



SJ Stephens Associates

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Arboricultural Impact Assessment

- Tree Survey
- Tree Protection Plan
- Arboricultural Method Statement

At:-

Far Field Sports Pitches
Hampstead Lane
Highgate
London
N2 0BG

On behalf of:-

Highgate School
North Road
London
N6 4AY

Prepared by:

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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 construction of new synthetic pitches at the Far Field site.
- 1.2** Trees were surveyed, with findings shown in the Tree Schedule in Appendix B and plotted on the Tree Protection Plan in Appendix A. This also shows tree protection measures, which are specified in the Arboricultural Method Statement in section 5 below. The arboricultural impact is assessed in section 6, which assumes that these measures are followed.
- 1.3** The tree survey was 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.
- 1.4** This survey and report have been prepared in accordance with the recommendations of BS 5837:2012, Trees in relation to design, demolition and construction - Recommendations.
- 1.5** Documentation supplied:
 - Topographical Survey
 - SJ Stephens Associates, Tree Constraints Plan, drawing no: 380.3-01revB
 - Hemstock Design, Proposed Site Plan: drawing no 1704-FF-LL-DR-A-10101 revP04

2 SURVEY DETAILS AND SCOPE

- 2.1 The site survey included trees with a stem diameter over 75mm at 1.5m height, as shown located 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 survey, the weather was fine with no restrictions to visibility. Broadleaf trees were not in leaf. There were no limitations to access around the trees.
- 2.5 Tree details are shown on the Tree Protection Plan 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 are located close together and are similar in character and management 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 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 Since the site is within a Conservation Area, six weeks notification must be given to the Local Planning Authority of any intended tree surgery works, to allow them the option of placing a Tree Preservation Order.
- 4.1.2 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 ARBORICULTURAL METHOD STATEMENT

5.1 Site Overview

- 5.1.1 The proposal is for the construction of new synthetic pitches on the existing sports ground. The proposed site plan is included as Appendix E and has been added to the survey drawing, along with tree details, to create the Tree Protection Plan attached as Appendix A.
- 5.1.2 There are trees all around the perimeter of the site which contribute strongly to the amenity of the area. The most common species are sycamore and oak, with a line of mature lime alongside Bishops Avenue and a line of plane trees alongside Hampstead Lane.
- 5.1.3 The existing pitches slope down from the Hampstead Lane side, so a cut and fill will be required, as shown on the plan included in appendix F, cutting a maximum of 1.37m in the south-west corner and filling a maximum of 1.35m in the north-east corner. The cut line for the pitches has been kept outside the Root Protection Areas of trees growing alongside Hampstead Lane.
- 5.1.4 A new path will be formed from Hampstead Lane in the south-east corner of the site, gradually sloping down to pitch level and a hard surfaced spectator area will be created, built up on existing pitches at the base of the bank down from Hampstead Lane.

5.2 Tree Work

- 5.2.1 Details of proposed tree works are included in the Tree Schedule included as Appendix B.
- 5.2.2 Five trees are proposed for removal to improve the remaining tree population, as detailed in section 6.1 below.
- 5.2.3 In addition, tree surgery works have been recommended to improve the safety of a number of trees and to increase the crown clearance over pitches.

- 5.2.4 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 included as Appendix B. They are also shown for all retained trees, as circular areas centred on the trunk, on the Tree Protection Plan included as Appendix A. Where there are physical obstructions to root growth the Root Protection Area should be shown as an equivalent area that is more likely to reflect actual root growth. The Root Protection Area shows the area around a tree in which all construction activity must normally be excluded, unless appropriate protection measures are implemented.
- 5.3.2 Where roads within the Root Protection Area of trees will have inhibited root growth, the Root Protection Area has been offset by 20% away from the road, as indicated on the Tree Protection Plan, 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, included as Appendix A. This will provide full protection of the Root Protection Areas of all retained trees within the site, 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 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 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. Alternatively, 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.
- 5.4.4 Tree Protection Fencing must initially be erected where indicated "E" on the drawing while earthworks works are undertaken, then moved to where indicated "C", before construction starts in each individual area.
- 5.4.5 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.
- 5.4.6 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 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 Engineering details 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 included as Appendix A. 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, 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.

5.5.3 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 required for pedestrians, 25mm plywood or side butting scaffold boards must be laid, on top of a compressible layer of sand or woodchips, laid onto a geotextile.

