Reduce by given maximum % (of outermost branch & twig length)
DWD - Remove deadwood.
Fell - Fell to ground level.
FInv - Further Investigation (generally with decay detection equipment).
Pol - Pollard or re-pollard.
Mon - Check / monitor progress of defect(s) at next consultant inspection which should be <18 months in frequented areas and <3 years in areas of more occasional use. Where clients retain their own ground staff, we recommend an annual in- house inspection and where practical, in the aftermath of extreme weather events.
Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects.

*Not generally specified following BS3998:2010

Landmark Trees

Site: 87 Avenue Road
Date: 12/05/2016

Appendix 1

Recommended Tree Works

Surveyor(s): Adam Hollis
Ref: PAN/87AVR/AMS

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
1	Plane, London	A	22	7.0	8/7/10/8	CCL	Pollard (Old) Decay at pollard heads Small hanging dead branch ; street tree Advise LA
2	Plane, London	A	22	7.0	7/7/10/12	CCL	Pollard (Old) Entry wounds at pollard heads lower crown reduced to south ; street tree Advise LA
3	Plane, London	B	22	7.0	8688	CCL	Pollard (Old) Deadwood thoughout lower crown massaria?; entry wounds at old pollard points; street tree Advise LA
8	Hazel, Common	C	8	3.0	4422	Fell	Multi stem Climber in crown To facilitate development
9	Cypress, Lawson variety	C	8	1.8	2.5	Fell	To facilitate development
10	Hazel, Common	C	9	2.5	3	Fell	Twin stem To facilitate development
11	Magnolia (M. grandiflora)	C	8	2.2	2233	Fell	To facilitate development

Landmark Trees

Site: 87 Avenue Road
Date: 12/05/2016

Surveyor(s): Adam Hollis
Ref: PAN/87AVR/AMS

Appendix 1

Recommended Tree Works

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
12	Magnolia (M. grandiflora)	C	8	2.2	2233	Fell	To facilitate development
13	Yew, Common	C	8	1.0	2231	Fell	Contributes to screen To facilitate plant enclosure development

APPENDIX 2: GENERAL GUIDELINES

2.1 All work must be to BS 3998:2010 - '*Recommendations for tree work'*.

2.2 Staff carrying out the work must be qualified, experienced and ideally be Arboricultural Association approved contractors, and will be covered by adequate public liability insurance.

2.3 Any defects seen by a contractor or the client that were not apparent to the consultant must be brought to the consultant's attention immediately.

2.4 No liability can be accepted by the consultant in respect of the trees unless the recommendations of this method statement are carried out under the supervision of a Landmark Trees consultant.

2.5 It is advisable to have trees inspected by a consultant regularly. On this site it is recommended that these inspections are made every year.

APPENDIX 3: SAMPLE SITE MONITORING SHEET

Landmark Trees

Site Monitoring Report Sheet

Client:		**Planning Ref:**	
Local Authority:		**Date:**	
Site Address:			
Proposal:			

Visit Checklist	**Y/N**		**Y/N**
Tree protection barrier (TPB) in place		TPB as per approved	
Ground protection (GP) in place		GP as per approved	
TPB breached		Trees damaged since last visit	
Client briefed by LT			
LT briefed by Client			
LPA informed			
Remedial action required			

