

Tree Protection Barriers

The purpose of tree protection barriers is to keep construction activity away from Restricted Activity Zones or Construction Exclusion Zones. They should be appropriate to the nature and proximity of activity within the site. The barriers should be erected prior to the commencement of all activity including demolition, soil stripping and delivery of materials and demolition (except where existing structures require demolition to enable the barriers to be installed). Barrier systems are specified below and should be installed according to the legend on the Tree Protection Plan.

Ground Protection Measures

Within Restricted Activity Zones, soils containing roots may be subject to compaction due to general construction activity (including pedestrian activity and use of plant machinery). In order to minimise compaction, it is proposed to ensure that a suitable load-spreading surface is in place at all times. Any existing hard surfacing may be retained and reinforced (where applicable and adequate), otherwise suitable new ground protection measures shall be installed. The ground protection shall need to be able to adequately spread the load of construction traffic. Where existing hard surfacing is to be retained, it shall not be necessary to install additional ground protection measures. However, the hard surfacing must be firm enough to spread the load of any traffic passing overhead.

Where only pedestrian traffic will occur, the ground protection measures may be as simple as timber boards or scaffold planks installed directly onto a geotextile fabric on the ground. The ground should first be made even by raking or by adding a few centimetres of sand or woodchip. Alternatively the boards may be supported by a scaffold framework. The scaffold may be founded on poles driven into the ground and/or onto blocks (to raise the scaffold) with additional coupling to make the framework secure.

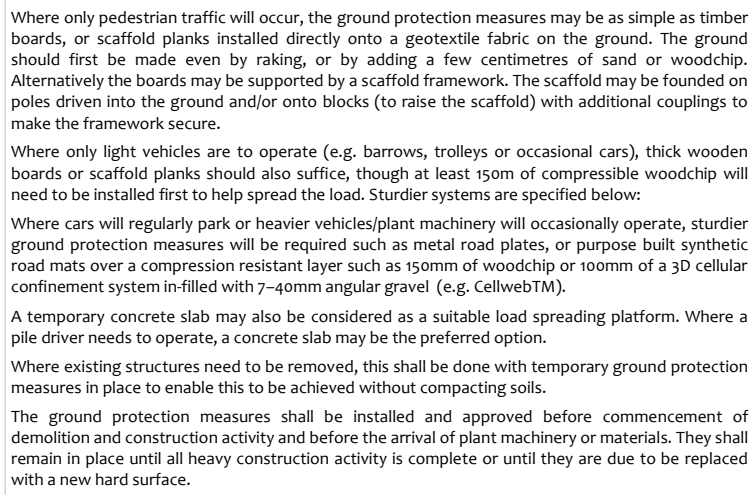
Where only light vehicles are to operate (e.g. barrows, trolleys or occasional cars), thick wooden boards or scaffold planks should also suffice, though at least 15mm of compressible woodchip will need to be installed first to help spread the load. Slender systems are specified below.

Where cars will regularly park or heavier vehicles/plant machinery will occasionally operate, sturdier ground protection measures will be required such as metal road plates, or purpose built synthetic road covers with a compression-resistant layer such as 15mm of woodchip on top of a 30-cm collar confinement system in-filled with 2-40mm angular gravel (e.g. CelwebTM).

A temporary concrete slab may also be considered as a suitable load spreading platform. Where a pile driver needs to operate, a concrete slab may be the preferred option.

Where existing structures need to be removed, this shall be done with temporary ground protection measures in place to enable this to be achieved without compacting soils.

The ground protection measures shall be installed and approved before commencement of demolition and construction activity and before the arrival of plant machinery or materials. They shall remain in place until all heavy construction activity is complete or until they are due to be replaced with a new hard surface.



