Landmark Trees

ARBORICULTURAL METHOD STATEMENT

23 Hamilton Terrace

London

NW8 9RE

REPORT PREPARED FOR:

ECP

30 Dorset Square

London

NW1 6QJ

REPORT PREPARED BY:

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Ref: SSH/23HMT/AMS/01a

Date: 12th August 2022

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Appendices

1.0 Introduction

1.1 Purpose & Use of the Method Statement

1.1.1 This method statement has been prepared for ECP, for assistance with the discharge of planning conditions at 23 Hamilton Terrace: Westminster City Council planning permission no.: 19/05543/FULL. The document will address the following condition:

12. Pre Commencement Condition

You must apply to us for approval of a method statement explaining the measures you will take to protect the trees on and close to the site. You must not start any demolition, site clearance or building work, and you must not take any equipment, machinery or materials for the development on to the site, until we have approved in writing what you have sent us. You must then carry out the work according to the approved details (C31CC)

Reason - To protect trees and the character and appearance of the site as set out in S38 of Westminster's City Plan (November 2016) and DES1(A), ENV16 and ENV17 of our Unitary Development Plan that we adopted in January 2007. (R31CC).

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. 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 the client, ECP, to prepare a 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.

1.2.2 For this purpose, the client has supplied us with existing plans (including Existing Plan Lower Ground Floor and Ground Floor ((794)010_P01, and (794)011_P01) and the current proposals plans (including Proposed Plan Basement, Lower Ground Floor and Ground Floor ((794)020_P01, (794)022_P01, and (794)023_P01). We are also reliant upon our own impact assessment report SSH/23HMT/AIA/02 and plan overlays of tree constraints contained therein.

1.3 Development Proposals & Potential Impacts

1.3.1 The principal proposals are for extension of the residential property, with the demolition of an existing conservatory / landscaping and the addition of basement under the rear garden, rear and side extensions. ("*Excavation of new basement (part 2, part 1 storey) beneath rear garden, demolition of existing rear lower ground floor conservatory and erection of rear lower ground floor extension. Erection of ground floor side /rear extension and external spiral staircase. Installation of ventilation plant. Internal alterations (Linked to 19/05544/LBC).*" – 19/05543/FULL dated 10/09/2019)

1.3.2 The consented scheme allows the removal of a line of holm oaks (G8), a magnolia (T6), a pittosporum (T7), a bay tree (T9) and a fig (T11) in the rear garden subject to replacement planting.

1.3.3 The potentially detrimental impacts of altering levels within the modified RPA of lime T1 is minimised by the use of suitable soil and coarse granular material to raise levels; of new hard landscaping within the modified RPAs of limes T1 and T5 is minimised by the use of no dig construction techniques; and, in respect of the RPA of London Plane T12, the use of no dig construction for replacement hard surfacing (the lower ground floor and ground floor alterations are within existing built footprint).

1.3.4 Thus, the impacts of design are relatively low. However, the purpose of this method statement is to ensure that no further impacts occur as a result of contractor activity on site, in accordance with the above condition.

1.4 Sequence of Works

1.4.1 The sequence of works will be as follows:

- initial tree works – felling, stump grinding and pruning for working clearances
- installation of Tree Protection Barrier (TPB) & 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

1.5.1 On this site, an individual (e.g. the Site Agent) will be nominated to be responsible for all arboricultural matters on site. A pre-commencement site briefing/meeting between the agent and arboricultural consultant must be held (see Table 1 below). During this meeting all the tree protection methods below will be studied and familiarization with requirements of this AMS. The agent will:

- be aware of the arboricultural responsibilities;
- be present on site for the majority of the time;
- 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.

1.5.2 At this stage, the nominated Key Personnel are as follows:

Adam Hollis — Tel: 07967 117937
Arboricultural Consultant
Landmark Trees
info@landmarktrees.co.uk

Jamie Newman — Tel: 07971 024085
Arboricultural Officer
City of Westminster
jnewman@westminster.gov.uk

Sean Vaughan — Tel: 07985 446180
Site Agent
Silver Interiors Design and Build Ltd
15 Lonsdale Road, London NW6 6RA
(0207 372 1886)

1.6 Site Monitoring

1.6.1 A tree protection protocol will be devised and integrated into the site induction process at a pre-commencement meeting involving the developer, the arboricultural consultant, the site manager and the Council tree officer as appropriate. In addition to the Tree Protection Plan and Arboricultural Method Statement, the protocol should contain a current contact list of the key personnel noted above (subject to any changes and confirmation of key personnel made since the writing of this AMS) and contingency plans covering actions to be taken in the event of accidents or unforeseen incidents involving or affecting retained trees.

