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Arboricultural Impact Assessment

- Tree Survey
- Tree Protection Plan
- Preliminary Arboricultural
Method Statement

At:-

The Mallinson Sports Centre
Bishopswood Road
Highgate
London
N6 4NY

On behalf of:-

Highgate School
North Road
London
N6 4AY

Prepared by:

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Survey Date: 21st February 2025
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Project no: 380.1

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1 BACKGROUND

- 1.1** This Arboricultural Impact Assessment has been instructed by Highgate School to assess the arboricultural impact of the proposed renovation and extension of the Mallinson Sports Centre at Bishopswood Road, Highgate.
- 1.2** Trees were surveyed, with findings shown in the Tree Schedule in Appendix B and shown plotted on the Tree Protection Plan in Appendix A. This also includes tree protection measures, which are specified in the Preliminary Arboricultural Method Statement in section 5 below. The arboricultural impact is assessed in section 6, which assumes that these recommendations are followed.
- 1.3** The Arboricultural Method Statement is only preliminary at this stage. Once planning permission has been granted, a detailed Arboricultural Method Statement will be prepared before work on site starts to include details of drainage, services and contractor's facilities with section drawings through No-Dig areas demonstrating existing and proposed levels.
- 1.4** The tree survey was initially undertaken, and this report has been prepared, by Simon Stephens MA Oxon, Dip Arb (RFS), MArborA, C Env, MICFor a Registered Consultant with the Arboricultural Association, with over 20 years relevant experience. Since the initial tree survey was undertaken, it has been updated by Highgate School Head Gardener, Fred Dukes.

- 1.5 This survey and report have been prepared in accordance with recommendations provided in BS 5837:2012, Trees in relation to design, demolition and construction - Recommendations.
- 1.6 Documentation supplied:
- Topographical Survey
 - SJ Stephens Associates, Tree Constraints Report, dated 19-09-2018
 - Robert Myers Associates: Landscape Masterplan, drawing no 733 01(MP)001 rev P6

2 SURVEY DETAILS AND SCOPE

- 2.1 The site survey included trees and shrubs, within influencing distance of the proposed development, with a stem diameter over 75mm at 1.5m height, located within the area shown on the Tree Protection Plan, included as Appendix A.
- 2.2 Tree inspection took place from ground level with the use of binoculars, sounding hammer and metal probe using the Visual Tree Assessment method (Mattheck & Breloer 1994). The presence and condition of bark and stem wounds, cavities, decay, fungal fruiting bodies and any structural defects that could increase the risk of structural failure were noted.
- 2.3 Tree diameters were measured using a girthing tape and tree heights were measured using a hypsometer. Where use of a tape was restricted by site factors, diameters were estimated, with the diameter recorded in the tree schedule as eg "est 300".
- 2.4 At the time of the surveys, the weather was fine, with no restrictions to visibility. Broadleaf trees were in leaf. There were no limitations to access around the trees.
- 2.5 The suitability of trees for inclusion in the future development was considered, in particular considering the safe useful life expectancy, and sustainability, of trees on the site after development is completed.
- 2.6 Tree details have been added to the plan received, which is included as Appendix A. Tree locations have been taken from the topographical survey provided. Where not included on the topographical survey, they have been determined by measuring distances from features shown on the plan, using a laser measuring device. The following information was recorded for each tree, and is shown in the Tree Schedule included as Appendix B:
- **Number:** an identity number for each tree, prefixed with a "T", which cross references locations shown on the plan with the schedule in Appendix B. Where a number of trees, normally of the same species, are located close together and are similar in character and requirements, they have been treated as a Group under a single Number, prefixed with a "G".

- **Species:** common name.
- **Tree height:** approximate height in metres.
- **Stem diameter:** diameter in millimetres, taken at 1.5m above ground. Where there are a number of stems, stem diameters are recorded in the condition column.
- **Branch spread:** approximate spread in metres to N,S,E and W of the trunk. The approximate branch spread is drawn on the plan.
- **Canopy clearance:** approximate height of the canopy above ground. Where a significant, low lateral branch is present, its height and direction of growth is included in the Condition column.
- **Age class:** Young, Semi-mature, Early mature, Mature, Over-mature, Veteran.
- **Condition:** features that affect the safe useful life expectancy and amenity of the tree, including the presence of decay or any physical defect.
- **Management Recommendations:** recommendations to ensure the health and safety of the tree, within the future development.
- **Estimated Remaining Contribution:** <10 years, 5-15 years, 10-20 years, 15-30 years, 20-40 years, >40 years.
- **Category grading:** tree classification taken from BS 5837:2012, Trees in relation to design, demolition and construction (see Appendix C for details), as follows:
 - Category U: Unsuitable for retention, trees with less than 10 years life expectancy, normally recommended for removal (Red)
 - Category A: high quality trees, able to make a substantial contribution for at least 40 years, normally retained unless there is an over-riding reason for removal and appropriate mitigation. (Green)
 - Category B: moderate quality trees, able to make a significant contribution for at least 20 years, normally retained. (Blue)
 - Category B/C: an intermediate category between categories B and C (not specifically described in BS5837). Trees, which should be retained wherever possible, providing retention does not unreasonably constrain the layout. (Blue)
 - Category C: low quality, in adequate condition to remain for at least 10 years, or young trees <150mm stem diameter. Trees which can be removed to allow the desired layout or new planting. (Grey)

For category A, B and C trees, a subcategory has been allocated, providing information on the reasons for selection of a specific category, as follows:

- Subcategory 1: mainly arboricultural values.
- Subcategory 2: mainly landscape values.
- Subcategory 3: mainly cultural values, including conservation.
- Trees have been classified irrespective of the possible proximity to future construction. The BS 5837 category is colour coded, as indicated above, on the plan included as Appendix A.
- **Protection Distance:** the protection distance in metres required to provide the Root Protection Area recommended in BS 5837, assuming a circular area centred on the tree.

- **Root Protection Area (RPA):** the area in m², as recommended in BS 5837, to provide sufficient rooting area to ensure tree survival and which, in most situations, should be fenced off to prevent root damage from construction activities.

3 SURVEY LIMITATIONS

- 3.1** No internal decay devices, or other invasive tools to assess tree condition, were used.
- 3.2** No soil excavation or root inspection was carried out.
- 3.3** This survey has not considered the effect that trees or vegetation may have on the structural integrity of future building through subsidence or heave.
- 3.4** The tree survey has been undertaken for planning purposes. Although any obvious structural defects have been noted, a Tree Hazard Assessment has not been carried out. Mature trees close to highly populated areas or public highways should normally be checked for safety annually, by a suitably qualified person.

4 LEGAL PROTECTION OF TREES

- 4.1.1** The Haringey District Council website shows that a number of Tree Preservation Orders affect the site, and it also falls within a Conservation Area. The presence of Planning Conditions currently attached to the site, was not checked.
- 4.1.2** Since the site is protected by Tree Preservation Orders and a Conservation Area, no tree surgery works must be undertaken without the approval of the Local Planning Authority.
- 4.1.3** Once planning permission has been granted, provided the application clearly shows any trees to be removed, this overrides protection provided by Tree Preservation Orders or Conservation Areas.

5 PRELIMINARY ARBORICULTURAL METHOD STATEMENT

5.1 Site Overview

- 5.1.1 The proposal is for the renovation, rebuilding and extension of the Mallinson Sports Centre, to be carried out over four separate phases. In addition to works to the sports centre, a “basin” will be created to the east of the sports centre to retain flood water in exceptional conditions.
- 5.1.2 The proposed site plan, along with tree details, is shown on the Tree Protection Plan included as appendix A.
- 5.1.3 There are a mixture of lime, sycamore and oak trees growing around the perimeter of the sports centre site. These are generally in reasonable condition and are providing high amenity value in the locality.
- 5.1.4 The soil on the site is described as a freely draining, loamy soil by the National Soil Resources Institute (NSRI) at Cranfield University. (www.landis.org.uk)

5.2 Tree Work

- 5.2.1 Details of proposed tree works are included in the Tree Schedule included as Appendix B and the implication assessed in section 6.1 below.
- 5.2.2 Tree works can be completed before Tree Protection Fencing is erected, however no contractors plant or vehicles must be allowed to track within the Root Protection Areas unless ground protection panels are laid.
- 5.2.3 All tree work must be undertaken to the standards set out in BS 3998:2010 Tree work – Recommendations.

5.3 Root Protection Areas

- 5.3.1 Root Protection Areas are shown for all trees in the tree schedule attached as Appendix B. They are also shown for all retained trees, as circular areas centred on the trunk, on the Tree Protection Plan attached as Appendix A. This shows the distance from a tree in which all construction activity must normally be excluded, to provide the Root Protection Area as per BS 5837, unless appropriate protection measures are implemented.