Timing of Operations

Activity within the site shall be planned according to the following chronology

Order	Phase	Activity
1st.	Pre-Construction Phase	Planning conditions relating to trees to be identified and discussed with the Project arborist and site manager.
2nd.	Pre-Construction Phase	All specified tree removal and pruning to be undertaken (see Header -Tree Works Schedule).
3rd.	Pre-Construction Phase	Install the tree protection barriers (fencing and ground protection boards) - see Headers -Tree Protection Barriers and Ground Protection Measures).
4th.	Pre-Construction Phase	Pre-Commencement site meeting: Tree protection barriers inspected. Additional protection measures to be agreed. Variances to be agreed. Location of underground services to be agreed. Boundary treatments to be agreed. Extents of excavation to be agreed. Scaffold restrictions to be agreed. Exact specification for foundations to be agreed. Scope of future inspections / monitoring to be agreed.
5th.	Pre-Construction Phase	Arboricultural Method Statement to be revised and approved.
Protection measures confirmed acceptable by the local authority		
6th.	Construction Phase	Demolish existing structures and remove existing surfaces where applicable.
7th.	Construction Phase	Install new buildings, hard surfaces and services taking into account restricted activities as specified in this Arboricultural Method Statement.
8th.	Construction Phase	Site meeting with project arborist. Landscaping restrictions to be agreed. Condition of retained trees to be assessed and mitigation agreed. Ground conditions to be assessed and ground remediation to be agreed.
9th.	Post-Construction Phase	Remove protective barriers (fencing and ground protection measures as applicable).
10th.	Post-Construction Phase	Undertake restricted landscaping operations within Root Protection Areas, including (where applicable) boundary treatments, pedestrian surfaces, decking and any proposed tree planting.

Removal of Tree Protection Barriers

Removal of protective fencing or ground protection measures shall be done after all major construction work is complete and their removal has been approved by the appointed arborist.

- Construction Exclusion Zones**
- Within Construction Exclusion Zones the following restrictions shall apply:
- Tree Protection Barriers shall be erected and maintained throughout the entire project as indicated on the Tree Protection Plan and under the header -Tree Protection Barriers.
 - These shall remain in place at all times except when authorised landscaping works are being undertaken. At such times, all restrictions that apply to the Restricted Activity Zone shall apply. Furthermore, the project arborist shall be informed prior to any works being undertaken in these zones.
 - No construction activity or excavation shall occur unless agreed otherwise by the project arborist and local authority.
 - No vehicles or plant machinery shall be driven or parked.
 - No tree works, other than those specified in this report shall be undertaken.
 - No alterations of ground levels or conditions shall occur.
 - No chemicals or cement washings permitted.
 - No temporary structures shall be installed.
 - No spoil shall be stored.
 - No fires shall be permitted.
 - All hazardous materials (including non-essential cement products) shall be forbidden.
 - Removal of hard surfaces, structures or turf shall be done using hand operated tools only and supervised by the project arborist.

Restrictions in Specific Zones

Restricted Activity Zone A

Within this zone trees roots are likely to be present where access will be required to facilitate construction. The following restrictions shall apply:

