

General
This illustrative plan provides information in respect of planning permission 14/12144/FUL (Royal Borough of Kingston) and planning permission 14/0451/FUL (London Borough of Richmond Upon Thames). This illustrative plan is intended to inform the location of protective barriers, other relevant physical protection and highlight precautionary areas for retained trees during the construction phase. This plan should be incorporated into subsequent drawings and contractors method statements and issued for use on site, to ensure that all parties are fully aware of the areas in which access and works may and may not take place.

Site Boundary
Indicative boundary
Ham Common Conservation Area

Site Hoarding
Line of site hoarding within RPA
Tree Preservation Order (RBK and LBRT)

Statutory Designations (trees)
Ham Common Conservation Area
Tree Preservation Order (RBK and LBRT)

Arboricultural Method Statement
The primary purpose of this plan is to aid the preservation of retained trees through setting out the appropriate working practices, construction techniques and tree protection measures that are to be adopted when construction works are undertaken in the proximity of trees. The methodology of this Tree Protection Strategy follows a logical sequence of events. Variations to the sequence could significantly reduce the efficiency of the tree protection measures. This plan should be incorporated into subsequent drawings and method statements used for design purposes or issued for use on site, to ensure that all parties are fully aware of the areas in which access and works may and may not take place.

A summary of tree protection will be provided to all personnel through the Site Induction. This summarises the key precautionary measures and responsibilities of all site personnel to ensure an awareness of trees during site works and that they are successfully protected throughout the site enablement and construction works. It is the responsibility of the Site Manager to ensure that the Tree Protection Plan is implemented on site, maintained during the development process and understood by all site personnel and contractors prior to commencement of works.

Tree Roots - The majority of tree roots are typically concentrated within the top 600mm of soil. Repeat tracking by vehicles, excavation or cement (including crushed) over soft ground near trees is likely to cause root damage. This may have an adverse impact on the trees health and stability. Any tree roots exposed during operations should be treated as once. Exposed roots smaller than 25mm diameter may be pruned back, preferably to a side branch, using proprietary cutting tools. In the event that roots are required to be pruned, sharp cutting tools are to be used to ensure the minimum damage is caused. Clean cuts can result in the redevelopment of fine roots. Poor unidirectional cuts can, however, result in root die back and decay. No roots greater than 25mm are to be pruned without prior agreement with the Project Arboriculturist.

Pre-commencement meeting - A pre-commencement meeting shall be held on site prior to commencement of enabling or construction works. This shall be attended by the Client's Representative, Main Contractor and Project Arboriculturist. The Local Authority Tree Officer will be notified and invited to attend. The methods of tree protection outlined within this statement and revisions for the particular phase shall be fully discussed at the meeting, so that all aspects of their implementation and sequencing are made clear to all parties. Any clarifications or modifications to this statement shall be recorded and circulated to all parties in writing.

Breaches of tree protection & unforeseen events - All damage to protective barriers or accidental damage to trees must be reported to the Site Manager immediately. Works occurring within the vicinity will cease immediately until adequate tree protection measures are rectified. A record of the damage will be made by the Site Manager, if appropriate in consultation with the appointed Project Arboriculturist, remediation measures carried out. In the event of spillage the area is to be secured with sandbags on the line of the tree protection area and measures taken to drain/soak any spillage away from the protected area.

Root Protection Area (RPA)
Preliminary root protection area This is the minimum Root Protection Area (RPA) recommended within British Standards 5837:2012. The RPA is an area (m²) equivalent to a circle with a specified radius. This is the minimum area in m² which should be left undisturbed. All measurements are rounded to the nearest 0.5m.

Tree Protection Barriers - All Type 1 Barriers (see below) are to be erected prior to commencement of any external works on site (including site enablement) and are to be retained throughout the construction process. All Type 2 Barriers (see below) are to be erected prior to commencement of any external works on site (including site enablement) and are to be retained throughout the construction process unless otherwise stated. All barriers are to be fit for purpose. All damage to protective barriers or accidental damage to trees must be reported to the Client's Representative. Works occurring within the vicinity will cease immediately until adequate tree protection measures are rectified. Where appropriate the protection barriers will be aligned with the site hoarding.