- 5.3.2 For tree number T5, T14 and T37-T43, where the road within the Root Protection Areas will have inhibited root growth, the Root Protection Areas have been offset by 20%, away from the road, to more closely reflect the likely actual root spread

5.4 Tree Protection Fencing

- 5.4.1 Tree Protection Fencing must be erected where shown on the Tree Protection Plan, attached as Appendix A. This will provide full protection of the Root Protection Areas of all retained trees, other than for:
- areas hatched in blue on the Tree Protection Plan, where No-Dig Construction must be used, as described in section 5.5 below, to protect underlying roots.
 - areas hatched cyan on the Tree Protection Plan, indicating Ground Protection Areas, where roots must be protected, as described in section 5.6 below.
 - areas cross hatched red on the Tree Protection Plan, where there will be excavation required at the edge of Root Protection Areas, but where hand excavation must be used, as described in section 5.7, to minimise potential root damage.
- 5.4.2 Tree works can be completed before Tree Protection Fencing is erected, however no contractors plant or vehicles must be allowed to track within the Root Protection Areas unless ground protection panels are laid.
- 5.4.3 Around the sports centre site, Tree Protection Fencing must be from weldmesh panels, at least 2m high, securely fixed, with wire or scaffold clamps, to a rigid framework. This framework must be constructed from scaffold tubes with vertical tubes, at a maximum interval of 3m and driven into the ground at least 0.6m. The structure must be well braced to resist impacts, constructed as per Figure 2 of BS5837:2012, which is reproduced in Appendix D.
- 5.4.4 Around the flood basin site, weldmesh panels can be supported on blocks, providing the blocks are pinned to the ground with road pins, or similar, and the panels are braced, as per Figure 3 of BS5837:2012, which is also reproduced in Appendix D.
- 5.4.5 Where alternative locations for Tree Protection Fencing are shown, it must initially be erected where indicated "C" on the Tree Protection Plan while construction work is undertaken, then moved to where indicated "L", for landscape work to be completed.
- 5.4.6 After erection of Tree Protection Fencing and installation of ground protection, 2 days notice must be given to the Local Planning Authority before demolition or construction, including any ground work, starts on site. Tree Protection Fencing must be maintained and retained for the duration of the works, or until such time as agreed in writing with the Local Planning Authority.

5.4.7 Weatherproof notices must be fixed to the Tree Protection Fencing, and maintained, stating:-

TREE PROTECTION AREA

KEEP OUT

TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS
AND TREE PRESERVATION ORDER/ CONSERVATION AREA STATUS

CONTRAVENTION MAY LEAD TO CRIMINAL PROSECUTION

THE FOLLOWING MUST BE OBSERVED BY ALL PERSONS:

- The Protection Fence must not be moved
- No person or machine must enter the area
- No materials or spoil must be deposited
- No excavation must be permitted

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

5.5 No-Dig Construction Areas

5.5.1 The No-Dig areas, shown hatched blue on the Tree Protection Plan included as Appendix A, must be constructed without excavation apart from the removal of turf/organic matter, which must be carried out by hand. Excavators, dumpers and other site traffic must not be allowed to track on the No-Dig areas until roots are protected by the No-Dig surfacing or ground protection.

5.5.2 The No-Dig Construction Areas comprise areas within Root Protection Areas where:-

- new hard surfacing is to be installed
- the new building will be built out over the existing slope and supported on piles, to protect the roots of T1, T2 and T3.

5.5.3 Where new hard surfacing is proposed within the No-Dig areas, engineering details for the new build must avoid localised compaction, using both a two dimensional geogrid, and a three dimensional cellular confinement system as integral components of the sub-base. A typical section is shown on the Tree Protection Plan. As well as being fit for purpose, the design and methodology must protect tree roots, by ensuring the following:-

- topsoil/turf can be removed carefully by hand to a maximum of 75mm, but less if roots are found nearer the surface.
- following leveling with soil or sand, a permeable, non-woven geotextile membrane, must be laid.
- a suitable two dimensional geogrid, such the TriAx Geogrid supplied by Tensar International (www.tensar.co.uk), or the Biaxial Geogrid supplied by Geosynthetics Ltd (www.geosyn.co.uk), must be laid over the entire area and underneath the edging.
- pressure treated timber edging boards, supported by driven stakes must be used.
- a suitable cellular confinement system must then be laid to manufacturers instructions on top of the geogrid. Products that might be considered include Geoweb, supplied by Greenfix (www.greenfix.co.uk) or Cellweb, supplied by Geosynthetics Ltd (www.geosyn.co.uk). The depth of the system must be adequate to take the maximum axle weight, as per manufacturers guidance.

- the cellular confinement system must be filled with clean (no fines), washed angular, 4/20mm or 20/40mm, stone to provide load support, while allowing air and moisture to permeate to the root zone.
- a further permeable, non-woven geotextile membrane, such as TreetexT300, or an alternative approved product which has similar oil trapping qualities, must be laid over the cellular confinement system.
- a porous, surfacing material, free from contaminants, must then be laid. Either sand bedding and block paving, gravel or permeable tarmac would be suitable.
- removed turf/topsoil can be used to grade surrounding ground levels.

5.5.4 A new foyer will replace and extend the existing lobby, as shown on the section details in Appendix H and on the photo in Appendix Eii). The foyer will be constructed on a reinforced concrete slab supported on piles. The level of this slab will be at the same level as the existing slab under the lobby, with the underlying void filled with soil. The ground within the Root Protection Areas of T1, T2 and T3, must be protected, as detailed in section 5.6 below. Trial holes must then be dug at pile locations and locations shifted, if necessary, if any roots over 25mm in diameter, are encountered. Following pile driving, good quality soil, must be placed to bring levels up to where a degradable void former will be installed and the concrete slab laid. This will provide additional rooting areas for the trees and allow gaseous exchange. Full details must be agreed with the contractor and included in the detailed Arboricultural Method Statement submitted for approval by the Local Planning Authority before work on site starts.

5.5.5 Site traffic, including pedestrians, must not be allowed on the No-Dig areas until roots are protected by the No-Dig surfacing, or unless suitable ground protection has been laid. If access is required across No-Dig areas for plant, before the No-Dig surfacing is laid, ground protection panels must be laid. Either Trakmats (supplied by the Marwood Group, www.marwoodgroup.co.uk), Groundtrax panels (see www.groundtrax.com), Ground-Guards, as supplied by Greentek (www.greentek.org.uk), or a similar approved product, must be used, laid on top of a compressible layer of sand or woodchips, laid onto a geotextile. If access is only required for pedestrians, 25mm plywood or side butting scaffold boards can be laid, on top of a compressible layer of sand or woodchips, laid onto a geotextile.

5.5.6 No-Dig construction will result in an increase in levels. This must be fully taken account of in all other aspects of the design.

5.6 Ground Protection Areas

5.6.1 Adjacent to the new buildings, where pedestrian movement and erection of scaffolding will take place within the Root Protection Areas of trees, Ground Protection Areas are shown on the plan. Trakmats, as supplied by either the Marwood Group, (www.marwoodgroup.co.uk) or Ground-Guards, (www.ground-guards.co.uk) or a similar approved product, must be used, laid on a compressible layer of sand or woodchips, laid onto a geotextile, with adjacent panels held together with connectors.

- 5.6.2 The location of the construction access to the basin is shown on the Tree Protection Plan. A cross section for the surfacing for this temporary access is shown on the Tree Protection Plan in appendix A. As well as being fit for purpose, the design and methodology must protect tree roots, by following the following construction methodology:-
- following leveling with soil or sand, a permeable, non-woven geotextile membrane, must be laid.
 - pressure treated timber edging boards, supported by driven stakes must be used.
 - a suitable cellular confinement system must then be laid to manufacturers instructions. Products that might be considered include Geoweb, supplied by Greenfix (www.greenfix.co.uk) or Cellweb, supplied by Geosynthetics Ltd (www.geosyn.co.uk).
 - the cellular confinement system must be filled with clean (no fines), washed angular, 4/20mm or 20/40mm, stone to provide load support, while allowing air and moisture to permeate to the root zone. The depth of the cellular confinement system must be confirmed with the suppliers as being adequate.
 - levels over the culvert can be made up, if required, by laying additional clean stone, or by additional layers of the cellular confinement system filled with stone.

5.7 Hand Dig Area

- 5.7.1 The Hand Dig area, shown cross-hatched red on the Tree Protection Plan, must be dug to formation level by hand, neatly severing any roots found, using secateurs or a hand saw.
- 5.7.2 On no account must use of an excavator be used in the Hand Dig area, which would rip roots and cause unnecessary damage.

5.8 General measures

- 5.8.1 No construction activity whatsoever, including routing of underground services, storage of materials or on-site parking, must be allowed within Root Protection Areas, other than that specifically described above.
- 5.8.2 No mixing or storage of cement, concrete, oil, fuel, bitumen or other chemicals must be permitted within 10m of the trunk of any retained trees, nor in any position where the slope of the ground could lead to contamination of the Root Protection Area.
- 5.8.3 Fires must not be lit in a position where their flames could extend to within 10m of foliage, branches or trunk.
- 5.8.4 Landscape works carried out within Root Protection Areas must be undertaken with great care so as not to damage shallow roots. Tractor mounted rotovators or other heavy mechanical cultivation must not be used within the Root Protection Areas.

- 5.8.5 If any retained tree is removed, uprooted, destroyed or dies, another tree shall be planted at the same place, at a size and species and planted at such time, that must be agreed in writing with the Local Planning Authority.
- 5.8.6 A copy of this report and the Tree Protection Plan must be kept on site and must be fully understood by the Site Agent.

5.9 Bat roosts

- 5.9.1 The current legislation makes it a criminal offence to disturb, damage or destroy any bat roost or hibernation area. Contractors must be reminded of their responsibilities and should contact the relevant authorities if any signs of bats are found.