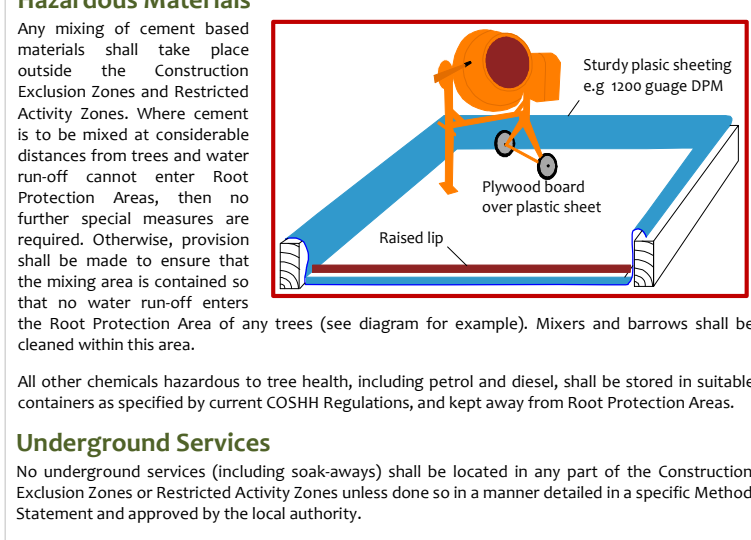
- No vehicles or plant machinery shall park or operate unless a suitable load spreading surface is in place. The load spreading surface shall be installed and maintained as specified under the heading Ground Protection Measures. This shall remain in place throughout the entire construction phase or until any new paved hard surfacing is installed. Any pedestrian activity other than very occasional shall also require a suitable load spreading surface.
- Removal of existing structures such as walls, steps and paved surfaces shall be undertaken using hand tools only. Excavation shall not exceed the depth of the sub-base of these structures.
- Where it is proposed to demolish and remove the shed and garage building, the walls shall be demolished inwards onto the footprint of the structure and carefully removed from the site.
- Where it is proposed to remove the existing surfaces and replace them with other soft landscaping, permeable and/or grit jointed paving, excavation shall not exceed the depth of the existing surface at its sub-base and shall be removed using hand tools only.
- No further excavation shall occur in this zone without consulting the project arborist and obtaining approval from the local authority.
- Except where it is proposed to raise the existing ground levels over a portion of the theoretical RPA of T5, all other existing ground levels shall be retained undisturbed or raised by no more than 150mm. Ground levels may only be raised using granular topsoil (not rich in clay) or where new surfacing is proposed.
- No new permanent or temporary structures shall be erected other than those shown on the planning application documents unless approved by the local authority.
- Underground services shall not be installed in these areas without prior consultation with the project arborist and a methodology agreed and approved by the local authority.
- If roots are encountered in excess of 25mm diameter, they shall be retained wherever possible and protected with damp sacking during times that they are unearthed. Any roots in excess of 50mm that need to be severed shall be pruned with secateurs.
- Storage of materials and spoil shall be avoided unless it has been agreed with the project arborist that the ground protection measures are adequate to ensure no soil compaction or contamination occurs. All hazardous materials (including non-essential cement products) shall be forbidden.
- No fires shall be permitted.
- Vehicles or plant machinery in excess of 2 tonnes shall not be permitted in this area.

General Restrictions - Continued

Hazardous Materials

Any mixing of cement based materials shall take place outside the construction Exclusion Zones and Restricted Activity Zones. Where cement is to be mixed at considerable distances from trees and water run-off cannot enter Root Protection Areas, then non-hazardous measures are required. Otherwise, provision shall be made to ensure that the mixing area is contained so that no water run-off enters the Root Protection Area of any trees (see diagram for example). Mixers and barrows shall be cleaned within this area.

All other chemicals hazardous to tree health, including petrol and diesel, shall be stored in suitable containers as specified by current COSHH Regulations, and kept away from Root Protection Areas.



Restricted Activity Zone B

In this zone foundations are to be installed. In order to minimise the impact on roots it is proposed to utilise the Hand-Side Method. The following restrictions shall apply:

- Excavation shall be overseen by the project arborist.
- Hand tools shall be used during the excavation to a depth of 600mm. Below this depth a carefully marshalled mechanical excavator may be used.
- The excavation shall not extend more than 200mm beyond the footprint of the proposed building walls in the direction of the trees.
- If roots in excess of 25mm diameter are encountered close to the edge of the excavation, they shall be retained wherever possible and protected with damp sacking during times that they are unearthed. Any roots that need to be severed shall be pruned with secateurs.
- If roots in excess of 50mm diameter are encountered they shall be retained intact and the foundations shall bridge over them. The exposed roots shall be adequately shrouded off using timber and a suitable protective packaging material such as damp cloth or polytrene prior to any concrete being cast.
- Any shoring structure shall be designed to prevent any ingress of concrete to within at least 50mm of any root surface. It shall be removed or retained after casting as determined best by the project arborist. Enough room will be left surrounding each root to enable future growth (at least 30mm gap containing loose soil or compressible material).

Underground Services

No underground services (including soak-aways) shall be located in any part of the Construction Exclusion Zones or Restricted Activity Zones unless done so in a manner detailed in this Method Statement and approved by the local authority.

Site Hoarding

If site hoarding shall be installed over the Root Protection Area of any tree, the following restrictions shall apply:

- Ground levels shall be maintained as existing.
- Post holes shall not exceed 300mm x 300mm.
- No post hole shall be excavated within 50m of any tree stem.
- Post holes shall be excavated using hand tools or by a post-hole auger attached to plant machinery sited outside of Root Protection Areas.
- Roots in excess of 25mm shall be retained wherever possible.
- Roots in excess of 50mm shall be pruned with sharp secateurs.
- Pruning shall be minimal and only undertaken where absolutely necessary to facilitate the site hoarding. It shall be undertaken by a reputable tree surgeon working to BS 3998 (2013).
- Site hoarding may be installed in place of the specified tree protection measures subject to the approval of the local authority with regard to its location and specification.