1.6.2 The protocol will be that in the event of any unplanned incursion / accident / spillage within the RPA, the site agent should notify (by telephone) the retained arboricultural consultant immediately. The consultant will provide advice and attend site as soon as possible. This may require the stoppage of all or part of the works in the vicinity of the tree. The consultant will notify the LPA Tree Officer of the nature and extent of damage, the mitigation strategy and likely prognosis. The consultant and officer will further liaise as necessary (perhaps meeting on site) until the officer is satisfied that protection measures are again satisfactory.

1.6.3 Landmark Trees are to be retained as Arboricultural Consultants responsible for site monitoring for the duration of the development. As noted above Adam Hollis MSc (Arb) is the key contact, with monitoring occasionally undertaken by Ross Gamblin MArborA (subject to any new staff intake). Site monitoring will be undertaken by a qualified and experienced arboriculturalist at pre-determined and agreed tasks as indicated in Table 1 below and the Checklist in Appendix 3.

Table 1: Site Monitoring Visits

Supervision Visit No:	Details	Action
Visit 1: Pre-Development Site Inspection (S.2.3 of AMS)	• To include construction Site Agent briefing (S.1.5). • To confirm position of protective fencing and that it has been erected in accordance with AMS (S.2.2 and Tree Protection Plan in Appendix 4); • To check any pre-demolition/construction ground protection is in place. • To check any tree works have been undertaken in accordance with this AMS (S.2.1. and Appendix 1). • Determine if further tree work is required and seek required permission if necessary. • To check site facilities/access are in accordance with the AMS (S.3.3).	Issue a brief report with findings to Architect, Tree Officer and Main Contractor within 5 days of site supervision visit (Site Monitoring Sheet in Appendix 3).
Visit 2: Installation of any new services within RPA (S3.4)	• Attend any excavation within RPA's where arboricultural supervision is prescribed by the AMS to ensure work is undertaken in accordance with NJUG provisions or other specification. • Date to be confirmed following formal project planning. • 2 weeks prior notice required.	As per Visit 1
Visit 3: Demolition of hard surfaces/structures within RPA (Ss 3.5 & 3.6) and Arboricultural supervision of construction within RPA	• Confirm position of any additional temporary ground protection and that temporary ground protection is in accordance with AMS. • Attend any excavation within RPAs where arboricultural supervision is prescribed by the AMS and any other unplanned incursions into the protection areas (subject to Local Authority agreement as noted above). • 2 weeks prior notice required.	As per Visit 1
Ongoing Monitoring Visits	• Periodically during 12 months (or longer) of entire project. • Visits will be based intensity of site operations; once a month is considered reasonable. • To be carried out before, between and after detailed visits 2 and 3 above. • Attend site to confirm protective measures are still in place. Ensure attendance is timed for any other key elements of proposed (and any other unplanned) incursions into the protection areas.	As per Visit 1
Final Site Visit - Completion of construction phase supervision visit (S.5)	After it has been confirmed that the construction phase is complete, allow removal of temporary ground protection and protective fencing. Specify any remedial work if necessary.	Issue a brief report with findings to Architect, Tree Officer and Main Contractor within 5 days of site supervision visit. (Site Monitoring Sheet in Appendix 3). Provide signed arboricultural checklist (see Appendix 3)

1.6.4 The arboriculturalist will arrive at the site, check in at the site office and be safely escorted around the site by the site manager, checking the maintenance of tree protection measures. Routine visits will generally be unannounced. However, the arboriculturalist will also visit subject to advance notification and agreement to supervise any agreed works within the RPA.

1.6.5 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 (and any other unplanned) incursions into the protection areas (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 manager and arboriculturalist.