Once the barriers have been properly installed and erected in position, the fenced area is to be considered sacrosanct and must not be removed or altered in any way without prior approval from the Project Arboriculturist. If 360-degree excavators or lifts are to be used during construction in close proximity to protective barriers, at no time is the arm to encroach over the position of the tree protection fence. Operation must always be in a way that avoids contact with branches.

All weather tree protection notices are to be fixed to the outside of all tree protection barriers. See Example - Tree Protection Signage.

Tree Protection Barriers Type 1 (To be erected prior to enabling works) - Type 1 Barriers - should consist of a scaffold structure of a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum of 3m and driven into the ground. Onto this, weldmesh panels should be securely fixed with wire or scaffold clamps unless similar fencing is agreed with the Local Planning Authority. See Tree Protection Barriers - Type 1 (extract of Fig 3 BSS5837:2012 - Default specification for protective barrier).

Tree Protection Barriers Type 2 (To be erected prior to enabling works) - Type 2 Barriers - should consist of wellmesh panels on rubber or concrete feet and secured with two anti-tamper couplers installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabilizer stands secured with ground pins unless similar fencing is agreed with the Local Planning Authority. See Default specification for protective barrier (extract of Fig 3 BSS5837:2012).

Tree Protection Barriers Type 2 - Sequential Removal (temporary sequential removal prior to construction within RPA).

Temporary Ground Protection - To be installed within RPA of T92, T96, T114, T120, T103, T104, T1070 Ground Protection to be installed to minimise compaction or root disturbance. This is to be installed immediately following removal of Tree Protection Barriers Type 2 - Sequential Removal and prior to commencement of construction works. Ground protection for pedestrian movements within the RPA will be constructed in the form of a single thickness of scaffold boards placed on top of a 100mm scaffold frame, so as to suspend the walkway.

Exclusion Zone (Construction) - The construction exclusion zone is to remain sacrosanct with storage of materials, machinery or equipment, discharge of chemical substance, cement washings or other materials prohibited. No excavation or changes in land levels are to occur within this area unless agreed in writing by the Local Planning Authority. All personnel using the site including site managers, agents, supervisors, operatives and other relevant personnel are to be informed of the role of the tree protection fences and its importance.

Route of access during construction (Haul Road) - Existing hard surfacing will remain in place to provide ground protection to vehicular traffic. The hard surfacing will be monitored and any deterioration or soft areas treated immediately to provide a load bearing surface as specified by an engineer and in consultation with the Project Arboriculturist such as Evertrackway (www.evertrackway.co.uk).

Removal of existing hard surfacing and re-instatement to soft ground - Existing hard surfacing will remain in place to provide ground protection to vehicular traffic or contractors parking during the development process or until such time agreed with the Project Arboriculturist. Tracking by vehicles is prohibited within soft ground areas of the RPA unless ground protection appropriate to the operation in hand is installed. Appropriate machinery under an arboricultural watching brief will be used to break-up and remove the existing surface and sub-base ensuring that excavation does not encroach within the soft ground below. When the hard surface or foundation will be close to the soil level, the surface should be protected by a 100mm scaffold frame. Any tree roots exposed by such operations should be treated as once. Exposed roots will be wrapped in dry, clean Hessian sacking to prevent desiccation and to protect from rapid temperature changes until the proposed soft ground is re-instated. During re-instatement of soft ground within the RPA all vehicles will be equipped with good quality topsoil (General Purpose Grade) according to BS 3884 and the tree protection barriers re-positioned to protect the soft ground area.

Installation of footpaths and temporary car park
Installation of footpaths and temporary car parking within the RPA will be installed using a 'no dig' construction method i.e. three dimensional cellular confinement system such as Geoweb by Geosynthetics, Geocells by Teram or similar in accordance with the engineers and arboriculturist recommendations and the principles laid out in BSS5837 (2012) 7.4 Permanent hard surfacing within the RPA.

Immediately prior to the footpath or temporary car park being installed, the tree protection barriers (Type 2) - Sequential Removal will be removed to allow access. Adjustment to the alignment of footpath locally may be required to avoid major roots and must not be within 1m of a tree's main stem.