Siting of Cabins

Cabins shall be located outside of Construction Exclusion Zones and Restricted Activity Zones unless agreed otherwise by the project arborist. Where this is being considered, the project arborist shall be consulted and specific tree protection measures agreed. The following general restrictions will apply:

- All services to and from site cabins shall be installed above ground through any Root Protection Areas.
- No excavation shall occur within Root Protection Areas to enable cabins to be installed.
- The cabins shall be founded on a suitable load spreading surface.

Fence Posts or Decking Posts

If permanent fencing or decking is to be installed within Root Protection Areas, the following restrictions shall apply:

- All post holes shall be excavated by hand and kept as narrow as possible (maximum diameter 300mm).
- Exploratory post holes shall be dug before committing to post / panel positions. If any roots in excess of 50mm are encountered they are to remain intact and the post hole shall be relocated slightly. The fencing system must permit such flexibility (i.e. where fixed panel walls are used, all post holes must be excavated before committing to the final location).
- Any roots in excess of 50mm which are severed shall be neatly pruned back with secateurs. This will encourage healing and reduce the likelihood of infection.
- Walls shall be avoided over Root Protection Areas unless their foundations may be spanned over roots using a beam system.
- Hedges may be planted within Root Protection Areas using hand tools to minimise excavation.

General Restrictions - Throughout the Site

Preparatory Works

No demolition, removal of surfaces, or soil stripping shall commence until the protective fencing and ground protection measures are installed to the satisfaction of the local authority.

Fires

No fires shall be permitted beneath any tree canopy or within 5m of any tree stem, branch or foliage. No fires shall be permitted within any Construction Exclusion Zone or Restricted Activity Zone. No fires shall be permitted in the vicinity of any exposed tree roots.

Canopy Protection

In order to protect tree canopies the following restrictions shall apply throughout the site:

- No machinery in excess of 15m shall pass beneath the canopy of any tree without being carefully marshalled in order to ensure that no branches are damaged.
- If materials require installation or delivery beneath tree canopies, this shall be done without the use of overhead cranes.
- If materials are to be installed or delivered close to tree canopies (but not beneath them) and a crane is required, they shall be carefully marshalled in order to ensure that branches are not accidentally damaged.

Storage of Spoil and Materials

Storage of materials and spoil shall be avoided in any Construction Exclusion Zones and Restricted Activity Zones unless it has been agreed with the project arborist that the ground protection measures are adequate to ensure no soil compaction or contamination occurs. All hazardous materials (including non-essential cement products) shall be forbidden.

Tree Works Specification

The following table specifies the tree works which will be required prior to the commencement of construction activity.

Tree Reference	Action Required	Notes
T1	Crown lift to 3m	To improve access in and out of the site for deliveries and waste removal
T4 and three small shrubs	Remove.	Stumps of trees within the RPAs of retained trees shall be removed with a stump grinder NOT a mechanical excavator.
T6	Trim canopy to create a clearance distance from the proposal.	Branches to be pruned back to secondary branch junction or the branch collar wherever possible.
T7	Crown lift to 3m on the side facing the proposal.	Branches to be pruned back to secondary branch junction or the branch collar wherever possible.

Site Monitoring Schedule

Inspection Number*	Attendees	Date**	Purpose of Inspection & Notes
1	Appointed Arborist, Site Manager.	TBC	Pre-commencement inspection and signing off of tree protection barriers including ground protection.
2	Appointed Arborist, Site Manager, Building Contractor, Piling / foundations contractor if different.	TBC	Oversee installation of foundations in Restricted Zone B. Attendance required during excavation of trial holes. Location of piles to be agreed and marked on site. Ground protection measures to be inspected. Methodology of installation to be formally agreed with the contractor. Additional site inspections to be agreed as required. Photographs to be provided daily throughout the installation.
3	Appointed Arborist, Site Manager, Building Contractor.	TBC	Oversee excavation for retaining wall close to T3. Roots to be exposed and piles inserted between. Sand to be backfilled to 100mm above roots before piling cap/beam is cast. Attendance required until the sand is back filled.
n/a	Appointed Arborist, Site Manager, Building Contractor.	Once per month, from commencement to completion of the build.	Tree protection measures to be inspected monthly. Photos and report to be sent to the local authority tree officer.
n/a	Site Manager	Once per month, from commencement to completion of the build.	Photographs of the entire site showing all tree protection measures to be supplied to the appointed arborist. Appointed arborist to forward to the local authority tree officer. To be supplied two weeks after last arborist inspection.