5.5.4 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 The pitch level will be built up in the Ground Protection Areas in the north-east corner of the site and for the new path down from Hampstead Lane in the south-east corner of the site, where shown hatched cyan on the Tree Protection Plan.
- 5.6.2 A cross section detail is shown on the Tree Protection Plan. Layers of a cellular confinement system (see section 5.5.2 for details) must be used filled with clean angular stone. This must be designed to spread weight, provide the necessary support for the synthetic pitch while allowing water and moisture to percolate to underlying roots.
- 5.6.3 Levels will be built up for the path close to the base of the oak, T44. There must be no increase in existing levels within 0.5m of the tree stem. The detailed design for this has still to be completed and must be approved by the retained arboricultural consultant.
- 5.6.4 No access for contractors plant must be allowed within the Ground Protection Areas until the areas are constructed. Tree Protection Fencing must therefore only be moved from the location marked "E" on the Tree Protection Plan to that marked "C", just before the cellular confinement system is laid.
- 5.6.5 No contractors plant must be allowed within the Ground Protection Areas until the base layer of the cellular confinement system are laid and filled with stone.

5.7 Hand Dig Areas

- 5.7.1 The Hand Dig area, adjacent to oak tree T48, 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 The Hand Dig trench for the drainage system, running alongside the eastern side of the pitch, shown cross-hatched red on the Tree Protection Plan, must be dug to by hand, retaining all roots greater than 25mm diameter and as many smaller roots as possible. Either hand tools or an air spade can be used. The drainage pipe must then be threaded between any roots, before backfilling the trench with the excavated soil. If the location of roots makes this impossible, the retained arboricultural consultant must inspect and advise. The trench must be left open for as short a time as possible, with any exposed roots covered with hessian to prevent desiccation or frosting.

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 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.
- 5.8.4 If any tree shown for retention is removed, uprooted or destroyed, another tree must be planted in the same location, at a size and species to be agreed in writing with the Local Planning Authority.
- 5.8.5 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 Arboricultural Supervision

5.11.1 A qualified Arboricultural Consultant must be retained during the period of construction to carry out the following:

- to meet with/ liaise with the contractor, prior to earthworks starting on site, to ensure this Arboricultural Method Statement is fully understood and can be complied with in full. If any revisions are required, a revised Arboricultural Method Statement must be approved by the Local Planning Authority, prior to work starting on site.
- to inspect Tree Protection Fencing prior to earth works starting on site.
- to visit site at approximately 3 weekly intervals during the construction period.
- 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 trees, categorized as per BS 5837 (see Appendix C for details), are proposed for removal:

- Category U – unsuitable for retention: T125.
- Category C – low quality:
 - T31 – a 14.5m, low quality sycamore
 - T34 – a 20m, drawn up, twin stemmed sycamore
 - T107 – a suppressed 4-stemmed sycamore
- Category B/C – between categories B and C:
 - T94 – a drawn up oak to be removed to allow T95 to develop.

6.2 No trees need to be removed to facilitate the proposals, but are recommended for removal to allow better specimens to develop.

6.3 Protection measures have been specified to protect the Root Protection Area of all retained trees, other than for:-

- for T48, where there will be hand excavation within approximately 58m², or 14% of the Root Protection Area. However, since the depth of excavation will grade from 0m to a maximum of only approximately 0.3m and the closest excavation will be more than 10m from the tree, this is most unlikely to have any significant effect on the health of the tree. In reality the majority of rooting is likely to be within the steep bank up to Hampstead Lane; no surface roots can be seen at the base of the bank.
- where a drain is proposed along the eastern boundary of the pitch, at the edge of a number of Root Protection Areas. However, if the trench is dug by hand and the drain pipe is threaded between roots this is unlikely to cause significant root damage.
- adjacent to The Bishops Avenue where a new access will be created and some minor excavation will be required within the Root Protection Areas of T2 and T3 for levels to marry with the road.

6.4 Provided the recommendations in this report are followed, the arboricultural impact of this development on existing trees is considered acceptable. Arboricultural supervision has been included to assist with implementation of tree protection measures.

7 REFERENCES

- *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.*
- *BS3998:2010 Tree Work. Recommendations.*
- *The use of Cellular Confinement systems near Trees: a guide to good practice Arboricultural Association Guidance Note 12.*