5.10 Birds

- 5.10.1 The current legislation makes it a criminal offence to disturb nesting birds. The nesting season is generally assumed to be from 1st March to 31st July, however this can vary depending on species and location. During these months a careful inspection must be made before work commences and works must be postponed if active nests are found.

5.11 Woodland Management

- 5.11.1 The woodland to the east of The Orchard site contains some spectacular individual trees along its eastern and southern boundaries, however the central section is in poor condition. Part of the area has been used in the past as a dumping/burning site and the remainder is mostly low grade sycamore with birch and ash at close spacing. Part of the area has been used for storage of grass cuttings for decades, which is suspected of causing toxic levels of nitrogen in the soil which is resulting in the failure of yew trees in the wood. After being unmanaged for many years, this project provides an opportunity to bring it back into management.
- 5.11.2 Approximately 30% of the poorer quality trees will be paint marked for removal to favour better quality trees and to open up areas for new planting. The Tree Officer will be invited to approve the thinning after it is marked, but before felling starts. Native shrubs will be retained but areas of bramble and nettle will be cleared. Smaller diameter material will be chipped with larger deadwood left for deadwood habitat.
- 5.11.3 All open areas will then be planted with a mixture of native broadleaf trees at 3m centres, including oak, sweet chestnut, field maple, hornbeam and small leaved lime. Trees will be interplanted with native shrubs, including hazel, spindle, dogwood, holly and viburnum in blocks of 3-7 of a species at 1m spacing.

- 5.11.4 A five-year maintenance programme must be undertaken, with any failures being replaced each winter.

5.12 Arboricultural Supervision

- 5.12.1 A qualified Arboricultural Consultant must be retained during the period of construction to carry out the following:
- to prepare a detailed Arboricultural Method Statement, to include details of drainage, services, contractors facilities, method of operation for the Cut and Fill of the basin and a cross section through the No-Dig areas showing existing and proposed levels. The Arboricultural Method Statement must be approved by the Local Planning Authority, prior to construction or demolition starting on site.
 - to attend a pre-start meeting with the contractor, project manager and Tree Officer to ensure the Arboricultural Method Statement is fully understood and all elements will be complied with.
 - to paint mark trees for removal.
 - to inspect Tree Protection Fencing and ground protection, prior to each phase of works starting on site.
 - to attend site as the cut and fill of the basin starts to ensure an agreed method of work is being followed.
 - as necessary, to advise on any issues at the request of the local planning authority, the developer, architect or contractor.

The details of each site visit must be recorded using a site visit proforma, with copies circulated to the contractor, developer and the local authority Tree Officer within 3 working days of the visit.

6 ARBORICULTURAL IMPACT ASSESSMENT

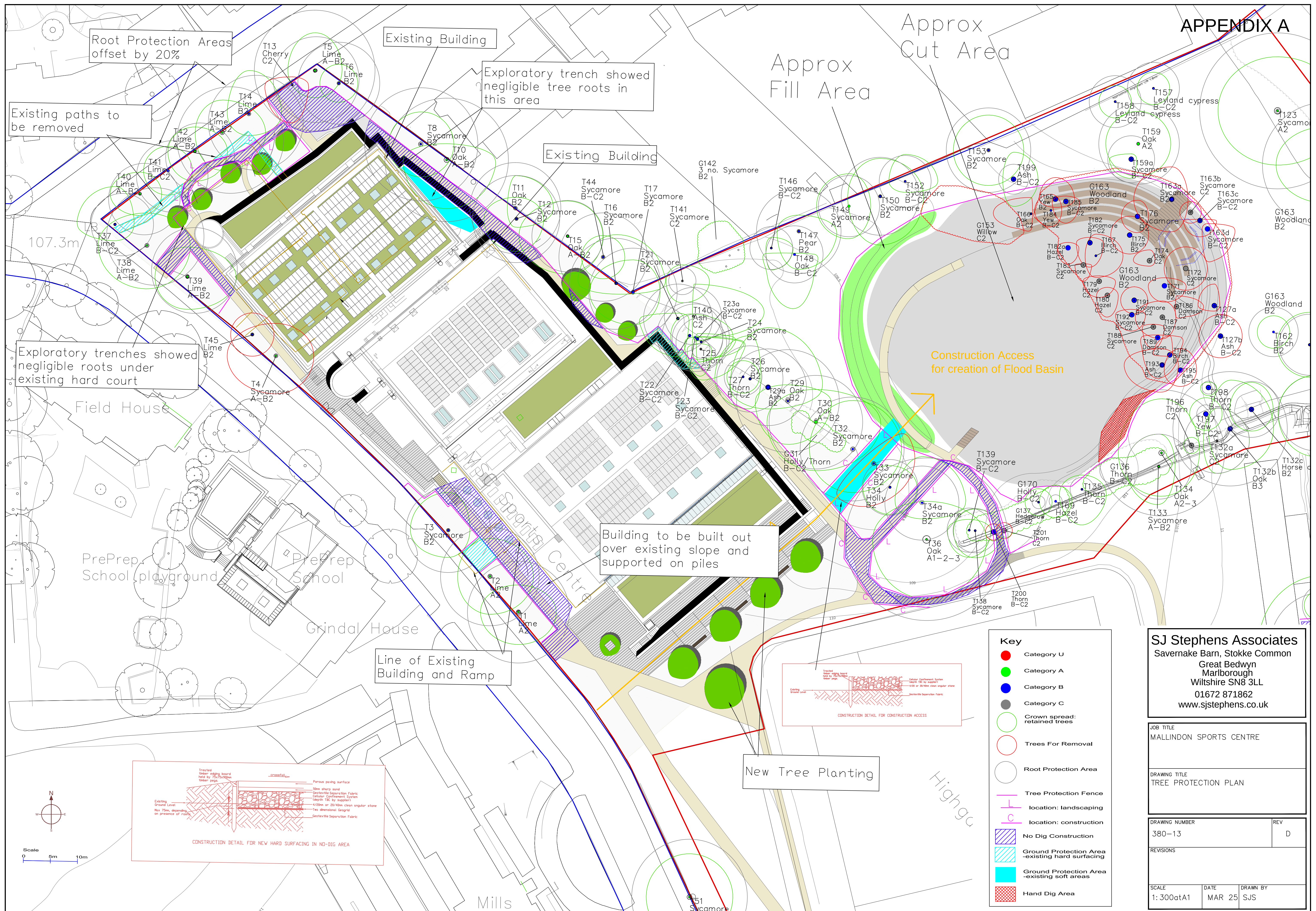
- 6.1 The following three trees, categorised as per BS 5837 (see Appendix C for details), are proposed for removal to carry out the 4 phases of the sports centre construction:
- Category C – low quality:
 - T13 – a 5m, leaning cherry that needs to be removed to allow the new access to be created.
 - Category B – moderate quality:
 - T45 – a 19m lime, showing good form and vigour despite some dieback at branch extremities.
 - Category A-B – good quality:
 - T4 – a 22m lime, which has four main stems from 2-4m, with good crown shape despite some thinning of foliage.
- 6.2 The only trees of any particular landscape significance proposed for removal to carry out the sports centre works are T4 and T45, which are growing alongside Bishopswood Road adjacent to the new sports hall. The new sports hall must be the size proposed to meet various sports standards. It can not be constructed in any other location so for the project to proceed there is no option but to remove these trees. Although four trees will be removed, the details of extensive new tree planting proposed around the new sports centre are shown on the Tree Planting strategy in Appendix G. These include, in particular, seven 10-12m, 35-40cm girth lime trees alongside Bishopswood Road and an “instant” Tulip tree, 90-100cm in girth, which will provide an immediate arboricultural feature set back from the road. The scale of this tree can be seen in the photo provided by the supplier and included in appendix Eiii).
- 6.3 To create a construction access for earthworks for the flood basin, the sycamore, T33, will be removed. As can be seen from the photo in Appendix E, it has been drawn up between T32 and the Holly, T34. There will be little landscape impact from removal of T33, which will allow T32 and T34 to develop.
- 6.4 The following 32 trees, categorized as per BS 5837 (see Appendix C for details), are proposed for removal to construction the new flood basin:
- Category C – low quality: 10 trees (T163b, T172, T174, T179, T180, T183, T186, T187, T188 and T201) and one group(G153)
 - Category B/C – between categories B and C: 17 trees: T127a, T127b, T163c, T163d, T166, T167, T182, T182a, T184, T185, T189, T191, T192, T193, T194, T195 and T200.
 - Category B – moderate quality: 5 trees
 - T33 – an 18m four stemmed sycamore, which needs to be removed to allow construction access to create the basin. The access has been kept out of the Root Protection Area of the veteran oak, T36, and located in this position as, as can be seen in the photo in Appendix G, the canopies of adjacent trees will soon fill the gap left by T33 and there will be little effect on the amenity value of this belt of trees.
 - T163a – an 18m twin stemmed sycamore

- T165 – an 8m yew
- T175 – an 18m birch within the woodland
- T176 – a 15m sycamore

- 6.5** Although 32 trees will be removed for the flood basin, apart from T33, these are all tightly spaced woodland edge trees. In total they comprise approximately 900m², or 0.2 acres of woodland. Loss of this small area will allow a useable space to be created within the basin and will be mitigated by the new woodland planting and woodland management plans for the remainder of the woodland.
- 6.6** Protection measures have been specified to protect the Root Protection Areas of retained trees.
- 6.7** Exploratory trenches were dug in January 2019 to determine the root spread of trees adjacent to the new sports hall with results used to determine the building layout. The location of these trenches is shown on the plan included as Appendix Fvii). The Tree Officer was kept informed of these works and invited to attend site.
- 6.8** Trenches in the south west corner showed that there is very little root growth under the existing netball court, but heavy root growth just outside. The north-west corner of the main building has therefore been kept within the netball court.
- 6.9** A trench was also dug along the north-east edge of the new hall location. This showed significant rooting at the southern end but negligible roots further to the north. Although the sports hall will be within the edge of the Root Protection Areas of T8 and T10, this area is almost entirely within the footprint of the existing building and where the exploratory trench has shown negligible rooting.
- 6.10** Provided the recommendations in this report are followed, the arboricultural impact of this development on tree cover in the area is considered acceptable, with new specimen and woodland tree planting mitigating for necessary tree removals. A detailed Arboricultural Method Statement will be prepared for approval prior to commencement on site and arboricultural supervision will be in place throughout the construction period.