1.6.6 The checklist in Appendix 3 will be kept by the site manager and copies will be made available to the project arboriculturalist/tree officer to show evidence of site monitoring. Landmark Trees will provide a separate site monitoring sheet where remedial action is required, to be circulated to the client, site manager and the Council's tree officer (see Appendix 3).

1.6.7 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 accordance with BS 3998: 2010 and any other prevailing good professional practice including BS 8545:2014 Trees: from nursery to independence in the landscape - Recommendations.

2.1.2 Specific works recommended to facilitate development are the removal of trees T6, T7, G8, T9 and T11. These specific works to facilitate development and other husbandry works are listed in Appendix 1.

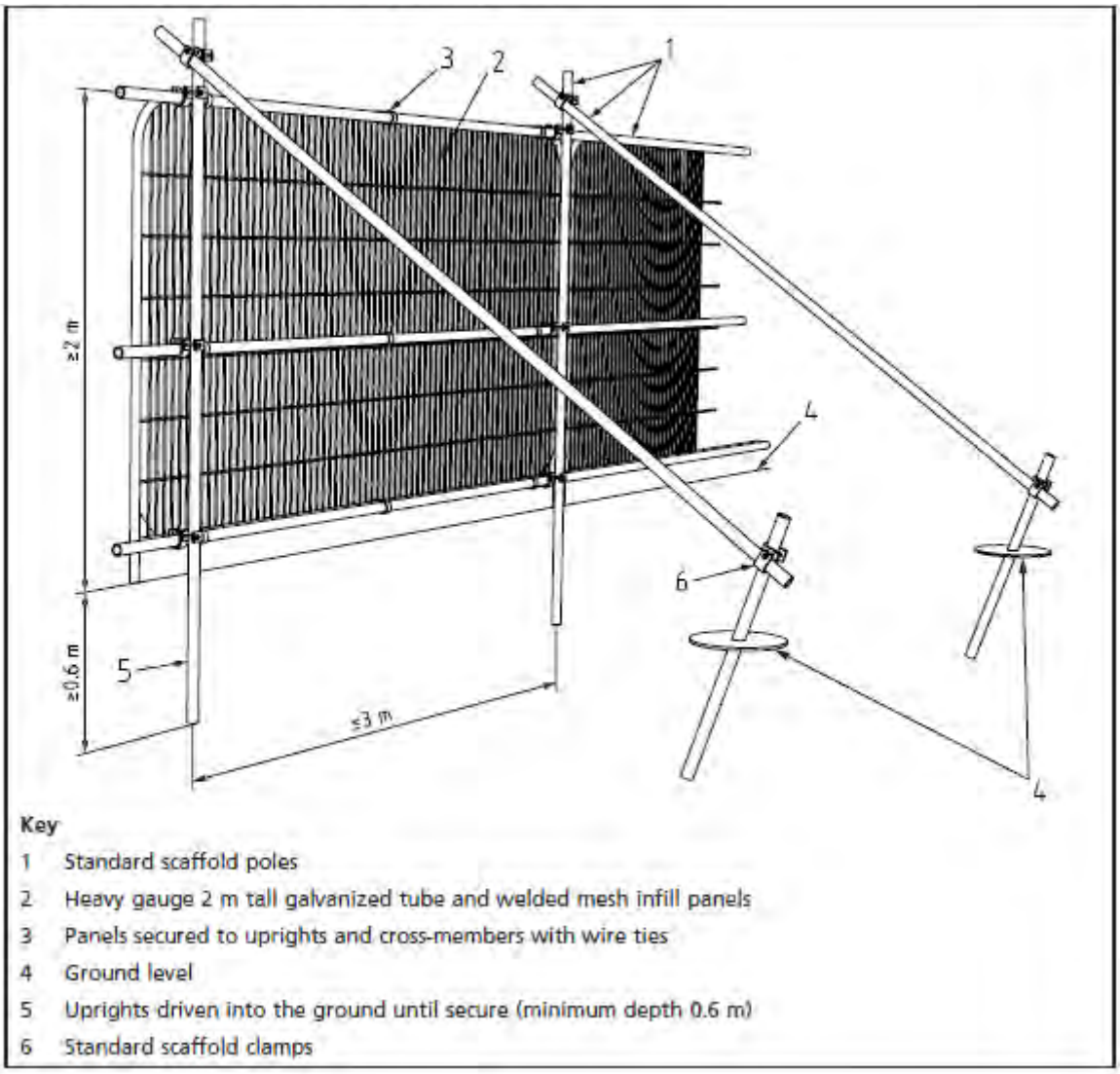
2.2 Installation of Tree Protection Barrier

2.2.1 The Root Protection Area (RPA) indicates the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. The default position is for the RPA's to be fully fenced off to form the boundary of the Construction Exclusion Zone (CEZ), an area based on the RPA, from which access is prohibited for the duration of the project, including the storage of any works materials and equipment.