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-PLANNING ISSUE

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REVISIONS

SCALE 1: 400atA1

DATE SEP 21

DRAWN BY SJS

Highgate School - Far Field

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	21	690	6	6	6	6	4	Mature	Good quality street tree.		>40	A2	8.3	215
T2	Lime	22	760	7	7	7	7	4.5	Mature	Good quality street tree.		>40	A2	9.1	261
T3	Lime	22	700	5	5	5	6	5	Mature	Good quality street tree.		>40	A2	8.4	222
T4	Lime	22	910	6	6	8	6	4	Mature	Main stem hollow.		20-40	B2	10.9	374
T5	Lime	15	640	5	5	5	5	4	Mature	Reduced vigour.		20-40	B2	7.7	185
T6	Lime	21	760	7	7	7	7	4	Mature	Good quality street tree.		>40	A2	9.1	261
T7	Lime	19.5	680	6	6	6	6	3.5	Mature			>40	A2	8.2	209
T8	Lime	19.5	670	7	7	7	7	3.5	Mature	Good quality street tree. Regularly pollarded- most recently approximately 5 years ago.		>40	A2	8.0	203
T9	Plane	15	530	10	5	6	7	5	Early mature	Good quality street tree.		>40	A2	6.4	127
T10	Plane	15	440	8	5	6	6	6	Early mature	Good quality street tree.		>40	A2	5.3	88
T11	Plane	16	620	9	7	8	7	4.5	Early mature	Good quality street tree.		>40	A2	7.4	174
T13	Plane	16	670	11	7	6	9	4	Early mature	Good quality street tree.		>40	A2	8.0	203
T14	Plane	16	700	11	6	6	6	3.5	Early mature	Good quality street tree.		>40	A2	8.4	222
T15	Plane	13	240	0.5	5	2	5	4	Early mature			15-30	B-C2	2.9	26
T16	Plane	16	590	7	6	8	4	4	Early mature	Good quality street tree.		>40	A2	7.1	157
T17	Plane	16	520	11	6	8	7	4.5	Early mature	Surface roots creating trip hazard.		>40	A2	6.2	122
T18	Plane	13.5	340	7	5	7	4	2	Early mature	Leaning to east.		20-40	B2	4.1	52
T20	Sycamore	15	430	5.5	4	4.5	6	2.2	Early mature	Basal bark damage. Growing immediately adjacent to manholes. Prominent position.		20-40	B2	5.2	84
T20a	Holly	6	240	2.5	2.5	3.5	1.5	1.5	Early mature	Showing good vigour. Providing evergreen screening.		20-40	B2	2.9	26
T21	Sycamore	15	570	4	3	5	4	2.5	Early mature	Main stem bifurcates at 1.7m, with water filled cavity and signs off some decay at fork. Previously reduced.		15-30	B2	6.8	147

Highgate School - Far Field

Appendix B BS 5837: 2012 Tree Schedule

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Cleara- nce (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								
T22	Sycamore	12.5	680	3	7	6.5	7	3.0	Early mature	Four stems from base- 240, 380,360,370mm.	Remove low hanging branches to provide 4m ground clearance over pitches.	20-40	B2	8.2	209
T23	Sycamore	14.5	440	3	3	5	7	2.5	Early mature	Twin stems from 1m- both 310mm- tight fork, with included bark.		15-30	B-C2	5.3	88
T24	Sycamore	14.5	470	6	2	4.5	3.5	3.0	Early mature	Twin stem from base- 310,350mm. Minor deadwood.		20-40	B2	5.6	100
T25	Oak	9.5	580	7	3	1	10	2	Early mature	Tag 916. Main stem bifurcates at 2m, with both stems then bending over pitch.	Remove small lateral branch (120mm diameter) growing from 2m to north and rubbing against stem of T24. Remove small low hanging branches to provide ground clearance of 3.5m. Reduce crown spread to west by 2m, to encourage development of a less asymmetric canopy.	20-40	B2	7.0	152
T26	Sycamore	14.5	630	4	3	6.5	6.5	3.5	Early mature	Twin stem from 0.5m- 380,500mm. Water filled pocket between stems.		20-40	B2	7.6	179
T27	Sycamore	12.5	300	4.5	0.5	4	3	3.5	Early mature	Slight lean to north. Post embedded in base.		10-20	C2	3.6	41
T28	Sycamore	10	260	4.5	0.5	3.5	3.5	2	Early mature	Suppressed.		10-20	C2	3.1	31
T29	Sycamore	20	560	7	1	8	7	4.5	Mature	Tag 998. Asymmetric crown, but good vigour.		>40	A-B2	6.7	142
T30	Sycamore	20	520	4.5	6	7	7	4.5	Early mature	Good vigour.		>40	A-B2	6.2	122
T31	Sycamore	14.5	290	1	2	1	6	3.5	Early mature	Poor form with basal stem to north removed. Low vigour.	Remove to allow surrounding trees to develop.	10-20	C2	3.5	38
T32	Sycamore	20	500	3	2	6	7	4.5	Early mature	Twin stem from 0.5m-330,370mm. Only moderate vigour.		15-30	B-C2	6.0	113
T33	Sycamore	19.5	300	2.5	3.5	5	1.5	5.5	Early mature	Drawn up.		20-40	B2	3.6	41