7 REFERENCES

- *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.*
- *BS3998:2010 Tree Work. Recommendations.*
- *NJUG 10: Guidelines for the planning, installation and maintenance of Utility Services in proximity to trees. (Published by the National Joint Utilities Group) Issue 2:16th November 2007.*
- *Mattheck & Breloer (1994). HMSO London. Research of Amenity Trees No4: The Body Language of Trees.*
- *The use of Cellular Confinement systems near Trees: a guide to good practice Arboricultural Association Guidance Note 12.*



Mallinson Sports Centre, Highgate School
**Appendix B
BS 5837: 2012 Tree Schedule**

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect- ion Distance (m)	Root Protect. Area (m2)
				N	S	E	W								
T1	Lime	23	780	5	6	7	7	3.5	Early mature	Good form, structure and vigour, despite minor deadwood at branch extremities. Dead wood recently removed.		>40	A2	9.4	275
T2	Lime	23	760	7	7	8	6	4.5	Early mature	Main stem bifurcates at 3m. Good crown shape and vigour. Canopy growing within 0.6m of building.		>40	A2	9.1	261
T3	Sycamore	19.5	650	7	5	4	7	3.5	Early mature	Main stem bifurcates at 1.9m. Reasonable vigour.		20-40	B2	7.8	191
T4	Sycamore	22	760	6	7	7	9	3.5	Early mature	Four main stems from 2-4m. Attractive crown shape, although some minor thinning of foliage.	Remove to facilitate development	>40	A-B2	9.1	261
T5	Lime	16.5	660	7	5	5	5	2.5	Mature	Crown previously reduced.		>40	A-B2	7.9	197
T6	Lime	14	630	3.5	3.5	3.5	3.5	3.5	Early mature	Branch removed at 2m to east- possible decay site. Bark damage to buttresses. Height reduced.		20-40	B2	7.6	179
T8	Sycamore	17	870	6	6	6	6	4	Mature	Twin stem from 1m - 540 & 680mm. Recent crown reduction. Good crown shape		20-40	B2	10.4	342
T10	Oak	17	est 950	3	9	9	8	3.5	Mature	Major limb to west previously broken out at 3m. Previous crown reduction. Good vigour.		>40	A-B2	11.4	408
T11	Oak	10.5	700	6	3.5	7	1.5	2.5	Mature	Major cavity to main stem.		15-30	B2	8.4	222
T12	Sycamore	14.5	670	4	6	5	6	4.5	Mature	Previous crown reduction. Slight lean to south. Tight fork at 3m. Low branches pruned back from building.		20-40	B2	8.0	203
T13	Cherry	5	210	1.5	7	3	5	1.8	Early mature	Low quality tree - acute lean to south. Bifurcates at 0.5m.	Remove to create new access	10-20	C2	2.5	20
T14	Lime	23	740	8	4	6	4	3.5	Early mature	Tag 020. Main stem bifurcates at 6m - some included bark.		20-40	B2	8.9	248
T15	Oak	13.5	est 550	6.5	7	6.5	9	2.5	Early mature	Growing in adjacent property - base not inspected. Attractive tree. Canopy growing 2.5m from building.		>40	A-B2	6.6	137
T16	Sycamore	14	est 700	9	2	9	7	3	Early mature	Growing in adjacent property - base not inspected. Rampant ivy, now dead. Diameter - 450 and 540mm.		20-40	B2	6.6	137
T17	Sycamore	16.5	680	6	6	5	8	3.5	Early mature	Twin stem from base - 520 & 440mm - tight fork. Cable brace.		20-40	B2	8.2	209
T21	Sycamore	17.5	530	1	7	2	7	5	Early mature	Good vigour. Canopy within 0.5m of roof.		20-40	B2	6.4	127
T22	Sycamore	16.5	510	4	5	8	3.5	4.5	Early mature	Twin stem from base - 310 & 410mm. Leaning to east.		15-30	B-C2	6.1	118
T23	Sycamore	16.5	520	1	3	9	0.5	5	Early mature	Leaning to east. 2 stems - 310 and 420mm - both leaning to east.		15-30	B-C2	6.2	122
T23a	Sycamore	16.5	390	1	4	7	0	5	Early mature	Growing immediately adjacent to T23. Leaning to east.		15-30	B-C2	4.7	69
T24	Sycamore	14.5	390	1	7	8	3	3	Early mature	Slight lean to east.		20-40	B2	4.7	69

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect- ion Distance (m)	Root Protect. Area (m2)
				N	S	E	W								
T25	Thorn	7	140	1	5	2	2.5	2	Early mature	Reasonable vigour.		10-20	C2	1.7	9
T26	Sycamore	17	510	8	5.5	2	6.5	6	Early mature	Good form and structure, but some reduction in vigour.		20-40	B2	6.1	118
T27	Thorn	5	290	3	3	3	3	0.2	Early mature	Approx six stems from base - average 120mm. Providing some screening.		15-30	B-C2	3.5	38
T29	Oak	17	790	3	8	8	6	4	Early mature	Declining vigour. Deadwood recently removed.		15-30	B2	9.5	282
T29a	Ash	17	590	11	4	10	7	2.5	Mature	Leaning to north. Reasonable vigour at present but susceptible to ash dieback disease.		15-30	B2	7.1	157
T30	Oak	19	720	6	9	12	9	3.5	Early mature	Minor deadwood.		>40	A-B2	8.6	234
G31	Holly/Thorn	5 - 6	100 - 150					0.2	Early mature	Unmanaged, gappy hedge. Dense ivy.		15-30	B-C2	1.8	10
T32	Sycamore	19	790	9	8	9	8	3.5	Mature	Main stem bifurcates at 1.9m - some included bark, and again at 2m. Tightly branched canopy. Ivy to mid crown. Moderate vigour.		20-40	B2	9.5	282
T33	Sycamore	19	760	2	7	8	9	3.5	Early mature	Four stems from base - 250, 340, 470, 430mm. Tight forks, but steeply ascending branches. Moderate vigour.	Remove for construction access	20-40	B2	9.1	261
T34	Holly	8	430	4	5	5	5	1.6	Mature	Main stem bifurcates at 1m - 270, 350mm - tight fork. Good vigour.		20-40	B2	5.2	84
T34a	Sycamore	17	580	8.5	3	8	5	3	Early mature	Four stems at 1.5m - 220, 260, 300, 360mm. Branches crossing and rubbing.		15-30	B2	7.0	152
T36	Oak	17.5	1420	7	11	11	10	2.2	Veteran	Fine feature tree. Slight lean to west. Showing good vigour. Occasional minor deadwood.		>40	A1-2-3	15.0	707
T37	Lime	17.5	480	7	3	3.5	7	2	Early mature	Major limb to south removed at 2.5m. Cavity in old branch wound at 2m.		15-30	B-C2	5.8	104
T38	Lime	24	750	6	8	8	9	3	Mature	Main stem bifurcates at 3m - minor deadwood at branch extremities.		>40	A-B2	9.0	254
T39	Lime	22	660	5.5	6	9	6	2.5	Mature	Minor dieback at branch extremities, but good quality tree.		>40	A-B2	7.9	197
T40	Lime	19	550	4	4	4	5.5	2	Mature	Dead branch to east at 8m.		>40	A-B2	6.6	137
T41	Lime	19	550	4.5	4.5	4.5	4.5	2	Mature	Cavity beginning in branch wound at 2m to south.		15-30	B-C2	6.6	137
T42	Lime	19	530	4.5	5.5	6	5	2.5	Mature	Minor deadwood.		>40	A-B2	6.4	127
T43	Lime	23	820	6	7	8	5	3	Mature	Wide spreading tree.		>40	A-B2	9.8	304
T44	Sycamore	16.5	est 680	4	4	4	4	3	Mature	Growing in adjacent property - base not inspected. Becoming engulfed in ivy.		15-30	B-C2	8.2	209

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**Appendix B
BS 5837: 2012 Tree Schedule**