Comments

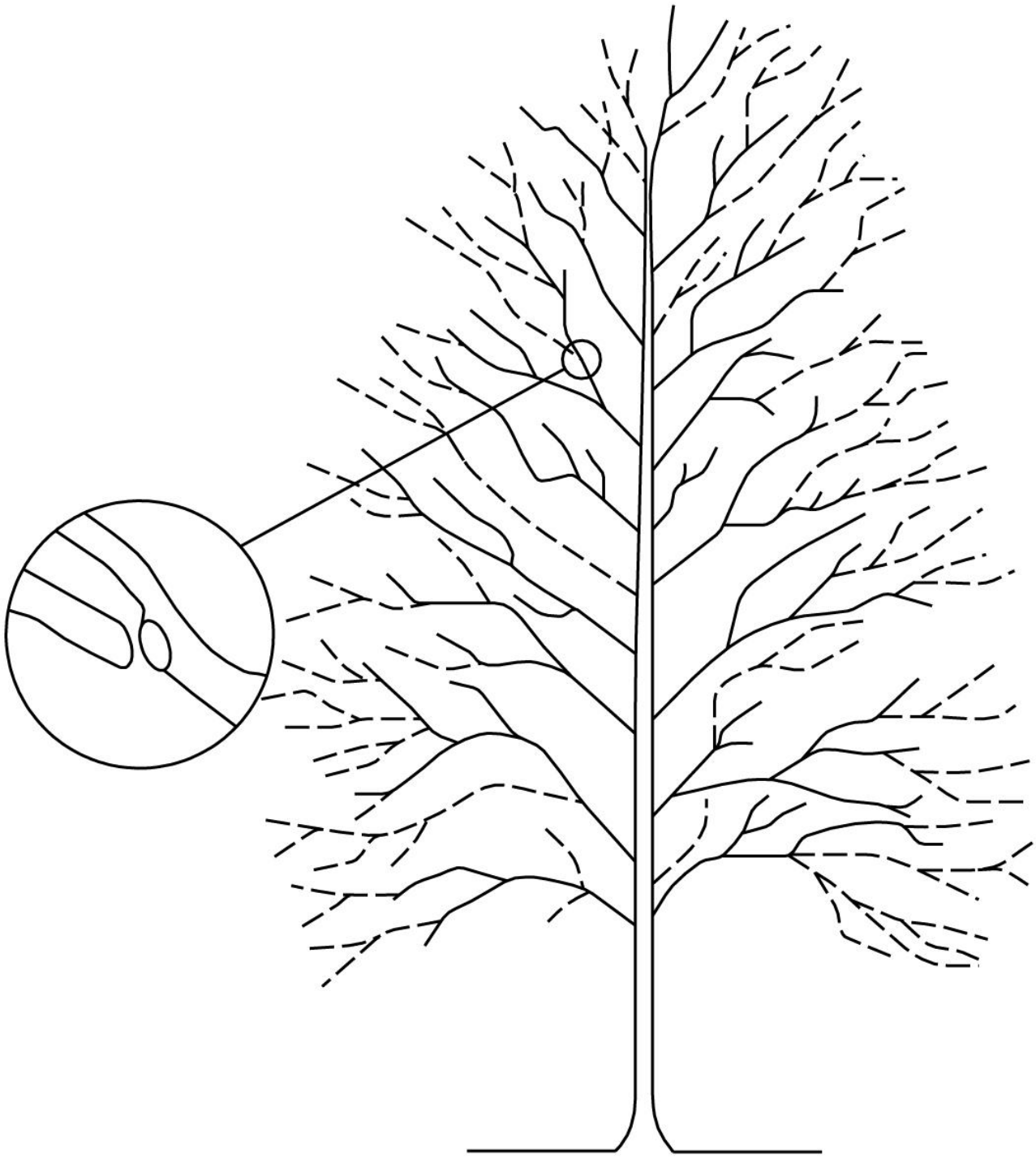
Recommendations

Outcome		
1		
2		
3		
4		

Web: www.landmarktrees.co.uk
e-mail: info@landmarktrees.co.uk
Tel: 0207 851 4544