Highgate School - Far Field

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								
T34	Sycamore	20	480	1.5	2.5	2	6	3.5	Early mature	Tag 993. Twin stem from base- 280,390mm. Drawn up.	Remove to allow surrounding trees to develop.	10-20	C2	5.8	104
T35	Sycamore	20	670	4	8	8	8.5	4	Mature	Twin stem from base-560,360mm.		20-40	A-B2	8.0	203
T36	Sycamore	16	410	3	5	5	4	3.5	Early mature	Twin stem from base-230,340mm.		20-40	B2	4.9	76
T37	Sycamore	15	240	3	2	1	6	4	Early mature	Slight lean to west.		15-30	B-C2	2.9	26
T39	Sycamore	14.5	330	0.5	4	4	3	2.5	Early mature	Three stems from base- 180,180,210mm. Drawn up.		20-40	B2	4.0	49
T40	Oak	18.5	520	6	4.5	0	11.5	3.5	Early mature	Leaning to west.	Reduce crown spread to west by approximately 2.5m to encourage formation of a more balanced canopy.	>40	A-B2	6.2	122
T41	Oak	11	190	3.5	3.5	3.5	3.5	2	Semi- mature	Good potential.		>40	B2	2.3	16
T43	Oak	21	670	7.5	4	7.5	6	3.5	Mature	Well balanced canopy. Minor deadwood.		>40	A2	8.0	203
T44	Oak	17.5	440	6	5.5	2	10	3.5	Early mature	Leaning to west.		>40	B2	5.3	88
T45	Oak	15.5	390	4	5	9	0	4.0	Early mature	Leaning over road.		20-40	B2	4.7	69
T46	Oak	7	260	2	4	0.5	7	1.7	Early mature		Remove low hanging branches to provide 3m ground clearance. Poor form.	15-30	C2	3.1	31
T47	Sycamore	16	850	7	7	7	7	2.5	Mature	Included bark between stems, but an attractive tree in prominent position.		20-40	A-B2	10.2	327
T48	Oak	18.5	970	11	8	10.5	9	2.0	Mature	Fine, wide spreading tree. Occasional minor dead and broken branches.		>40	A2	11.6	425
T49	Crab apple	6	170	7.5	1	1	7.5	3.5	Mature	Leaning to north west. Poor form.		10-20	C2	2.0	13
T50	Birch	17.5	300	7	3	8	1	5.0	Mature	Major lateral to north east from 3m.		15-30	B2	3.6	41
T51	Sycamore	12	250	4	1	4	1	2.5	Semi- mature	Leaning to north east.		15-30	B-C2	3.0	28
T52	Sycamore	20	710	8.5	6	7	6	4	Mature	Three stems from 1.1m- 440,400,380mm- water filled pocket between stems.		20-40	A-B2	8.5	228
T53	Birch	19.5	310	7	0	1	6	7	Mature	Leaning to north.		15-30	B2	3.7	43

Highgate School - Far Field

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								
T54	Sycamore	16	480	6	6	6	6	2	Early mature	Twin stem from 0.3m-260,400mm. Fence embedded.		15-30	B2	5.8	104
T55	Birch	18	470	7.5	2	6.5	6	2.5	Mature	Twin stem from 1.1m- 230,410mm. Attractive tree, but limited life expectancy. Limb from 1.5m growing at 45degrees to NE over pitches.	Consider at next tree hazard assessment.	15-30	B2	5.6	100
T56	Oak	18	420	6	6	0	8.5	3.5	Early mature	Leaning to west.		>40	A-B2	5.0	80
T57	Sycamore	16.5	310	6.5	3.5	5	5	2.5	Early mature			20-40	B2	3.7	43
T58	Sycamore	17	740	6	6	6	6	3.5	Mature	Twin stem from 0.5m-500,540mm. Good crown shape. Water filled pocket between stems.		>40	A-B2	8.9	248
T61	Birch	17	410	7	1.5	4.5	4.5	3	Mature	Attractive tree, but limited life expectancy.		15-30	B2	4.9	76
T62	Sycamore	15	360	4.5	8	4	6	2.5	Early mature	Leaning to south. Good vigour.		>40	A-B2	4.3	59
T63	Sycamore	15	340	1	9	7	3.5	3.5	Early mature	Leaning to south.		20-40	B2	4.1	52
T64	Birch	16	490	9.5	4	7	5	7	Mature	Twin stem from base- 300,390mm. Decay points at base.		10-20	B-C2	5.9	109
T65	Birch	15	380	9	3	7	6	3.5	Mature	Twin stem from base- 240,300m- third stem removed.		10-20	B-C2	4.6	65
T65a	Birch	17	240	2	2	2	2	10	Mature	Drawn up.		10-20	B-C2	2.9	26
T66	Sycamore	15.5	660	4	8	5	8	4	Mature	Three stems from base- 310,340,470mm.		20-40	B2	7.9	197
T67	Sycamore	15	500	7	3	3	7	6.5	Early mature	Good quality tree, growing on steep slope.		>40	A-B2	6.0	113
T68	Sycamore	14.5	300	0.5	6	0	8	3	Early mature	Leaning to south west.		20-40	B2	3.6	41
T69	Birch	16	580	7	6	6	7	4.3	Mature	Twin stems from 1.2m from swollen base- 360,450mm. Awkward structure, but an attractive tree.		15-30	B2	7.0	152
T70	Sycamore	15	420	5	3	6	5	4	Early mature	Growing on steep bank. Main stem bifurcates at 1.7m.		15-30	B2	5.0	80
T71	Oak	15	440	5	5	8	0	3.5	Early mature	Tag 949. Leaning to east.		20-40	B2	5.3	88
T72	Sycamore	13	530	3	1	5	3	2.5	Early mature	Twin stems from base- 340,400mm- third stem recently removed and crown reduced.		20-40	B2	6.4	127
T73	Sycamore	12.5	400	6.5	6.5	7	4	5	Early mature	Poor structure.		15-30	B-C2	4.8	72