Construction shall ideally be undertaken in dry weather when ground is driest and least prone to compaction. To prevent severe erosion sections in the soil during the process of decomposition, all dead organic material shall be removed. All major professions such as rocks and demolition material shall be removed minimizing ground disturbance. All hollows will be filled with sharp sand. Do not roll or consolidate the area. Edging will then be installed to the depth of the layer profile depth to be constructed. Edging will be formed of Aluminium Edging or tanalised timber edging and secured with Steel securing pins or pegs driven into the ground. Pegs should be long enough to give adequate support during construction. Where kerbs are to be installed, the kerb will sit on top of the cellular confinement system. A permeable separator (geotextile) will then be laid on the soft ground and the cellular confinement system laid on top, opened out and pegged into place. The cellular confinement system will then be filled in accordance with manufacturers' guidelines using clean open graded angular no fines aggregate (normal 4-20 or 4-40 stone) or a reduced fine DOT type 1 sub-base. Single sized, rounded aggregate, DOT Type 1 sub-base or concrete crush shall not be used. The stone shall be tipped at one end of the cellular confinement system and spread so that machinery moves forward on the already filled cellular confinement system and not directly on the untreated or soft ground. The fill will then be lightly compacted with a 3 wheeler plate to ensure binding and avoid rutting. The final surface will be of porous design. Paving slabs or brick pavings should be dry-bedded on the sub-base and joints left unsealed.

For temporary haul roads the construction detail above will be followed except for the substitution of a sacrificial layer of clean graded stone or DOT Type 1 sub-base stone in place of a permanent porous surface. The sacrificial layer will be separated from the cellular confinement system by a permeable textile separator (Geotextile). Where appropriate the final 1m of cells may be filled with concrete to provide a robust run-on or run-off apron to avoid rutting or ruckholes of the cellular confinement system. During use of the haul road, the route will be monitored to ensure that the surface does not erode and is replaced.

Following completion, the entire construction profile will be removed and the site returned to its original status. During removal the principles of tree protection contained within this method statement will be observed and operations carried out under an Arboricultural Watching Brief.

Changes in land levels within RPA
Excavation within the RPA as part of the Approved Plans will be carried out using hand held tools or appropriate machinery and carried out under a watching brief by the Project Arboriculturist.

Prior to commencement of ground works, the line of excavation nearest to the tree will be marked out prior to commencement of works. A trench will be excavated along this line using an air spade and hand held tools and any roots found during excavation will be recorded and severed by a qualified Arboriculturist ensuring that the roots are not ripped or torn. During the excavation, the Project Arboriculturist tests that trees are being stabilised by the pruning, the technical design will be reviewed by an engineer having regard to the recommendations of the BS 5837:2012 and following consultation and agreement with the Local Authority's Tree Officer.

Removal will be carried out sequentially to ensure vehicles work backwards and remain on the undisturbed hard surfacing. Any tree roots exposed by such operations should be treated as once. Exposed roots smaller than 25mm diameter may be pruned back, preferably to a side branch, using proprietary cutting tools. In the event that roots are required to be pruned, sharp cutting tools are to be used to ensure the minimum damage is caused. Clean cuts can result in the redevelopment of fine roots. Poor unidirectional cuts can, however, result in root die back and decay. No roots greater than 25mm are to be pruned without prior agreement with the appointed Project Arboriculturist. At all times the principles of tree protection contained within this method statement will be observed and operations carried out under Arboricultural Monitoring.

Re-surfacing or installation of hard surfacing within previously disturbed areas - existing hard surfacing will remain in place to provide ground protection to vehicular traffic or contractors parking during the development process or until such time agreed with the Project Arboriculturist.

Where installation of hard surfacing is proposed within an area of previously disturbed ground from previous hard standing or roadway, precautionary measures will be observed to minimise further root disturbance. Where hard surfacing remains within the RPA of a retained tree, precautionary measures and care must be observed to minimise potential disturbance of tree roots and the crown.

Re-surfacing or installation of hard surfacing within previously disturbed areas - (cont) existing hard surfacing will remain in place to provide ground protection to vehicular traffic or contractors parking during the development process or until such time agreed with the Project Arboriculturist.