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect- ion Distance (m)	Root Protect. Area (m2)
				N	S	E	W								
T45	Lime	19	630	4	4	4	4	2	Early mature	Showing good vigour, although minor dieback at branch extremities. Base not accessible.	Remove to facilitate development	20-40	B2	7.6	179
T123	Sycamore	24	1200	10	10	12	11	5	Mature	Fine woodland edge tree.		>40	A2	14.4	651
T124	Sycamore	20	960	7	7	9.5	9	5	Mature	Fine woodland edge tree.		>40	A2	11.5	417
T125	Holly	11	470	4	4	7	3	3	Mature	Three stems from base- 190,210,370mm - all leaning to east. Dense ivy		15-30	B-C2	5.6	100
T126	Sycamore	19.5	690	9	7	9	7	3	Mature	Main stem bifurcates at 2.5m cavity at 3m in pruning wound in southern stem.		20-40	B2	8.3	215
T127	Lime	13.5	460	2.5	2.5	2.5	2.5	1.8	Early mature	Previously pollard. Basal wound with underlying decay		10-20	C2	5.5	96
T127a	Ash	18	300	4	1	1	3	4	Early mature	Drawn up. Poorly developed canopy. Reduced vigour.	Remove to construct new flood basin	15-30	B-C2	3.6	41
T127b	Ash	17	300	4	4	4	4	4.5	Early mature	Twin stems from 0.5m - 130 and 270mm. Drawn up. Poor form. Susceptible to disease.	Remove to construct new flood basin	10-20	B-C2	3.6	41
T128	Ash	18	500	7	1	1	7	12	Early mature	Acute lean to north		10-20	C2	6.0	113
T131	Sycamore	15.5	580	7	8	7	7	3.5	Early mature	Three stems- 320, 340,350mm. Attractive tree.		20-40	B2	7.0	152
T132a	Sycamore	16.5	500	6	6.0	6	2.5	3	Early mature	Growing on edge of ditch. Reasonable vigour.		20-40	B2	6.0	113
T132b	Oak	16.5	880	9	7.5	8	4	2.5	Mature	Tag 58. Occasional dead branches, but conservation value.		>40	B3	10.6	350
T132c	Horse chestnut	11.5	430	5	4.0	4	4	1.8	Early mature	Twin stems from 0.7m - 270 and 330mm. Good vigour.		20-40	B2	5.2	84
T133	Sycamore	18	500	6	7	3	6	3.5	Early mature	Good form and structure.		>40	A-B2	6.0	113
T134	Oak	18	970	10	8	7	8	N2, S3.5, E3.5, W5	Mature	Tag 56. Fine tree, showing good vigour. Occasional dead branches.		>40	A2-3	11.6	425
T135	Thorn	5	180	2.5	6.5	4	4	1.7	Mature			15-30	B-C2	2.2	15
G136	Thorn	5-7	200					0.5	Mature	Stem diameter 100-200mm.		15-30	B-C2	2.4	18
G137	Hedgerow	3-6.5	200					0.2	Mature	Stem diameter 75-200mm. Dense hedgerow containing thorn, holly and hazel.		15-30	B-C2	2.4	18
T138	Sycamore	12.5	340	4	5	5	4	3.5	Early mature	Cavity at 1m.		15-30	B-C2	4.1	52
T139	Sycamore	13	340	2	5	4	4	1.8	Early mature	Main stem bifurcates at 2.3m- included bark.		15-30	B-C2	4.1	52

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Appendix B
BS 5837: 2012 Tree Schedule

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect- ion Distnce (m)	Root Protect. Area (m2)
				N	S	E	W								
T140	Ash	16	440	5	5	13	0	4	Mature	Acute lean to east. Feb25: Crown spread reduced. Susceptible to disease.		10-20	C2	5.3	88
T141	Sycamore	11	210	3	4	5	3	1.5	Early mature	Tag 1206. Leaning to east.		10-20	C2	2.5	20
G142	3 no. Sycamore	14 - 17	200 - 420					1.8	Early mature	Growing either side of fence.		20-40	B2	5.0	80
T146	Sycamore	16	330	2	4	4	1	5	Early mature	Dense ivy to upper crown.	Remove section of ivy from base.	15-30	B-C2	4.0	49
T147	Pear	13.5	650	3	7	7	4	2	Mature	Attractive tree. Dense ivy to mid crown.	Remove section of ivy from base.	15-30	B2	7.8	191
T148	Oak	9	440	0	10	4	5.5	2	Early mature	Acute lean to south west.		15-30	B-C2	5.3	88
T149	Sycamore	18	470	6	6	4	6	2.5	Early mature	Good potential.		>40	A2	5.6	100
T150	Sycamore	17.5	600	7	5	9	7	2	Mature	Feb25: Major branch to south broken out and further branch shortened and dead.		15-30	B-C2	7.2	163
T152	Sycamore	15	est 400	5	2	6	3	5	Early mature	Growing outside site- base not inspected. Dense ivy. Slight lean to north.		15-30	B-C2	4.8	72
T153	Sycamore	16	est 650	6.5	6.5	6.5	6.5	3.5	Mature	Growing just outside boundary fence. Twin stems.		20-40	B2	7.8	191
G153	Willow	8 - 14	75 - 250					1.6	Semi-mature	Growing at close spacing - some windblown.	Remove.	10-20	C2	3.0	28
T157	Leyland cypress	13	400	3	3	3	3	2.5	Early mature	Low amenity value.		20-40	B-C2	4.8	72
T158	Leyland cypress	13	400	3	3	3	3	2.5	Early mature	Low amenity value.		20-40	B-C2	4.8	72
T159	Oak	21	620	6	6	6	6	8	Early mature	Tag 767. Fine tree. 12.5m from boundary.		>40	A2	7.4	174
T159a	Sycamore	16.5	360	1	3.5	1	4	4.5	Early mature	Dense ivy to upper canopy.		15-30	B-C2	4.3	59
T162	Birch	18	380	3	3	3	3	9	Mature	Attractive tree.		20-40	B2	4.6	65
G163	Woodland	6-20	450					1	Early mature	Stem diameter 100-450mm. Some fine mature trees around eastern and southern edge, but majority of area with early mature sycamore, with some ash and birch. Few trees of particular individual merit, but as a group providing good amenity and conservation value. Understorey includes holly, blackthorn, hazel and thorn. Woodland edge to west contains mainly hazel, blackthorn and low quality small sycamore.	Remove understorey as necessary to construct flood basin. Thin out approx 30% of poorer quality trees to allow better ones to develop and to open up space for new planting .	20-40	B2	5.4	92

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**Appendix B
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Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect- ion Distance (m)	Root Protect. Area (m2)
				N	S	E	W								
T163a	Sycamore	18	640	6	6	3	7	3	Early mature	Twin stems from 0.3m - 450mm. Dense ivy to 9m. Moderate vigour.	Remove to construct new flood basin	15-30	B2	7.7	185
T163b	Sycamore	17	300	2	2	2	2	9	Early mature	Drawn up.	Remove to construct new flood basin	10-20	C2	3.6	41
T163c	Sycamore	18	410	0	3	3	3	6	Early mature	Drawn up. Dense ivy.	Remove to construct new flood basin	15-30	B-C2	4.9	76
T163d	Sycamore	17	350	1	6	5	1	3.5	Early mature	Slight lean to south east. Drawn up.	Remove to construct new flood basin	15-30	B-C2	4.2	55
T165	Yew	8	320	3	3	2	3	0.5	Early mature	Twin stem from 0.5m- 180,270mm. Reasonable vigour can develop.	Remove to construct new flood basin	>40	B2	3.8	46
T166	Oak	9	300	3	3	0	7	1.7	Early mature	Tag 747. Leaning to west. Main stem doglegs.	Remove to construct new flood basin	15-30	B-C2	3.6	41
T167	Birch	17	350	4	4	5	2	8	Mature	Twin stem from base- 200,290mm. Western stem leaning to north.	Remove to construct new flood basin	15-30	B-C2	4.2	55
T169	Hazel	4.5	100	3	3	3	3	1.2	Mature	Approximately 15 stems from base- average 25mm.		15-30	B-C2	1.2	5
T170	Holly	4	100	2.5	2.5	2.5	2.5	0.5	Early mature	Stem diameter 75-100mm.		15-30	B-C2	1.2	5
T172	Sycamore	15	480	4	4	4	4	9	Early mature	Twin stems from 1.6m-tight fork, with adaptive growth. Possible risk of breakout.	Remove to construct new flood basin	10-20	C2	5.8	104
T174	Oak	10	130	2	1	1	3	2.5	Semi- mature	Dead top.	Remove to construct new flood basin	5-15	C2	1.6	8
T175	Birch	17.5	430	3.5	3.5	3.5	3.5	8.5	Mature	Good form and structure.	Remove to construct new flood basin	20-40	B2	5.2	84
T176	Sycamore	15	240	3	3	2	3	4	Early mature	Good form and structure.	Remove to construct new flood basin	>40	B2	2.9	26
T179	Hazel	4	170	1	3	3	3	0.1	Mature	Approximately 8 stems- average 60mm, together with fresh growth. Dense ivy.	Remove to construct new flood basin	10-20	C2	2.0	13
T180	Hazel	4	150	1.5	4	2	2	0	Mature	Approximately 6 stems- average 60mm- breaking apart. Engulfed in ivy.	Remove to construct new flood basin	10-20	C2	1.8	10
T182	Sycamore	13.5	260	1	4.5	2.5	2.5	2.5	Early mature	Tight fork at 3.5m-.	Remove to construct new flood basin	15-30	B-C2	3.1	31
T182a	Hazel	3	140	1	3	2	2	0	Mature	Approximately 8 stems from base- average 50mm. Dead stem. Dense ivy.	Remove to construct new flood basin	15-30	B-C2	1.7	9
T183	Sycamore	7.5	110	0	3	1.5	1.5	4	Semi- mature	Leaning to south.	Remove to construct new flood basin	20-40	C2	1.3	5
T184	Yew	8	260	4	1.5	3.5	3	2	Early mature	Only moderate vigour.	Remove to construct new flood basin	15-30	B-C2	3.1	31
T185	Sycamore	15	240	1	4	2.5	2.5	8	Early mature	Paint mark 753. Drawn up.	Remove to construct new flood basin	15-30	B-C2	2.9	26