2.2.2 A Tree Protection Barrier [TPB] comprising steel mesh panels of 2.4m in height ('Heras') shall be erected to protect rear garden trees. These 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). Street trees, T12 & 13 will be separated from the site by the site hoarding across the front boundary, and will also have further self-supporting boxed hoarding, 2.4m in height, around their planting pits to protect against site access collision. This hoarding shall be at least 19mm in thickness, no part of this hoarding may be affixed to the trees themselves.

2.2.3 The TPB's are to be erected before any work (other than tree surgery) 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 a Landmark Trees representative should be informed to enable their presence to oversee the work being carried out.

2.2.4 The location of the RPAs and TPB's are shown in the Tree Protection Plans at Appendix 4.



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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

2.3 Ground Protection

2.3.1 Extant areas of RPA that cannot be fenced off and therefore lie outside the CEZ must be protected with fit-for-purpose ground protection. The location and type of ground protection is shown in the Tree Protection Plans at Appendix 4. As per paragraph 2.2.3, this ground protection is to be installed before any work (other than tree surgery) commences on site, is to remain *'in situ'* undamaged for the duration of all work until the landscape phase and only to be removed once all construction work is completed.

2.3.2 In order to provide a sufficient level of protection to unfenced RPAs, a minimum of 100mm deep concrete will be poured onto the existing surface (to within 0.5m distance from the front of the piling line). The extent of this pour will be defined by shuttering to prevent overspill. Where the existing surface is permeable, a HDPE liner or equivalent will be employed. The scaffold gantry installed in the existing lower ground floor void at the front of the property will be built from a 150mm deep cellular confinement system installed as per paragraph 3.7.8.

2.3.3 This ground protection will remain in situ until the completion of construction works and the site being handed over to specialist landscaping contractors for the no-dig drive replacement. It is imperative that the site manager closely control site access following the removal of this ground protection to avoid the compaction of soil. It is ESSENTIAL that a briefing is held with the retained arboriculturalist prior to removal of the ground protection.

3.0 Development Phase

3.1.1 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 hoarding without the approval of an arboriculturist.

3.1.2 The procedures for dealing with variations and incidents are detailed in S1.6, with the routine inspections, unannounced visits and supervisory visits highlighted in Table 1. It is also noted that the arboriculturist shall attend site as required by architect, or site agent, or the LPA; any breaches of tree protection measures will be the subject of a site monitoring report, which will be copied to architect, client and LPA. The site monitoring sheet in Appendix 3 will be used to provide photographic evidence (if required), indicate the remedial action required and timescales for remediation completion. The action in response to incidents will be commensurate with and appropriate to the nature of any such incident. Any breach of the stipulated timescale for remediation will trigger a further monitoring report.

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 4. As much as possible, the RPAs 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. excavation of the basement / lower ground floor, raising levels for new hard landscaping.

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), S 3.5 (changes in grade) and S. 3.6 (demolition of surfaces) and S. 3.7 (construction) will be required.

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 4), making use of the existing driveway/garage and area available within the existing building at ground floor level, use will also be made of a scaffold gantry erected in the lower ground floor lightwell. Storage will additionally take place in the basement as it is excavated.

3.3.2 Pedestrian access will be made through a gate in the site hoarding opposite the front door, with a set of double gates erected in the site hoarding opposite the garage doors for deliveries and materials access to the site. A traffic marshal will be on hand when vehicles are being loaded or unloaded and when accessing or egressing the site. Materials can be unloaded onto protected ground within RPAs and stored throughout the interior of the site away from protected trees.

3.3.3 The existing street trees, London Planes T12 and T13, will be protected from construction traffic with 2.4m high hoarding.