Highgate School - Far Field

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								
T74	Sycamore	17	640	5	8	9	5	5	Mature	Twin stem from 1.6m.		20-40	B2	7.7	185
T75	Oak	18	310	1	7	1.5	3.5	4	Early mature	Drawn up.		20-40	B2	3.7	43
T76	Oak	18	670	7	10	12	0.5	1.9	Mature	Leaning to east, but a good quality tree.	Remove small low hanging branches to provide 4m ground clearance. Reduce crown spread to east by approximately 3m to encourage a more balanced crown to develop.	>40	A-B2	8.0	203
T77	Oak	10	320	3.5	3.5	9	0	1.8	Early mature	Acute lean to east.		15-30	B-C2	3.8	46
T78	Lime	11	320	2	4	7	2	1.7	Early mature	Fence support leaning against trunk. Leaning to east.	Remove steel fence support.	>40	B2	3.8	46
T79	Lime	5.5	180	4	1	6	3	2	Semi- mature			15-30	B-C2	2.2	15
T80	Lime	11	300	3	3	4.5	2	2	Early mature	Moderate vigour.		>40	B2	3.6	41
T81	Lime	16.5	460	6	5	7	3	1.9	Early mature	Minor deadwood patches of dead basal bark. Resin bleed spots.		15-30	B-C2	5.5	96
T82	Sycamore	11	460	5	6	8	3	3	Early mature	Leaning to east.		20-40	B2	5.5	96
T83	Sycamore	13.5	300	4.5	4.5	6	3	1.8	Early mature			20-40	B2	3.6	41
T84	Sycamore	12.5	190	1	2	3	1	1.8	Semi- mature			10-20	C2	2.3	16
T85	Ash	14	380	6	5	11	1	1.8	Early mature	Leaning to east. Major surface roots to E and N.	Reduce crown spread to east by approximately 4m to encourage formation of a more balanced canopy.	15-30	B2	4.6	65
T87	Sycamore	7	190	4	3	4	1	1.8	Semi- mature	Low quality.		15-30	C2	2.3	16
T89	Cherry	9	220	3.5	3.5	1	3.5	2.5	Early mature	Twin stem from base- 100,190mm.		10-20	C2	2.6	22

Highgate School - Far Field

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								
T90	Holly	9.5	200	2	2	0	3.5	1.2	Mature			15-30	B-C2	2.4	18
T91	Lime	11	220	5	1	1.5	4	2.5	Semi- mature			15-30	B-C2	2.6	22
T92	Cherry	16	330	1	1	0	7	6	Mature	Main stem dog legs and leans to west.		15-30	B-C2	4.0	49
T93	Oak	19	710	0	12	1	10	7	Mature	Leaning to south.		20-40	B2	8.5	228
T94	Oak	18	310	2	6	1	3	5	Early mature	Tag 386. Drawn up.	Remove to allow T95 to develop a more balanced canopy.	15-30	B-C2	3.7	43
T95	Oak	20	710	8	8.5	8	3	7.5	Mature			>40	A2	8.5	228
T96	Oak	15	340	0	8.5	2	3	5	Early mature	Leaning to south.		20-40	B2	4.1	52
T96a	Holly	9.5	240	0	3	2.5	2.5	2	Early mature	Basal wound.		15-30	B-C2	2.9	26
T96b	Holly	9.5	260	1	2.5	1.5	2.5	1.5	Early mature	Bifurcates at 4m.		15-30	B-C2	3.1	31
G96c	Laurel	7-9	180					0	Mature	Stem diameter 75-180mm. Dense group, providing evergreen screening. Yew and holly at western end.		15-30	B-C2	2.2	15
T97	Wild cherry	16	340	6.5	1	1	6	10	Early mature			15-30	B2	4.1	52
T98	Sycamore	14.5	350	0.5	7	3.5	3.5	3.5	Early mature	Slight lean to south. Only moderate vigour.		15-30	B-C2	4.2	55
T99	Lime	17	520	8	2	3	4	2.5	Early mature	Twin stems- 330,400mm- tight fork.		20-40	B2	6.2	122
T100	Oak	17	420	1	13	1.5	3.5	8	Early mature	Drawn up.		20-40	B2	5.0	80
T101	Oak	17	360	4	7.5	1.5	1.5	7	Early mature	Drawn up.		20-40	B2	4.3	59
T102	Oak	17	730	8	7.5	7	6	4.5	Mature	Tag 177. Slight lean to south east, but a good tree.		>40	A2	8.8	241
T103	Lime	15	490	3	6	1.5	3	4	Early mature	Twin stem from 1.6m. Slight lean to south.		20-40	B2	5.9	109
T104	Oak	13	330	0	7.5	1	4	6.5	Early mature	Tag 176. Twin stem from 0.4m- 150,290mm- both leaning to south.		15-30	B-C2	4.0	49
T105	Oak	19.5	740	6.5	9.5	4	8	5	Mature	Tag 357. Twin stem from 0.7m- 440,590mm. Included bark at fork. Crown to north reduced.		20-40	A-B2	8.9	248
T106	Oak	11	210	6.5	0	3.5	3.5	4	Early mature			15-30	B-C2	2.5	20