Mallinson Sports Centre, Highgate School
**Appendix B
BS 5837: 2012 Tree Schedule**

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect- ion Distance (m)	Root Protect. Area (m2)
				N	S	E	W								
T186	Damson	7	140	2	2	5	0	1.6	Mature	Acute lean over path.	Remove to construct new flood basin	5-15	C2	1.7	9
T187	Damson	7	210	3	4	2.5	5	1.6	Mature	Three stems from base- average 120mm. Branch broken out. Engulfed in ivy.	Remove to construct new flood basin	5-15	C2	2.5	20
T188	Sycamore	11.5	210	0.5	4	2	2	4	Early mature	Drawn up. Leaning.	Remove to construct new flood basin	10-20	C2	2.5	20
T189	Damson	4	270	0.5	7.5	4.5	3	0.5	Mature	Major stem growing low to south. Poor structure.	Remove to construct new flood basin	15-30	B-C2	3.2	33
T191	Sycamore	13	220	2.5	2.5	2.5	2.5	8	Early mature	Paint mark 1014. Slight lean to north. Drawn up.	Remove to construct new flood basin	15-30	B-C2	2.6	22
T192	Sycamore	10.5	150	1	3	2.5	3	3	Early mature	Stem dog legs at base.	Remove to construct new flood basin	15-30	B-C2	1.8	10
T193	Ash	15	510	3	5	3	7	3	Early mature	Six stems from base-average 210mm. Minor dieback throughout canopy. Dense ivy.	Remove to construct new flood basin	15-30	B-C2	6.1	118
T194	Birch	15.5	230	3.5	0	0.5	3	9	Mature	Drawn up. Leaning to north.	Remove to construct new flood basin	15-30	B-C2	2.8	24
T195	Ash	14	150	4	3	3	3	3.5	Early mature	Ivy to mid crown.	Remove to construct new flood basin	15-30	B-C2	1.8	10
T196	Thorn	3.5	190	1.5	1.5	1.5	1.5	1.5	Mature	Three stems from base- average 110mm. Dying back.		10-20	C2	2.3	16
T197	Yew	4.2	140	3	3	3	3	1	Semi-mature	Twin stems from 1m- both 100mm. Showing good vigour.		>40	B-C2	1.7	9
T198	Thorn	5.5	100	1	1.5	1.5	1.5	1.6	Early mature			15-30	B-C2	1.2	5
T199	Ash	12	230	5	5	4.5	2	2.5	Early mature	Minor deadwood.		15-30	B-C2	2.8	24
T200	Thorn	3.5	240	1.5	1.5	1.5	1.5	1.4	Mature	Engulfed in ivy, but still showing reasonable vigour.	Remove to construct new path	15-30	B-C2	2.9	26
T201	Thorn	3	est 250	1.5	1.5	1.5	1.5	0.5	Mature	Engulfed in ivy. Little live growth.	Remove to construct new path	10-20	C2	3.0	28

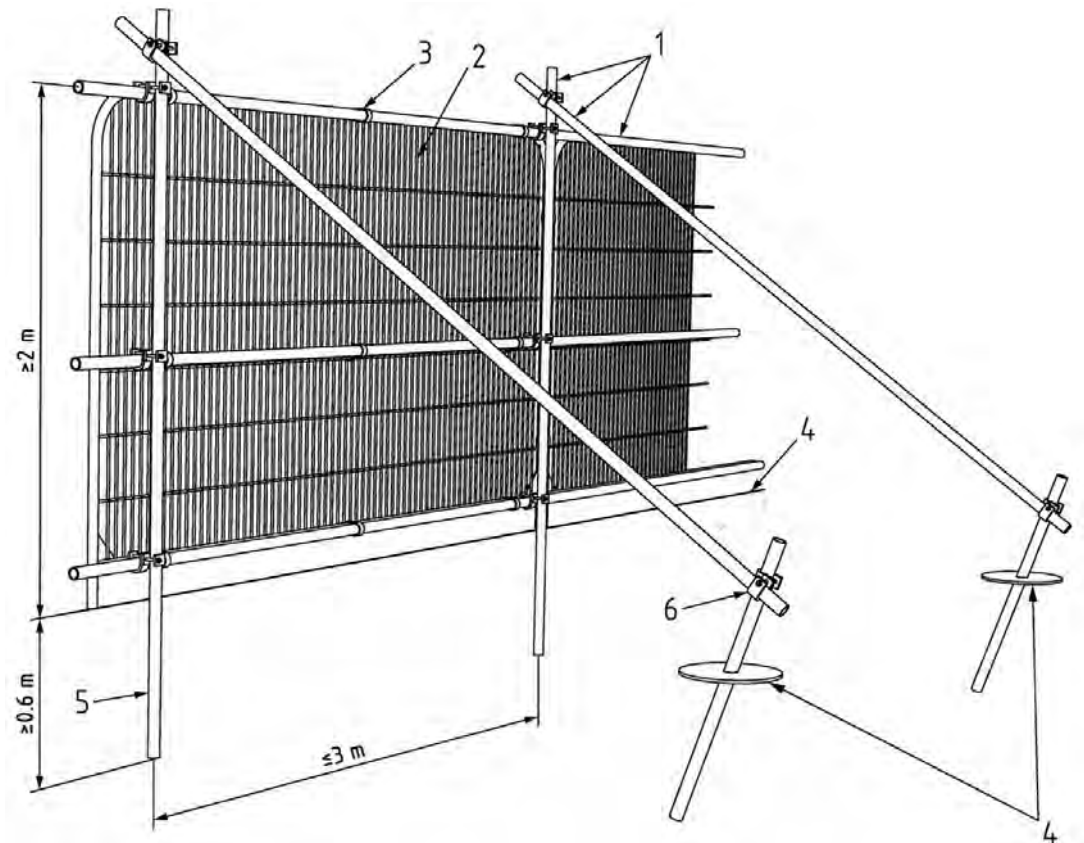
BS 5837:2012, Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

Figure 2

Key

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m galvanised 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