3.3.4 The single residents parking bay in front of the site will be suspended and a small gantry will be built over part of the parking bay to support a small hopper and conveyor for loading lorries e.g. with excavation arisings. The loading bay will be enclosed with sheeting and hoarding. There will be a small covered walkway provided for pedestrians using the Hamilton Terrace footpath.

3.3.5 To ensure the street trees T12 and T13 are adequately protected, the size of the gantry will be restricted and the gantry / hopper will be fully hoarded with ply and polythene to control dust migration.

3.3.6 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 Every effort should be made to ensure that the routing and instillation of services avoid the RPA at the design stage; however, if unavoidable then it may be possible, with written permission from the LPA, to implement the provisions of BS5837 and NJUG VOLUME 4 (e.g. radial trenching and /or mole trenching) under arboricultural supervision.

3.4.2 Further investigation will be undertaken to inform the details of the plant room and associated landscaping features in consultation with the supervising arboriculturalist, and the details shall be agreed with the supervising arboriculturalist and with the written consent of WCC and implemented accordingly.

3.5 Changes in Grade

3.5.1 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 arboriculturalist will be informed if roots are exposed.

3.5.2 If ground levels within the RPA require raising, this will be achieved using a mix of suitable soil and geotextiles (e.g. ArborRaft) with coarse, granular material fill such as pebbles. Hard landscaping finishes to these raised geotextile sections will require permeable paving / joints. The degree of encroachment (>20% of RPA) means that permeable paving surface (e.g. gravel or block paving) is required.

3.5.3 If ground levels need to be marginally altered within the RPA of any tree, prior agreement must be sought from the Tree Preservation Officer and given in writing by the LPA.

3.6 Demolition Measures.

3.6.1 Any existing hard standing within the trees' RPAs will be first broken up with manual power tools and then carefully removed with light plant by a skilled machine operator, either operating outside the RPA, or working from within the existing built structure and hard standing near trees. Soil exposed beneath the structure will not be scraped away but preserved in situ and protected immediately (not tracked over) with replacement ground protection (as per para 3.2.3 and 3.5.2) before the continuance of operations.

3.6.2 Demolition materials and arisings will be conveyed via a ramp through the garage to a skip located at the front of the garage. Skips will be delivered and collected via skip lorry reversing into the drive and loading / unloading the skip just in front of the garage.

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 path of foundations through RPAs (and in particular the path of the basement foundations through the modified RPAs of limes T1 and T5) will be manually excavated to 750mm depth under arboricultural supervision; any roots encountered within the trenches / pits will be cleanly pruned back to an appropriate junction with a sharp pruning saw or secateurs back to a junction. Roots larger than 25mm diameter may only be cut in consultation with an arboriculturalist and the consent of WCC.

3.7.2 Piling will be carried out from lower ground floor level from a piling platform formed with crushed stone which will extend to, but not beyond, the footprint of the contiguous piled wall.

3.7.3 Concrete for piling works will be delivered via $6m^3$ or $8m^3$ concrete trucks which will enter the unloading area and discharge via a chute into an agitator on scaffold gantry above lightwell, concrete will then be fed via pipeline to piling rig as required.

3.7.4 Spoil from the basement excavation will be transported via conveyor belts (excavation conveyor, ramp / garage conveyor, discharge conveyor) and hopper to load into tipper trucks located under the small gantry at set out at 3.3.4.

3.7.5 Given the limited space on site all deliveries will be scheduled. The loading bay in the suspended parking bay provides sufficient space for one vehicle at a time to load or unload – scheduling deliveries and material movements will be carefully controlled in manageable weights and sizes and monitored.

3.7.6 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 sought and if necessary remedial measures such as hosing down the trees will be taken.

3.7.7 Unless specified otherwise, e.g. at para. 3.5.2 above, the replacement paving/hard landscaping will require a no-dig construction technique, either using a cellular confinement system with no fines aggregate for the sub-base or simply building upon the existing sub-base without disturbing the ground below. Choice of construction method will initially depend upon root penetration within the existing sub-grade. The key principle is not to excavate in the presence of roots and to provide a porous surface to promote healthy soil water relations for future root growth. A further consideration in the use of a more expensive cellular confinement system or similar, may be the claimed reduction in risk of possible future slab / surface displacement by roots of trees growing in paved areas.