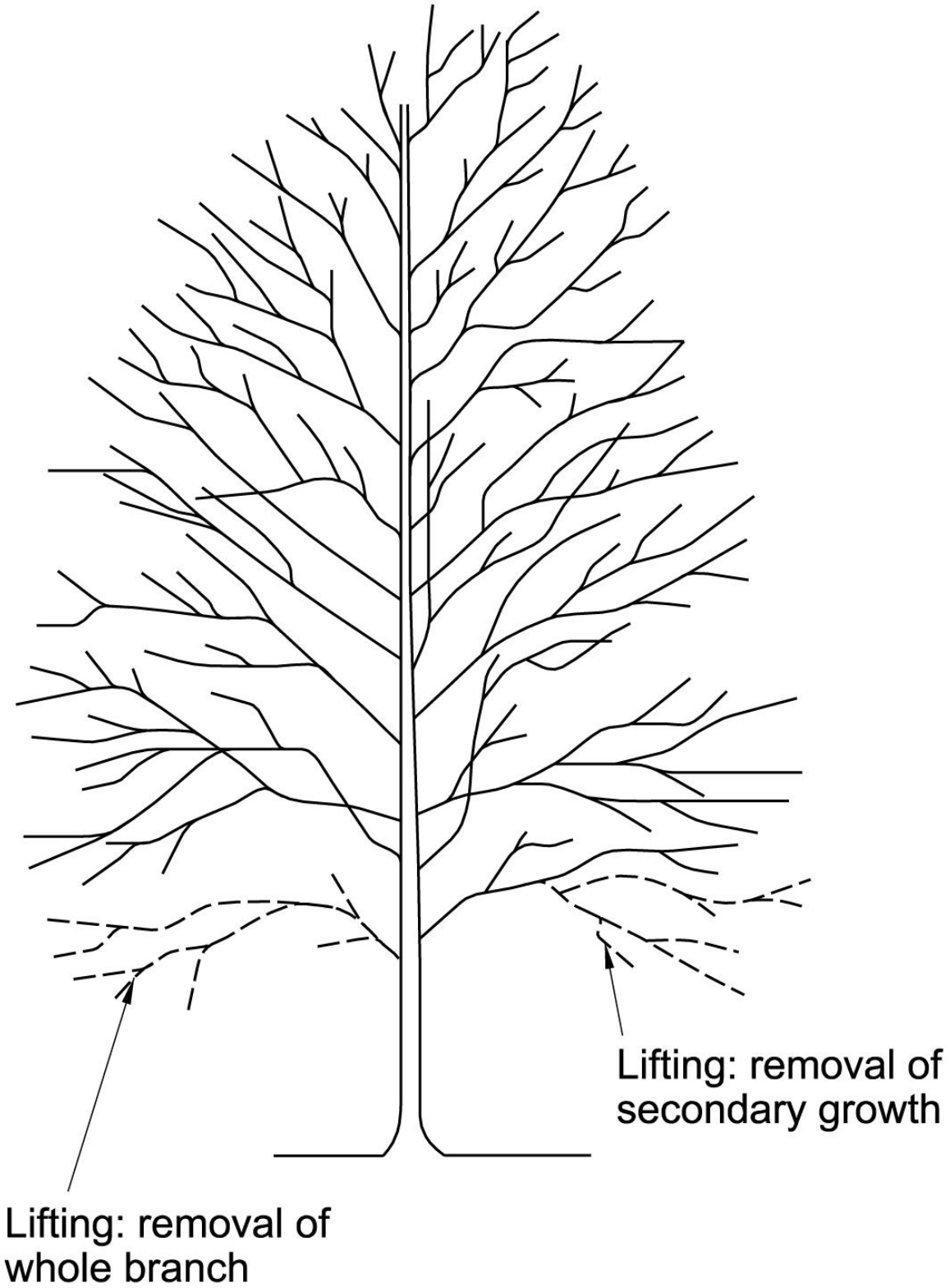
London Office: Holden House, 4th Floor, 57 Rathbone Place London W1T 1JU
Registered Office: 15 Abbey Road, Oxford OX2 0AD