Examples of above-ground stabilising systems

Figure 3a

Stabiliser strut with base plate secured with ground pins

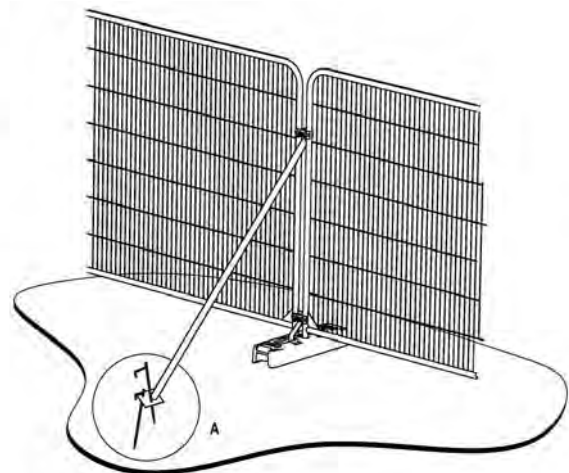
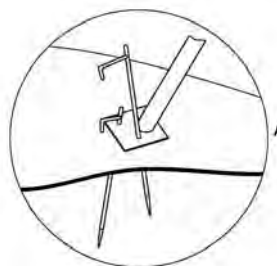
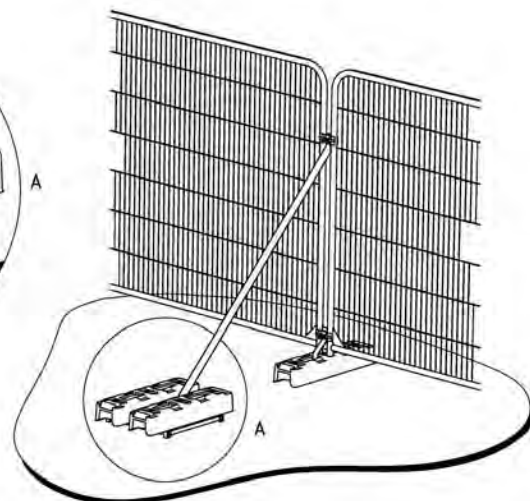
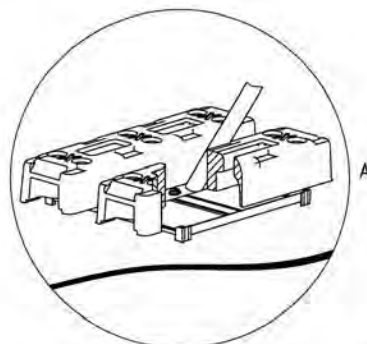
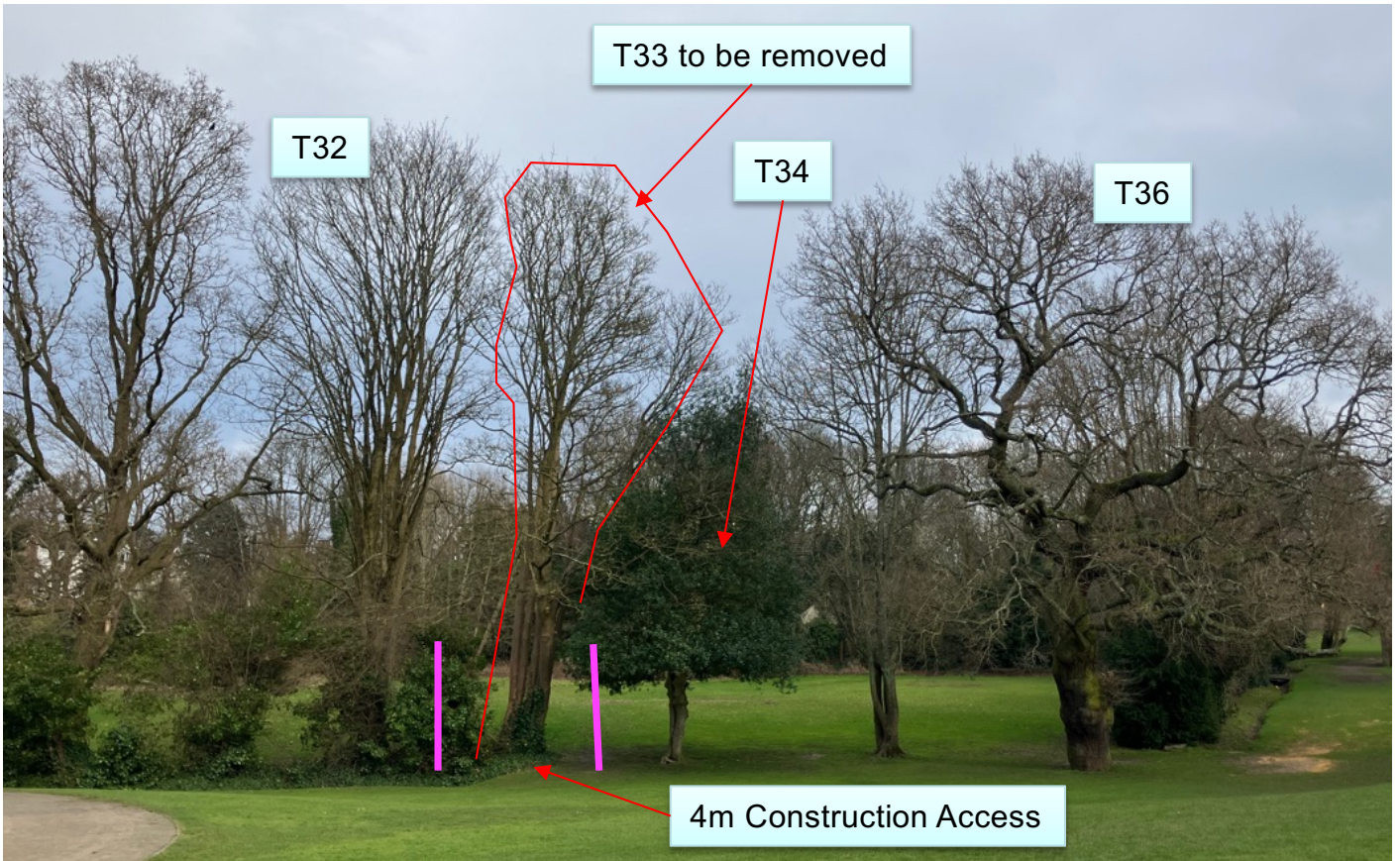


Figure 3b

Stabiliser strut mounted on block tray







(38) *Liriodendron tulipifera* 'Fastigiata' solitair h 1000/1200 w 400/500 ste



Tulip tree to be planted as an Instant arboricultural feature, where shown on the plan in Appendix G

Appendix Fi)



Trench E to B

- 0.9m below asphalt surface
- 60mm asphalt, 200mm sub-base
- very few roots, largest 9mm, approx. 20 others <5mm (some dead)



Trench C to D

- 0.7m below asphalt surface
- 60mm asphalt, 200mm sub-base
- largest root 7mm, approx. 20 others <5mm
- with a mass of roots at C

VERY LITTLE ROOT GROWTH SEEN UNDER THE ASPHALT COURTS, BUT EXTENSIVE ROOT GROWTH JUST OUTSIDE. IF LINE OF EXCAVATION FOR FOUNDATIONS CAN BE KEPT 1m BACK FROM THE EDGE OF THE COURTS THERE WILL BE MINIMAL ROOT DAMAGE

Appendix Fii)



Trench B to F

-dug to 0.8m

- A mass of fibrous roots in top 250mm, then number reducing with depth.
- roots 58mm, 42mm and 13mm
- 6no roots c10mm
- 15no roots 5-10mm
- numerous roots < 5mm

Trench C to F

-dug 0.3m to 0.8m depth

- a mass of fibrous roots in top 250mm, then number reducing with depth.
- roots 12, 13, 20, 22, 28, 30, 35 and 38mm
- 23no roots c10mm
- 34no roots 5-10mm
- numerous roots < 5mm



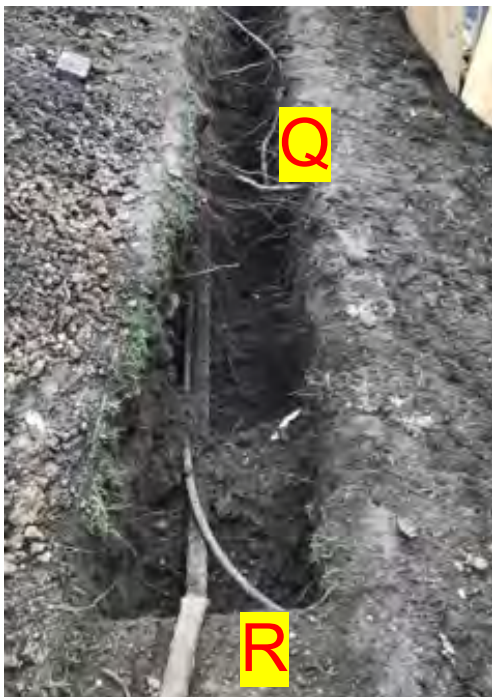
Appendix Fiii)



Trench P to Q

-dug 0.8m to 0.9m depth

- a reasonable number of roots: none of great size
- roots 12, 15, 20, 20 and 26mm
- 3no roots c10mm
- 11no roots 5-10mm
- a reasonable number of roots < 5mm in top 300mm



Trench Q to R

-dug 0.8m to 0.9m depth

- very few roots
- no roots over 10mm
- 2no roots 5-10mm
- a minimal number of roots < 5mm

Appendix F iv)



R to S

- solid concrete 75mm below surface and approx. 250mm deep
- little sign of root growth underneath

Trench S to T

- 300 by 300mm concrete "bridge"
- very minimal root growth
- no roots over 5mm
- minimal roots <5mm

Appendix Fv)



Trench T to U

- dug to 0.9m depth
- very few roots found
- No roots > 10mm
- 3no roots 5-10mm
- approx 20 roots < 5mm



Trench U to V

- dug to 0.3m -0.5m depth when inspected
- fibrous root found, but few larger roots
- no roots > 10mm
- 1no roots 5-10mm
- many roots < 5mm close to surface