3.7.8 Method Statement - Sample specifications for no dig hard landscaping within the RPA of retained trees using the Greenfix's Geoweb system (N.B. comparable systems are available from other manufacturers):

i. Remove surface vegetation or treat with suitable herbicide to level – under the supervision of the project Arboriculturist.
ii. Fill any hollows in the exposed ground with no fines 40/20mm clean angular stone.
iii. Place TRP4000 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. Allow adequate drainage as a separation layer between soft subgrade and GEOWEB® infill material
v. Mark out the area to be protected with edging detail e.g. Timber boards / treated railway sleepers or Greenfix Recycled Plastic Edgings
vi. Roll out TRP4000 geotextile to cover the area to be protected
vii. The Greenfix Geoweb® 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:
    - 75mm deep - for Pedestrians, Cycleways and vehicles up to 1.5 tons;
    - 100mm deep - for Cars, 4 Wheel Drives, Vans etc up to 6 tons;
    - 150mm deep - for Fire Tenders, Removal Vehicles and Dust Carts up to 20 to 20 tons;
    - 200mm deep - for construction vehicles, cranes etc up to 40 tons
    - 300mm deep – for extra heavy construction use – cranes, piling rigs etc
viii. It is important to ensure the correct Geoweb cell size and cell depth are specified and installed based on the anticipated pavement loads. These are calculated based on the following criteria:
    1. Traffic type and loading
    2. Frequency of traffic
    3. Subgrade strength (typically CBR, Ev2, Cu or SPT values)
    4. Infill type
    5. Type of surfacing (i.e. tarmac, block paving, grass, gravel pavers etc)
    6. Allowable settlement of the pavement (if necessary)
ix. Insert x 4 equally spaced steel pins along the width of the first panel
x. Expand Geoweb sections over the area to be protected and use temporary stakes orweights to hold sections open to prevent movement during infilling
xi. Pin along the length of the panel and along each side to achieve this
xii. If full panels are not being used, then ensure the cells have been expanded to their full dimension.
xiii. The Geoweb panels can be cut to shape if required with a heavy-duty Stanley Knife

xiv. Connect adjacent sections using ATRA® Keys. Position the sections so the slots are aligned, insert the key, and turn 90 degrees locking the panels together. ATRA® Keys provide a long-term connection that is safer, quicker, and stronger than staples or cable ties. In environmentally protected areas (SSSI in United Kingdom), ATRA® Keys can be used without the requirement for diesel-fuelled compressors

xv. Using 4/ 20mm or 40/20mm clean angular stone to Bs EN 13242 and 12620 (depending on cell depth being used)

xvi. For permeability, infill the fully connected Geoweb system with a well graded, angular stone such as a 4/20mm or 40/20mm clean angular stone.

xvii. Allow 30mm overfill for any settlement of the stone into the cells during installation

xviii. If the area is to be trafficked immediately slightly increase the amount of surcharge overfill to a max 50mm over the Geoweb with 4/20mm or 40/20mm clean angular stone

xix. Consolidate the fill material with conventional plant or non-vibratory plant when required. Fill should be maintained above the Geoweb system by a minimum of 10mm at all times or a permanent wearing course of blocks, porous asphalt or gravel installed.

xx. The Geoweb TRP system can be surfaced with the materials listed below.

Block Paving:

- Place TRP1000 geotextile separation fabric over the filled Geoweb.
- Lay sand / gravel bedding material as per manufacturer's recommendations.
- Place porous / standard blocks as per manufacturer's instructions. (Such as Brett Paving)

Porous and Standard Asphalt:

- Slightly surcharge the Geoweb with 30mm of 4/20mm or 40/20mm clean angular stone.
- Place Base and wearing courses of Asphalt as per manufacturer's instructions.

Resin Bound Gravels:

- Place TRP1000 geotextile separation fabric over the filled Geoweb.
- Lay bound gravel to the required thickness and as per manufacturer's instructions.