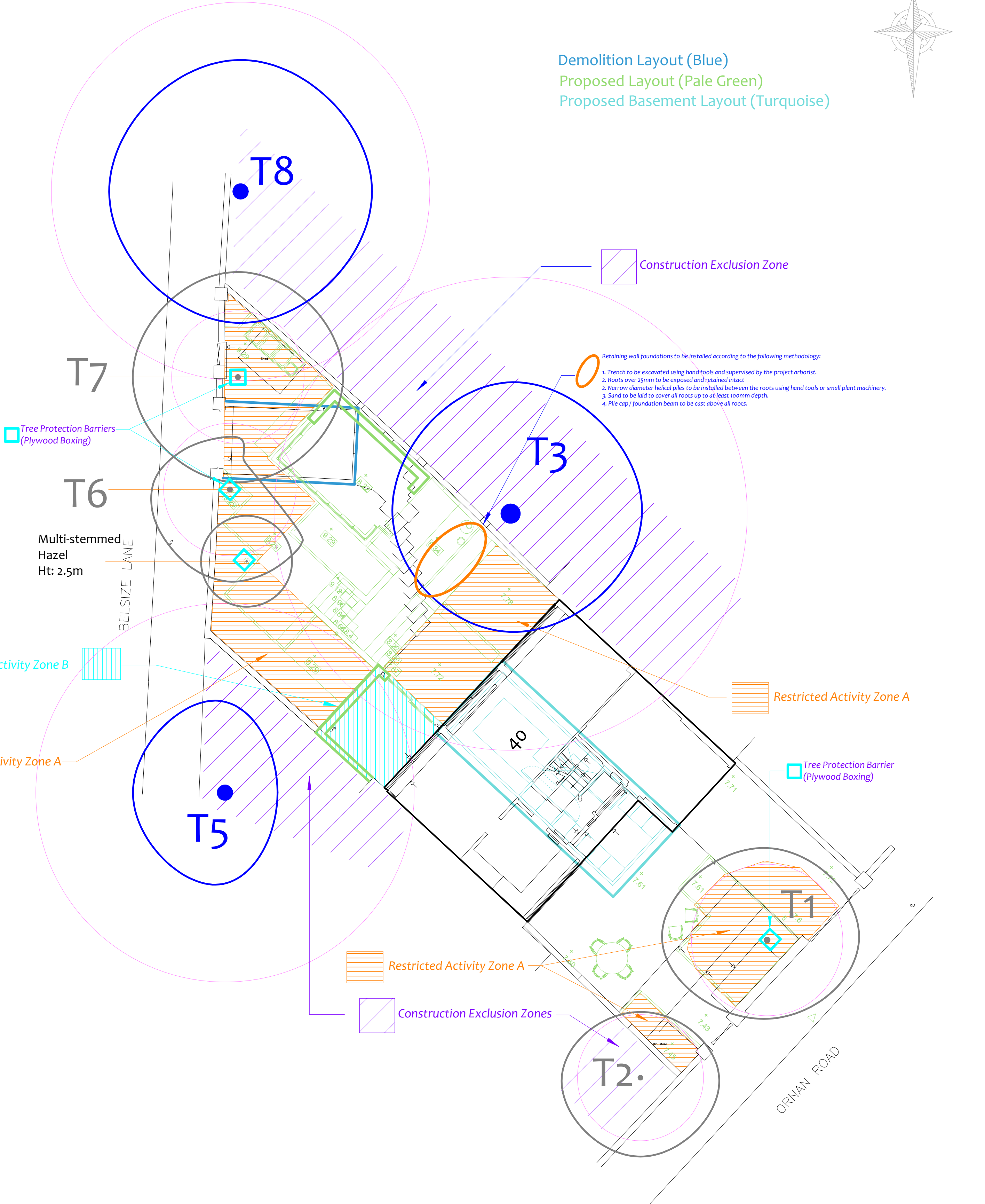
Site Monitoring Accountability

This table should be completed at the Pre-Start Meeting or earlier

Position	Name	Contact Phone & email	Roles
Project Manager	Insert Details	Insert Details	Liaising with site manager & project arborist regarding any potential issues relating to trees. Oversight of this monitoring schedule. Instructing the project arborist and arranging access. Liaising with local authority regarding discharge of planning conditions and variances to the Arboricultural Method Statement.
Site Manager	Insert Details	Insert Details	Familiarity with Arboricultural Method Statement. Implementation of the tree protection measures. Day-to-day compliance with Tree Protection Measures. Informing the Project Manager of Tree Protection variances & issues affecting trees.
Project Arborist	Crown Tree Consultancy 08000 14 13 30 0203 797 7449 info@crowntrees.co.uk	08000 14 13 30 0203 797 7449 info@crowntrees.co.uk	Inspect tree works and report to the project manager. Inspect tree protection measures and report to Project Manager. Oversee excavations in RPAs, provide mitigation advice, undertake root pruning. Monthly site monitoring and reporting to the Project Manager on tree protection and variances.
Local Authority	London Borough of Camden	Nick Bell	Liaising with the project arborist and project manager regarding tree protection issues relating to planning conditions. Advice and assistance with the discharge of planning conditions relating to trees.
Additional Contact	Insert Details	Insert Details	Insert Details
Additional Contact	Insert Details	Insert Details	Insert Details

Tree Data Schedule

Reference	Age & Species	Height (m)	Diameter (cm)	Crown Spread (m)	Notes	Recommendations (development proposals)	Visual Physiological Condition	Amenity Value
T1	Early-Mature Broad-leaved Cockspur Thorn Crataegus x prunifolia.	4	2	24	Position: Situated within the front garden. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects observed.	No action required.	Good	Moderate