Where installation of hard surfacing is proposed within an area of previously disturbed ground from previous hard standing or roadway, precautionary measures will be observed to minimise further root disturbance. Where hard surfacing remains within the RPA of a retained tree, precautionary measures and care must be observed to minimise potential disturbance of tree roots and the crown.

Tree Works - For location of trees identified for removal or pruning to facilitate demolition see Tree Retention & Removal Plan (TFR13s1/TPP/300) & Tree Works Schedule Plan (TFR13s1/TPW/500). Tree Works during construction shall be phased as follows:

- Following site set-up and setting out, a review of retained trees shall be carried out and additional minor pruning works to facilitate adequate working space or site logistics agreed with the Local Authority Tree Officer.
- Following practical completion, all trees shall be re-inspected and remedial tree works (including deadwood) agreed with the LPA and carried out in accordance with best development requirements.

All tree works are to be carried out in accordance with BS 3998 (2010) Tree work - Recommendations and current good arboricultural practice by a qualified and experienced tree contractor. Prior to commencement of tree works, the responsibilities under the Wildlife & Countryside Act (1981), as amended by the Countryside and Rights of Way Act 2000 must be observed.

No tree works or site clearance shall take place within the bird breeding season (March to August) unless a survey undertaken by a suitably experienced person establishes active nests are absent.

Piling Rigs, Cranes & Booms
Where enabling works or construction is to occur within 2m of the crown extent of any retained tree, protection and precautionary measures must be observed. In addition to the site induction, all vehicles will operate with a bankman to ensure the limit of travel is observed. Where a crane is in operation, the exclusion zone formed by the tree constraints will be programmed into the cranes onboard limiter. These precautionary measures are to be adopted by the contractor and provision made within the contractor method statement.

Piling rigs will operate from outside of the RPA and the direction of approach considered to avoid the tree's crown. Where a piling rig is to be used in close proximity to the tree's crown or within the RPA the smallest practical rig will be used. The location and extent of the piling mat will be suitably considered to avoid 2m depth into the protection barriers or RPA and a geotextile separator layer used. Shearhead piles shall be used to crush and as specified by an engineer to avoid potential toxic effects of concrete.

Utilities & Drainage within the RPA - New services are not anticipated within the RPA of retained trees. Where existing utilities or drainage runs are to be retained within the RPA and require maintenance the appropriate method will be used to ensure the site constraints and the potential impact on the health and stability of the tree. Where feasible new connections will be made outside of the RPA. All services will be installed in accordance with the guidance provided in National Grid Utility Guidance Note Issue 2 dated Nov 07. Provision must be made within the contractor's method statement for tree protection at all stages of installation. No plant machinery will be used within the RPA of retained trees. Prior to commencement of any works in connection with the operation, the line of the trench will be marked out by the Site Manager in agreement with the Project Arboriculturist. The narrowest practical width of trench will be marked. The Tree Protection Barriers will be set back to enable the minimum practical working space required. Ground protection shall then be installed between the barrier and the nearside of the trench and from the far side of the trench to the edge of the RPA. Surface vegetation or existing overburden will then be removed using hand tools. Excavation shall be carried out using a pick or fork to first loose the soil. The tree roots are to be cleared using a compressed air soil pick and the loosened soil removed using hand tools. All excavated material to be re-used shall be protected from excessive drying or wetting during storage. No roots greater than a diameter of 25mm are to be pruned without prior agreement with the appointed Project Arboriculturist or Local Authority representative. In the event that roots are required to be pruned, sharp cutting tools are to be used to ensure the minimum damage is caused. Clean cuts can result in the redevelopment of fine roots. Poor unidirectional cuts can, however, result in root die back and decay. No roots greater than 25mm are to be pruned without prior agreement with the Project Arboriculturist.

Surface vegetation or existing overburden will then be removed using hand tools. Excavation shall be carried out using a pick or fork to first loose the soil. The tree roots are to be cleared using a compressed air soil pick and the loosened soil removed using hand tools. All excavated material to be re-used shall be protected from excessive drying or wetting during storage. No roots greater than a diameter of 25mm are to be pruned without prior agreement with the appointed Project Arboriculturist or Local Authority representative. In the event that roots are required to be pruned, sharp cutting tools are to be used to ensure the minimum damage is caused. Clean cuts can result in the redevelopment of fine roots. Poor unidirectional cuts can, however, result in root die back and decay. No roots greater than 25mm are to be pruned without prior agreement with the Project Arboriculturist.