3.7.9 For technical data on the Geotextile membrane and the Protectaweb cellular confinement system always refer to the manufactures guidelines for design and implementation. Further technical advice can be gained from the manufacturer:

Greenfix Soil Stabilisation and Erosion Control Specialists
Old Manor Farm Yard
Beckford Road
Ashton-Under-Hill
Evesham
Worcestershire
WR11 7SU
Tel. 01386 881493
www.greenfix.co.uk

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 It is necessary to carry out soil remediation operations within areas of proposed soft landscaping. Within RPAs, this operation will consist of the manual excavation of soil to a minimum depth of 150mm under arboricultural supervision. Roots encountered will be retained and wrapped in hessian kept damp to prevent desiccation until the importation of clean topsoil which will be laid onto a geo-fabric membrane. Where necessary to accommodate existing roots and allow new plantings, this membrane may be cut.

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

3.8.4 The landscape impact of tree losses will be offset by the landscape proposals which will be submitted separately pursuant to conditions 13 and 14. 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:

Table 2: Summary of Proposed Methods

Impact	Mitigation	Reference	Trees Affected
General site access, material storage etc.	Ground and canopy protection to acceptable standards.	Paras 2.2 & 3.3 Tree Protection Plan in Appendix 4	All retained trees
Damage to roots caused by basement foundation excavation within RPA.	Hand digging of top 750mm of basement line through RPAs	Sections 3.7 & 3.8	T1, T5
Damage to roots caused by removal / replacement of hard surfacing	Existing hard surfacing broken up with manual power tools No dig construction for replacement hard surfacing	Sections 3.5, 3.6, 3.7 & 3.8	T1, T5, T12

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.

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: 23 Hamilton Terrace, London NW8 9RE
Date: 03/06/2019

Surveyor(s): Adam Hollis
Ref: SSH/28HMT/AIA

Appendix 1

Recommended Tree Works To Facilitate Development

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
6	Magnolia (M. X soulangiana)	C	5.5	1.5	1422	Fell	Twin-stem (N stem is kinked) Suppressed by nearby T7 To facilitate development
7	Pittosporum	C	8	3.0	1212	Fell	Variegated form To facilitate development
G8	Oak, Holm	C	10	2.0	2	Fell	Leaf blotch. 10yr old planting Clipped as screening of flats To facilitate development
9	Bay, Sweet	C	4.5	1.5	2	Fell	Clipped as topiary specimen To facilitate development
11	Fig	C	6	2.0	2128	Fell	Espalier To facilitate 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 AND ARBORICULTURAL SUPERVISION SIGN OFF CHECKLIST