T2	Early-Mature Broad-leaved Cockspur Thorn Crataegus x prunifolia.	3.5	2	20	Position: Situated on third party land. Form: Multi-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects observed.	No action required.	Good	Moderate
T3	Mature Ash Fraxinus excelsior.	15	4	75	Position: Situated on third party land. Form: Twin-stemmed at 6m with a balanced crown. History: Multiple pruning wounds due to crown reduction. Defects: Limited inspection, dimensions estimated.	No action required.	Good	Moderate
T4	Young Bay Laurel Laurus nobilis.	3	1.5	8	Form: Single stemmed and vertical with a balanced crown. History: Regularly trimmed. Defects: No significant defects observed.	No action required.	Good	Low
T5	Early-Mature Ash Fraxinus excelsior.	10	5	60	Position: Situated on third party land. Form: Multi-stemmed specimen. History: Multiple pruning wounds due to crown reduction. Defects: No significant defects observed.	No action required.	Good	Moderate
T6	Early-Mature Apple Malus domestica.	3	2	21	Form: Multi-stemmed at 2m with a balanced crown. History: Multiple pruning wounds due to crown reduction. Defects: No significant defects observed. Resting on boundary wall.	No action required.	Good	Low
T7	Semi-Mature Himalayan Birch Betula utilis.	6	2	21	Form: Multi-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects observed.	No action required.	Good	Moderate
T8	Mature Lime Tilia sp.	12	5	60	Position: Situated on third party land. Form: Multi-stemmed at 3.5m with a balanced crown. History: Multiple pruning wounds due to crown reduction. Defects: No significant defects observed.	No action required.	Good	Moderate



- Retaining wall foundations to be installed according to the following methodology:
- Trench to be excavated using hand tools and supervised by the project arborist.
 - Roots over 25mm to be exposed and retained intact.
 - Narrow diameter helical piles to be installed between the roots using hand tools or small plant machinery.
 - Sand to be laid to cover all roots up to at least 100mm depth.
 - Pile cap / foundation beam to be cast above all roots.