APPENDIX 4: INDICATIVE PRUNING GUIDELINES



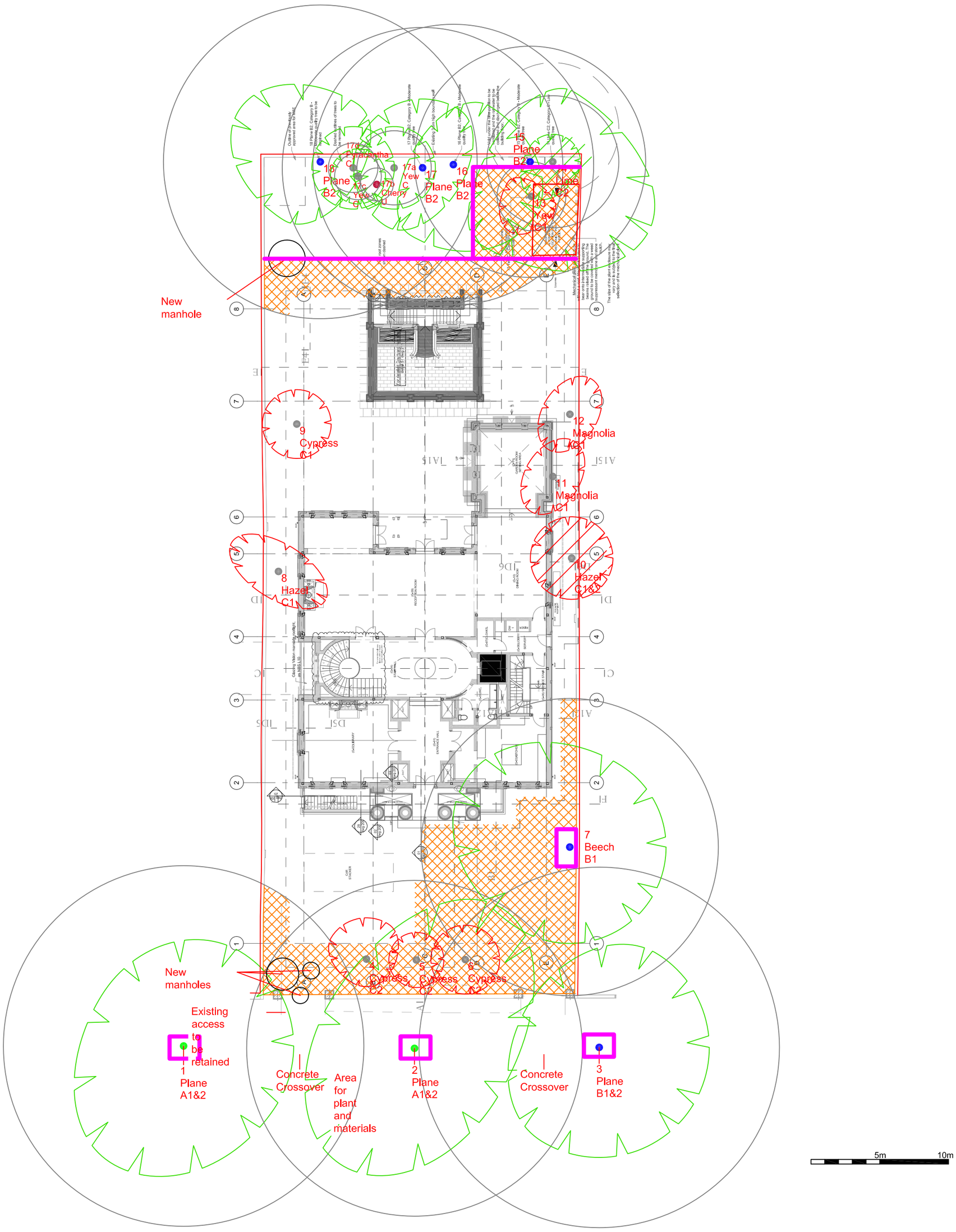
NOTE: Branches pruned back to suitable outward pointing bud or small branch.

REDUCING THE CROWN



CROWN LIFTING

APPENDIX 5: TREE PROTECTION PLAN



NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base) or immediately above the root flare for multi-stemmed trees.

Landmark Trees

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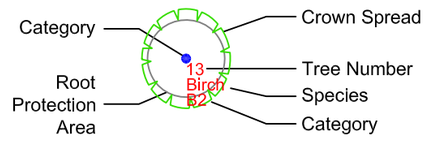
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 87 Avenue Road	1:250 @ A2
Drawing Title: Tree Protection Plan	May 2016

Key:

- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category R Poor Quality



- Tree Position Approximate (not shown on original survey)
- Tree Proposed for Removal
- Ground Protection
- Tree Protection Fencing
- Stem Protection with Boxed Hoarding