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

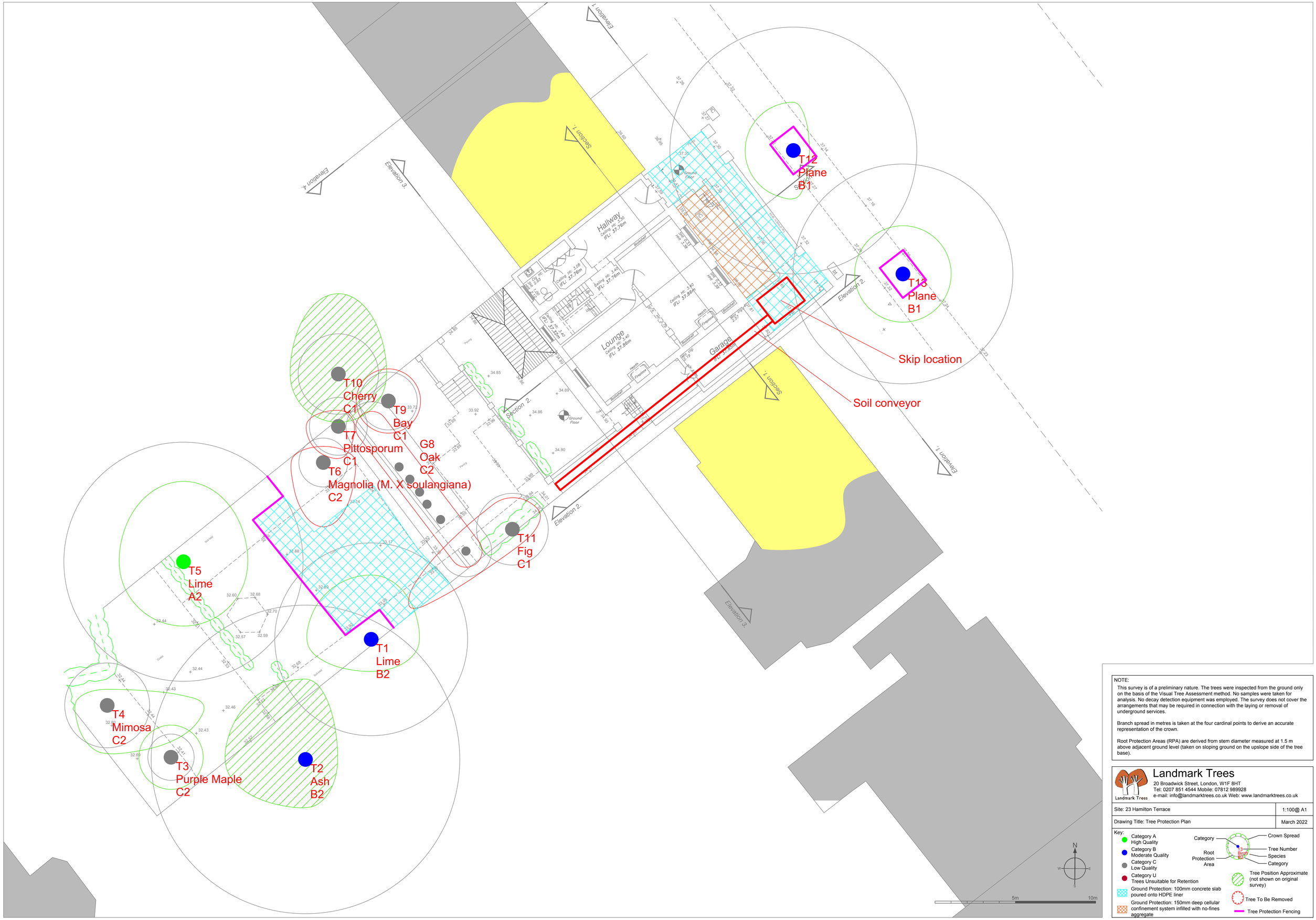
Outcome		
1		
2		
3		
4		

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

Arboricultural Supervision Sign off Checklist

Tree No (s)	Project Phase	Task	Date Completed	Signed (Project arboriculturist)	Signed (Site Manager)
	Pre-commencement	Pre-commencement site meeting to include site manager briefing (S.1.5)			
	Pre-commencement	Confirm the location and specification of the protective measures is in accordance with AMS & Tree Protection Plan (TPP)			
	Pre-commencement	Confirm any tree works have been undertaken in accordance with this AMS (S.2.1/ App 1) and determine if further tree work is required			
	Pre-commencement	Seek required permission for further tree works if necessary.			
	Installation of any new services	Attend any excavation within RPA's where arboricultural supervision is prescribed by the AMS (S3.4) to ensure work is undertaken in accordance with NJUG provisions or other specification.			
	Demolition	Demolition of hard surfaces/ structures within RPA (S3.6) Confirm position of any additional temporary ground protection and that temporary ground protection is in accordance with AMS.			
	Completion of Demolition	Sign off of the demolition phase			
	Construction	Supervised manual excavation of foundations			
	Construction	Installation of 'No Dig' hard surfacing			
	Construction	Additional excavations (if required)			
	Completion of Construction	Completion of construction			
	Post Construction	Removal of machinery and materials from site			
	Post Construction	Dismantle & removal of protective measures			
	Landscaping	Completion of Landscaping			
	Project Completion	Sign off from project arboriculturist			

APPENDIX 4: 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).

Landmark Trees

20 Broadwick Street, London, W1F 8HT
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Site: 23 Hamilton Terrace	1:100@ A1
Drawing Title: Tree Protection Plan	March 2022

Key:

- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category U Trees Unsuitable for Retention
- Ground Protection: 100mm concrete slab poured onto HDPE liner
- Ground Protection: 150mm deep cellular confinement system infilled with no-fines aggregate

Category — Crown Spread
Root Protection Area — Tree Number
Species
Category

- Tree Position Approximate (not shown on original survey)
- Tree To Be Removed
- Tree Protection Fencing