Installation of fence posts - Posts within the RPA of a retained tree shall be installed using hand tools only in order to minimise root severance/disturbance. The pit shall be positioned to avoid root disturbance/severance of major roots. Roots smaller than 25mm diameter may be pruned back, preferably to a side branch, using proprietary cutting tools. The resultant hole shall be lined with a non porous membrane to protect the soil from potential toxic effects of concrete prior to setting of the post and pouring. Where roots are larger than 25mm in diameter are encountered, the pit shall be backfilled with soil and compacted and a new pit excavated to avoid roots. At all times, the principles of tree protection contained within this method statement.

Landscaping works - All landscaping works, soft and hard, should be carried out as the last process of development. For details of hard and soft landscaping please refer to the Detailed General Arrangement Hard Works Plans and Soft Landscaping Proposals.

All landscaping operations within the RPA of any retained tree will be carried out in accordance with this Method Statement. In particular, tracking of vehicles within the RPA or woodland area will be prohibited to prevent soil compaction unless additional ground protection is installed. Soil grading and disturbance within the tree protective area will be avoided. If cultivation of the soil or making up of levels is required as part of the approved plans, cultivation of the existing soil level must not exceed 50mm depth and must at all times be by hand. Excavation for trees or shrubs must be carried out by hand and not by machine. Any damage to underlying roots, where roots over 25mm are present the roots should be carefully pushed aside or the planting station infilled and a new pit excavated void of roots. Any excavated soil re-profiling required to achieve the finished ground level shall be carried out by hand with good quality topsoil (General Purpose Grade) in accordance with BS 3884. Specification for top-soil and under a watching brief by the Project Arboriculturist.

Tree Works - All tree works are to be agreed with the Local Planning Authority and carried out in accordance with BS 3998 Tree Works - Recommendations (2010). Trees identified for removal, facilitative works or relocation are to be carried out prior to commencement of construction works. All responsibilities under the Wildlife & Countryside Act (1981), as amended by the Countryside and Rights of Way Act 2000 must be observed. Due to the change in land use and development within the RPA of retained trees, it is recommended that an inspection of trees be carried out on grounds of safety and that all recommendations implemented prior to occupancy. All recommendations or precautionary measures made by the Project Ecologist will be adopted by the tree contractor.

Tracking of vehicles within the RPA of retained trees during tree works will be avoided.

All arisings will be removed from site by the tree contractor unless otherwise agreed in writing by the client.

Lift, Crown - The removal and/or tip reduction of lower branches to attain clearance of specified height above ground level (m) on compass profile (i.e. u.s.w.) whilst maintaining the crown shape and form of the species. Tip reduction to be carried out to avoid any risk of growth.

Arisings - parts of a tree, including stem roots, branches, bark, other woody material and foliage, derived from the tree during tree work operations unless otherwise instructed by the Client. Instructions may be issued to retain appropriate timber by discrete locations to form habitat logs.

Phasing and Timing of works - All operations will be complete within the ecological time constraints as specified under the Ecologist. No tree felling works are to take place within the bird nesting season (March to August) unless a survey undertaken by the Project Ecologist establishes that active nests are absent.

Tree Protection and Dismantling of Protection Barriers and Temporary Car Park - In order to implement final surface treatments and landscaping works will be necessary to dismantle the protective barriers. Within tree protection distances, all works will conform to the principles set out within the Arboricultural Method Statement and be carried out under arboricultural supervision. Removal of the temporary car park will be carried out in accordance with the principles provided under Removal of hard surfacing & re-instatement to soft ground. Following removal of the temporary car park or at a time to be agreed with the Project Arboriculturist, the soft ground area will be subject to de-compaction using Teravent system or similar to the crown extents in accordance with the manufacturers recommendations and guidance. Under no circumstances will the soil levels be altered after the protective barriers have been removed.