Highgate School - Far Field

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								
T107	Sycamore	9	320	3	2	0.54	1	4	Early mature	Four stems - average 160mm. Suppressed.	Remove to allow surrounding oak to develop.	5-15	C2	3.8	46
T108	Oak	17	430	2	7	4	2	3.5	Early mature	Slight lean to south.		>40	A-B2	5.2	84
T109	Oak	14.5	340	6	5	4	3	3.5	Early mature	Drawn up.		>40	B2	4.1	52
T110	Oak	13	420	1	8.5	5.5	0.5	3.5	Early mature	Main stem leaning to south east, then dog legging to south.		15-30	B2	5.0	80
T111	Sycamore	14	710	5	9	4	7	4	Early mature	Tag 352. Twin stem from 0.8m- 470,530mm.		20-40	B2	8.5	228
T112	Oak	19	580	4.5	9	3	6	4	Early mature	Tag 351. Branches to north pruned.		>40	A2	7.0	152
T113	Lime	19	700	5	9	4	4	3	Mature	Tag 350. Three stem from 0.6m- 360,400,450mm. Tight forks, but upright, well balanced stems.		20-40	A-B2	8.4	222
T114	Oak	9.5	290	3	8	1	6	3.8	Semi- mature	Poor structure- no leading stem.		15-30	B-C2	3.5	38
T115	Sycamore	13.5	730	5	8	3	7	4	Mature	Three stems from base-310,390,530mm.		20-40	B2	8.8	241
T116	Oak	17	1030	12	11	11	9	4	Mature	Moderate vigour, but a good tree. Low branch to south removed.		>40	A-B2	12.4	480
T117	Sycamore	11	est 350	0.5	5	4	2	4.5	Early mature	Leaning to south east. Dense ivy to mid canopy.		15-30	B-C2	4.2	55
T118	Sycamore	11	est 300	1	3	5	0.5	4	Early mature	Low quality.		10-20	C2	3.6	41
T120	Willow	10.5	400	0.5	0.5	0.5	0.5	1.5	Mature	Acute lean to south east. Main stem recently removed.		10-20	C2	4.8	72
T122	Sycamore	16	670	6	9	7	6.5	4	Mature	Three stems at 1.5m- 320,400,430mm.		20-40	B2	8.0	203
T123	Sycamore	16	510	5	5	2.5	5	3.5	Mature	Growing at top of steep slope. Bifurcates at 3.5m.	Remove small rubbing stem 0.3m above fork. Remove lumps of concrete from around base.	>40	A-B2	6.1	118
T124	Sycamore	16	890	5	7	6	4	2	Mature	Three stems from base- 450,530,560mm- tight forks. Previously reduced.		20-40	B2	10.7	358
T125	Sycamore	14.5	570	5	6	3	3	3.5	Mature	Major cavity, with decay extending through the majority of the stem. Previously reduced.	Remove.	<10	U	6.8	147

Highgate School - Far Field

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								
T126	Sycamore	14.5	350	6	6	6	2	2.5	Early mature		If T125 removed, then reduce canopy by 15% to allow tree to adapt to increased exposure.	20-40	B2	4.2	55
T127	Sycamore	14.5	420	6	4.5	5	3	3.5	Early mature	Wire mesh embedded in trunk.	Cut wire mesh flush with trunk.	20-40	B2	5.0	80
T127a	Plum cherry	5	150	2.5	1	3	1.5	1.5	Early mature			15-30	B-C2	1.8	10