Trench V to W

-dug to 0.9m depth, 1 root c5mm. Many small fibrous roots but all <5mm

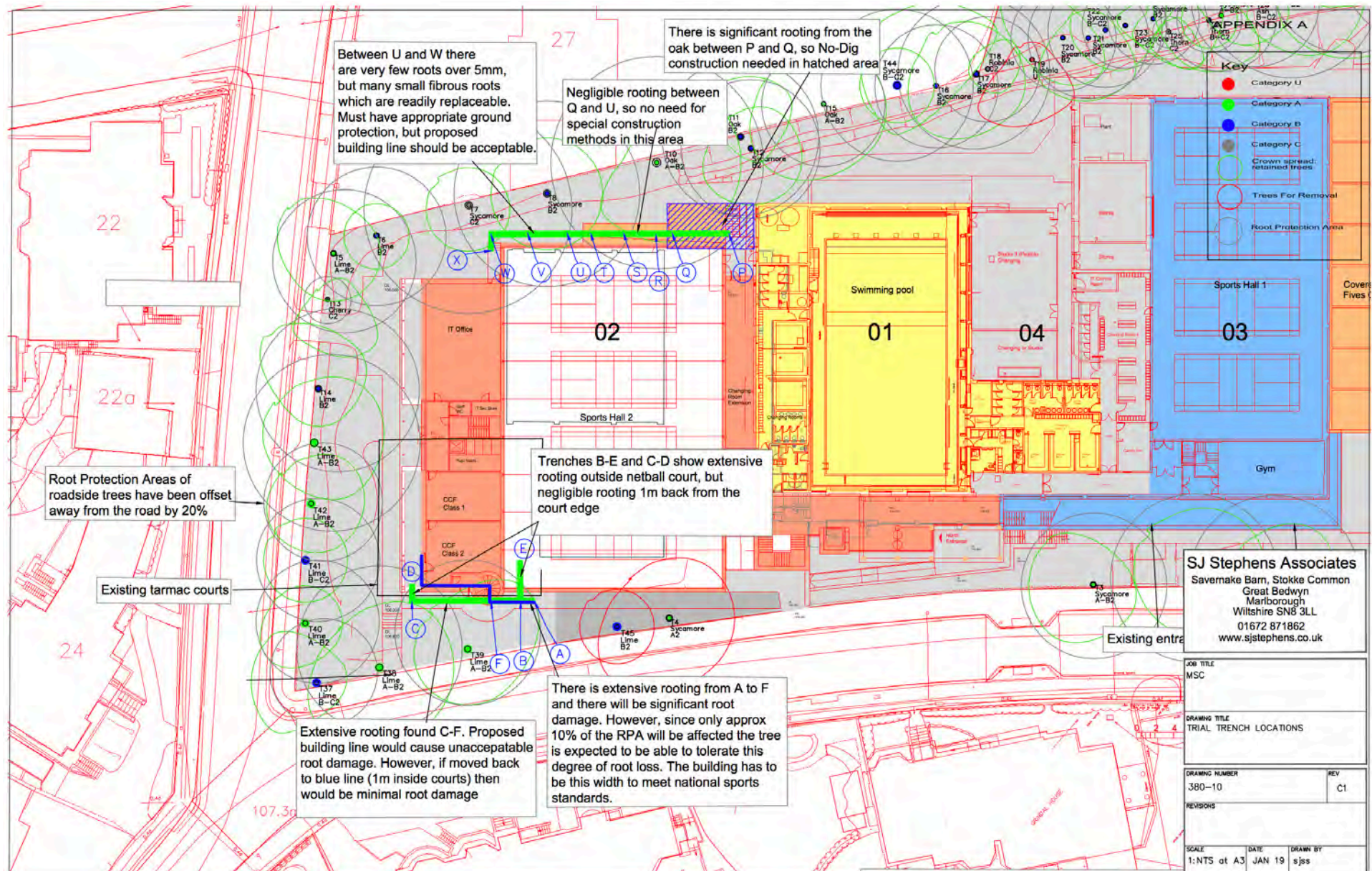


Trench W to X

- dug to 0.9m
- 2no roots c5mm
- fibrous roots < 5mm



At X, burrowed under
playground: almost no roots
Found underneath



06 Planting strategy

TREE PLANTING STRATEGY

TREES



Acer campestre 'Elsrijk'
(20-25cm girth)



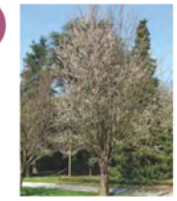
Liriodendron tulipifera
'Fastigiata' (90-100cm
girth, 10-12m height)



Cornus kousa var.
chinensis 'Ikone'



Tilia x euchlora (35-40cm
girth, 10-12m height)



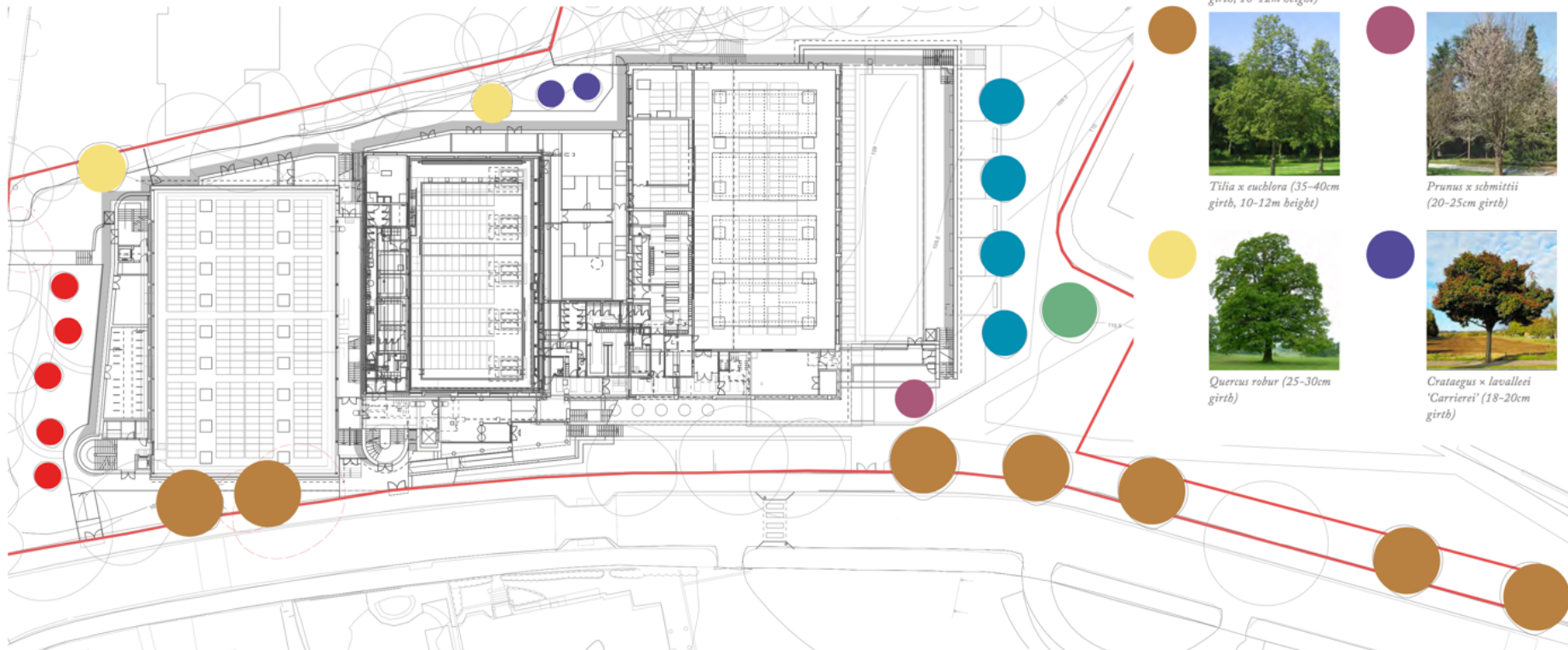
Prunus x schmittii
(20-25cm girth)



Quercus robur (25-30cm
girth)



Crataegus x lavallee
'Carrierei' (18-20cm
girth)



North



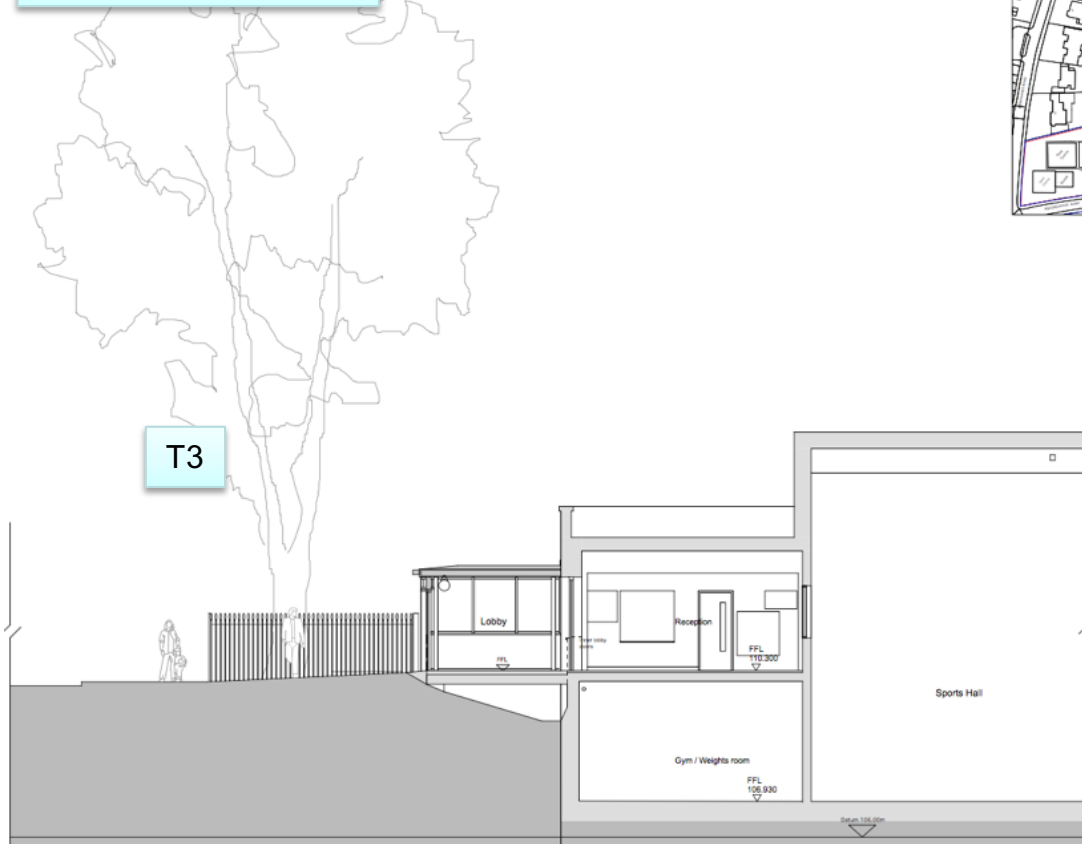
SCALE 1:500 @ A3



Robert Myers Associates

Appendix H

Existing cross section



Proposed cross section