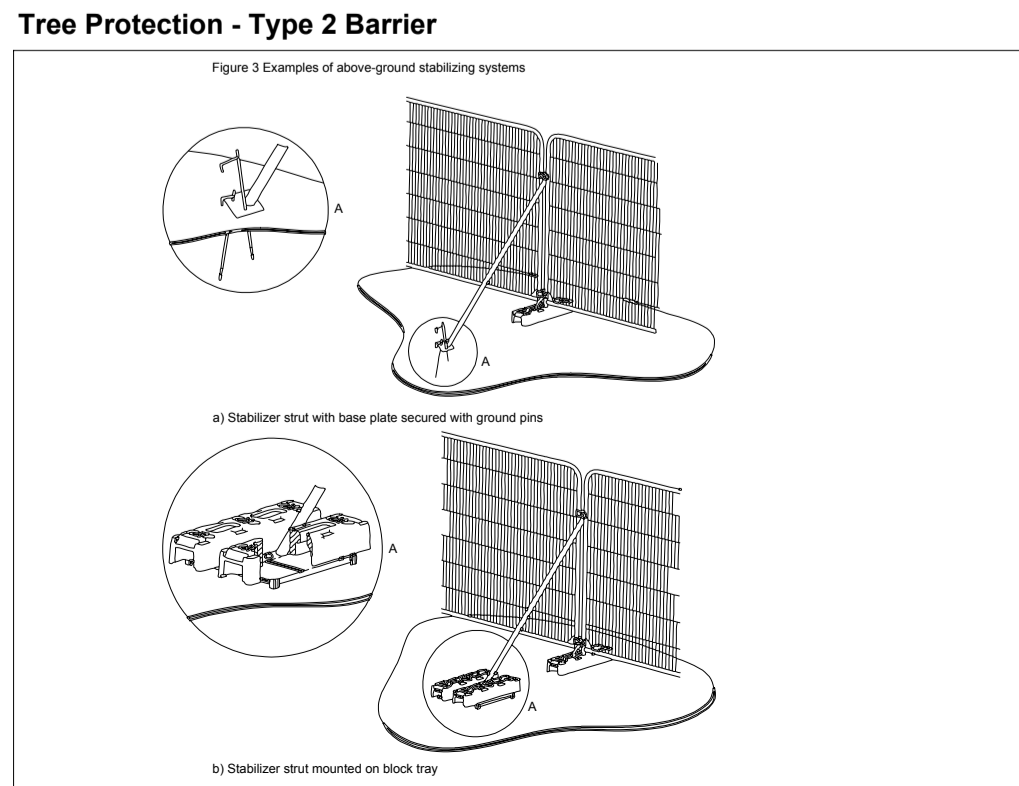
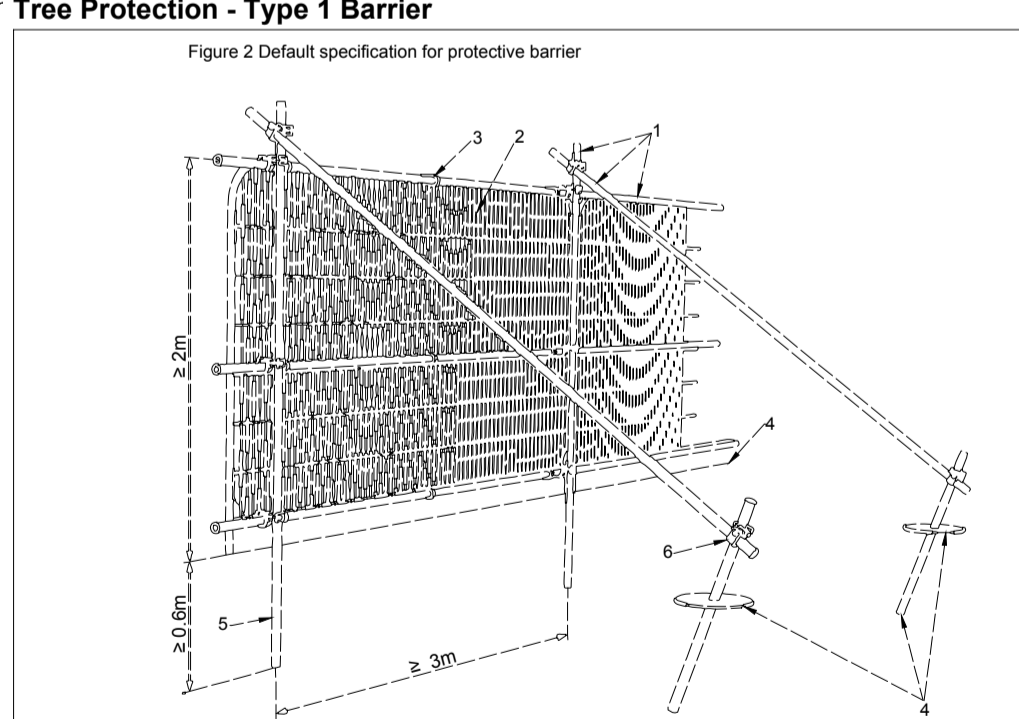
ARBORICULTURAL MONITORING & RECORDING
All close to the crown extents of retained trees will be carried out under an Arboricultural Watching Brief by the Project Arboriculturist.