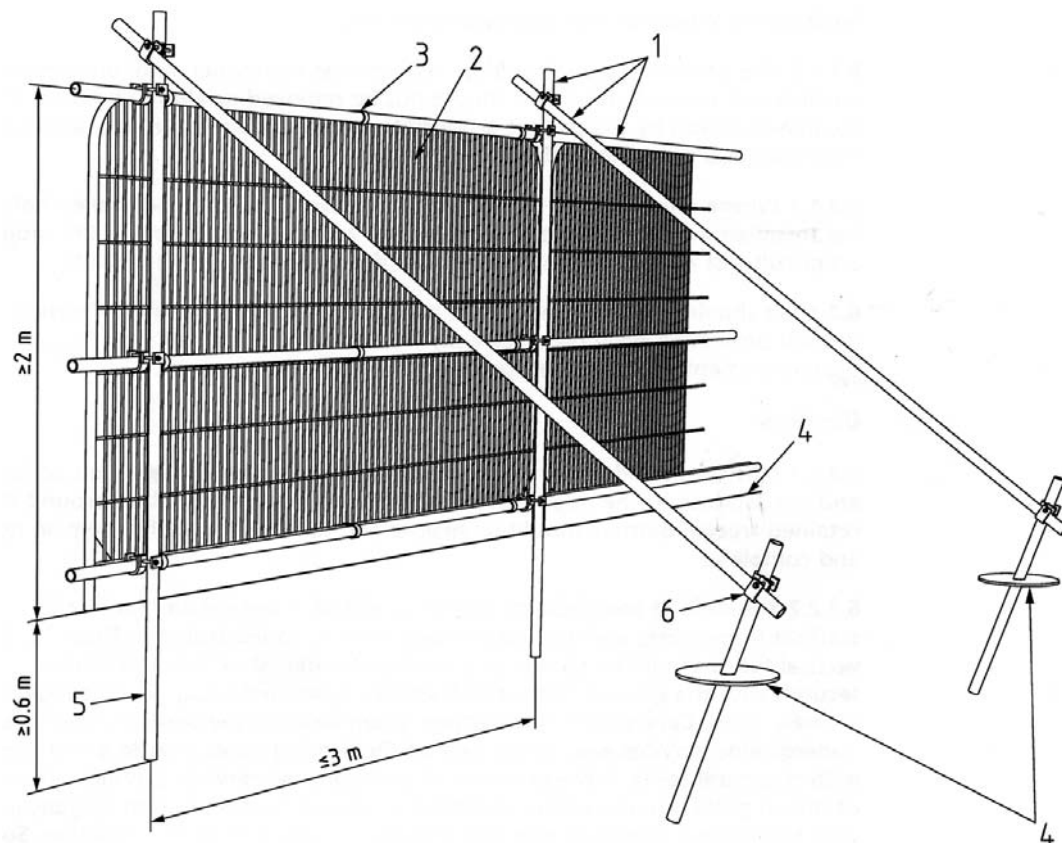
BS 5837:2012, Table 1 Cascade chart for tree quality assessment

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>			Canopy coloured red
	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)	Canopy coloured green
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	Canopy coloured blue
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	Canopy coloured grey

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

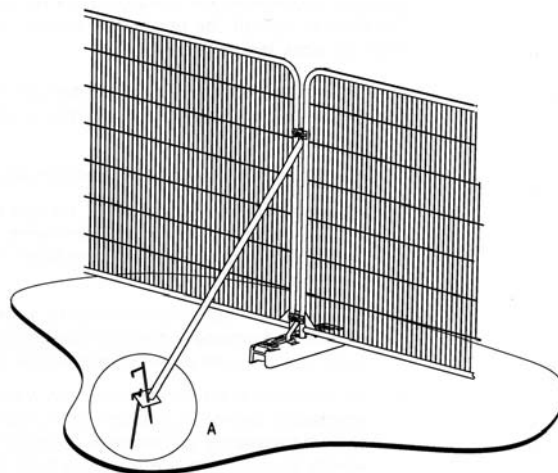
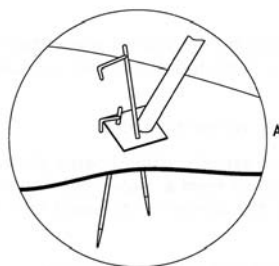
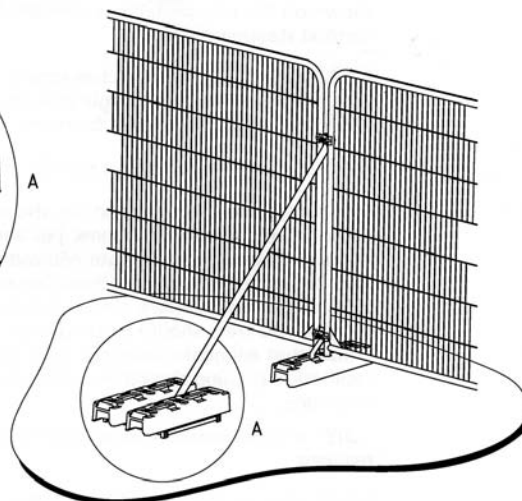
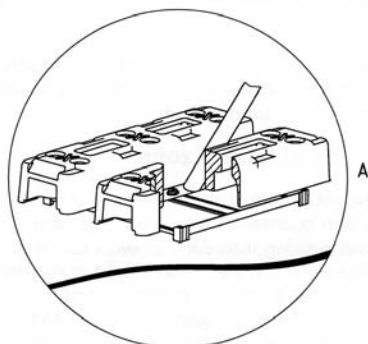