It is the responsibility of the Client to appoint a Project Arboriculturist and agree the level of monitoring and recording prior to commencement. The frequency of site visits will be determined by the scope of works and complexities of development prior to commencement of each phase. As a minimum, a site visit will be made at the commencement of each phase and within one week of commencement of works on site, following site set-up on a month thereafter unless otherwise agreed. Following completion of each work stage within each phase, the appointed Project Arboriculturist will circulate a report to the Site Manager within two weeks. The reports shall be retained to form an auditable log for inspection by the LPA at such time as is requested. The work stages and associated scope of works for Arboricultural Monitoring forms Table 1 below.

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

TREE PROTECTION AREA
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONSENTATION AND ARE THE SUBJECTS OF A TREE PRESERVATION ORDER. CONTROVERSIAL OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION.
ANY INCLUSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY.

Work stage and scope of arboricultural monitoring	
Work Stage	Scope of watching brief
Pre-commencement meeting	Attend site, discuss and agree method statement and tree protection strategy with Site Manager. Circulate written minutes of meeting including any modifications or clarifications.
Tree Protection Barriers and Ground Protection	On re-location of any protection barriers following demolition: inspect identifying any outstanding works or action required. On completion of any outstanding actions sign off on completion. Report breaches to Site Manager for action.
Root pruning prior to installation of services and drainage	Attend site and discuss Arboricultural Watching Brief
Installation of footpaths, road or removal of hard surfacing. Agreed excavation or soil grading within RPA	Attend site and discuss methodology of works with Site Manager, provide arboricultural watching brief during execution of works. Circulate report to all parties.
Unscheduled works within the RPA or Construction Exclusion Zone	Discuss extent of works with Site Manager and provide appropriate method statement and tree protection. Obtain agreement from Local Authority Representative prior to commencement.
Dismantle tree protection	Attend site and discuss Arboricultural Watching Brief. Sign-off following completion. Circulate report to all parties.
H&S Tree Inspection and Tree Works	Carry out tree survey assessment and agree post construction tree works with LPA.
Tree Works	Attend site with tree contractor and identify trees to be pruned. Following completion identify any outstanding works to be carried out by third party.
Landscaping	Supervision to be carried out by third party.



FACILITATIVE TREE WORKS

Tree No.	Species	Reason for Works	Tree Works
T109	Norway Maple (RBK TPO 2)	To remove damaged branch and minimise future damage to lower branches.	Remove x1 low est branch (damaged) on north east profile. Crown lift north east profile over temporary haul route to provide 4.5m clearance above ground level.

Revisions

No.	Date	Reason	Name
A	16-08-22	amendments to site layout	AR
B	14-12-17	methodology amended to include temporary car park	AR
C	14-12-17	additional temporary car park and tree works	AR
D	31-10-18	additional area of storage and temporary haul route	AR
E	27-11-18	minor amendment to alignment of temporary barriers	AR

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DRAWING TREE PROTECTION & ARBORICULTURAL METHOD STATEMENT - CONSTRUCTION (SHEET 1 of 2)

Scale: 1:500 Date: NOV '17 Drawn: AR

Drawing No. if 913s1/TPP/302 Revision: E

Drawing sheet size - A1
Scale: 1:500