Figure 3b

Stabiliser strut mounted on block tray





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PLANNING ISSUE	Rev: P01 Date: 01/10/2021 By: CH
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Legend - Surfaces	
	Synthetic playing surface
	Grass banks
	Grass
	Grass (reinforced)
	Footpath

Client: Highgate School Highgate, London	
Project: Far Field: Proposed Pitch Renovation Works Adjacent Courtney Avenue, Highgate, London. (Nearest Postcode N6 4LP)	
Title: SITE PLAN PROPOSED SYNTHETIC TURF SURFACE	
Drawn by: CH	Checked by: DKH
Scale: 1:500	Original size: A1
Date: October 2021	Revision: P04
Drawing Number: STP GENERAL LAYOUT_1704-FF-L1-DR-A-10101_PLAN	

Site Plan: Proposed Synthetic Turf Surface
Scale - 1:500 @ A1

Appendix F

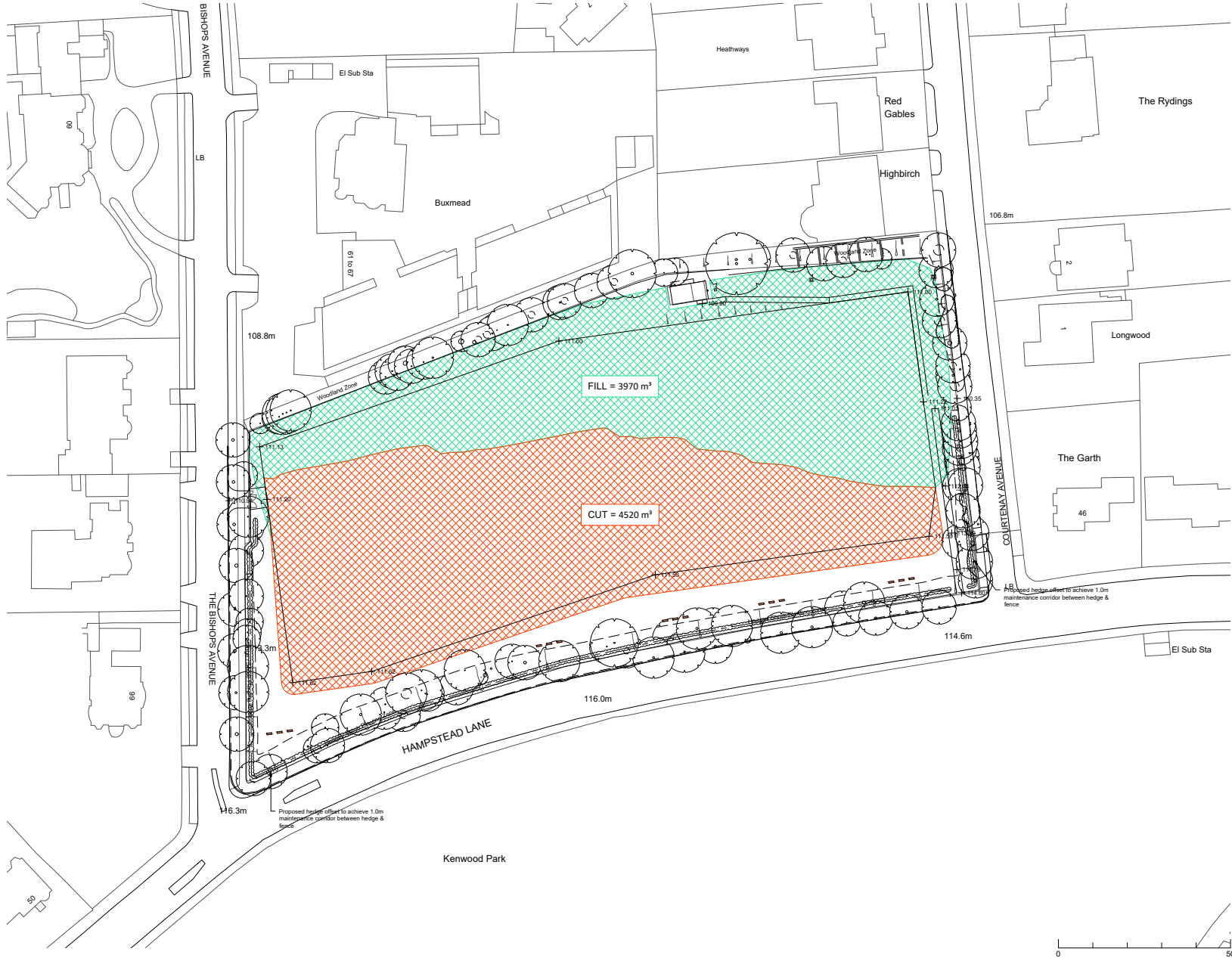
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PLANNING ISSUE

Rev: P01
Date: 10/08/2021
By: GH



Site Plan: Proposed Regrading
Scale - 1:500 @ A1