Arboricultural Impact Assessment

At

William Ellis School, Highgate Road, London, NW5 1RN

Gardiner & Theobald LLP

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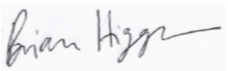
Technical Arboriculture Approved **Brian Higginson Dip.Arb (RFS) M.Arbor.A**			

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Report Caveats

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Specific - Trees

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur, but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to identified site risks and in accordance with relevant HSE and Central Government guidance. Environmental Services can provide further information on this matter if required.

Please note no statutory control checks have been undertaken (unless specified). Where tree surgery works have been identified these works are based on the assumption that planning is approved, no tree works should be undertaken prior to determination of this application without up to date confirmation of the Tree Preservation Order / Conservation Area Status of the vegetation. All works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of protected species.

Any comment relating to 3rd party trees has been made without full access to the tree(s). Should these trees have any impact on the proposed development we would advise you to instruct us to contact the 3rd party and undertake further inspection work.

1.0 Introduction

1.1 Environmental Services have been appointed by Gardiner & Theobald LLP to provide advice on the arboricultural issues relating to the proposed development of the above site.

1.2 We undertook a series of pre-development Tree Condition Survey's (see Appendix 1), on 25 October and 06 November 2013. This survey assessed the condition of the tree resource, categorised the trees and provided the Root Protection Area (RPA) information according to the BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations".

1.3 Following preparation of our original Tree Condition Surveys in September and October 2013, we undertook a further survey of additional on and off site boundary trees located on Hampstead Heath 3rd party land where trees with Root Protection Areas (RPA) and crown spreads overhang or encroach upon the site. We have yet to receive a copy of the layout drawing showing the development proposal for the site.

1.4 We have been informed that no trees on site are subject to statutory protection by Tree Preservation Order, but the site is within the Dartmouth Park Conservation Area. The tree numbers used in this report refer to the tree numbers used in our Tree Condition Survey.

1.5 The tree numbers used in this report refer to the tree numbers used in our Tree Condition Survey.

2.0 Executive Summary

2.1 The site is currently an 'aided' secondary and sixth form school for 16-19 year olds located on Parliament Hill Fields since 1937, on the edge of Hampstead Heath. The school is located immediately north of Parliament Hill School and shares its southern boundary with this school.

2.2 The site is surrounded around all but its western boundary with mature trees of high amenity value. Only the trees along the southern boundary, which it shares with Parliament Hill School, are actually located onsite and managed by the school, the remaining trees along the eastern, northern and the one or two along the western boundary are located on Hampstead Heath land, managed by the Corporation of London.

2.3 The development proposals involve the construction of additional educational space for the purposes of teaching at the school along the northern fringe of the site, between T126 and T127. The front entrance of the school, car parking, access and landscaping will also be re-modelled and improved.

2.4 Currently all 'A' and 'B' category trees will be retained and protected with five poor condition 'C' and 'U' category individual trees and one 'C' category tree group identified for removal and replacement.

2.5 A summary of the affected trees is detailed in the table below:

Impact	Reason	A	B	C	U
Trees to be removed	To facilitate the development or due to their condition (U cat)	*N/A*	*N/A*	*T81, TG4*	*T82, T88, T92 TG8(1 tree)*
Trees with RPA encroachment	To facilitate construction	*T126*	*T73, T83,T86, T87, T93, T95, T123*	*T74, T75, T84, T85, T89, T90, T91, T94, T96, T125*	*N/A*

3.0 Scope of Tree Survey

3.1 To carry out a tree condition survey on the trees and hedgerows at and immediately adjacent to the site, identifying any hazard trees and making recommendations for those trees to be retained and low amenity value and hazard trees to be replaced.

3.2 To undertake the tree survey in accordance with the principles of BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'.

3.3 To produce a tree constraints plan (TCP), showing the location of surveyed trees, their BS5837: 2012 categorisation, the theoretical Root Protection Areas (RPA) and any shading arcs required to be shown for those trees south of the development window.

3.4 To carry out an arboricultural impact assessment on the effect of the new development at the site identifying the construction exclusion zones (CEZ) shown on the tree protection plan (TPP). This will also show the locations for tree protective fencing, any temporary ground protection required and identify 'No-Dig' zones for RPAs shown outside of CEZs.

3.5 The purpose of this report is to comment on the arboricultural implication of the proposed development and to aid the preservation of trees to be retained at and adjacent to the site during the construction works by setting out the tree protection methods, construction techniques and working practices that are to be adopted on this site.

3.6 If the guidelines and principles outlined in this report are not adhered to, as with all development sites there is a risk that the construction activities will result in damage to and potentially the death of the retained trees. Damage to the trees will significantly increase the risk of their health declining and may increase the risk of their complete or partial failure.

4.0 Terms of Reference

4.1 Reference Documents:

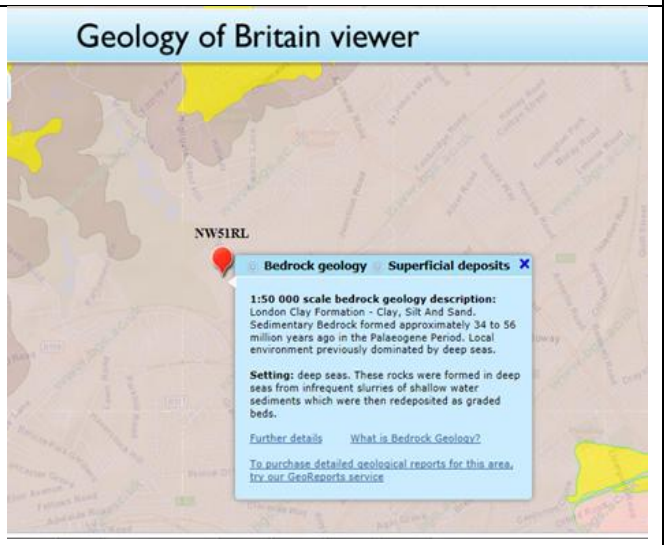
- BS5837:2012 'Trees in relation to design, demolition and construction – recommendations'
- BS3998:2010 'Tree work – recommendations'
- NJUG 4 – National Joint Utilities Group "Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London: NJUG 2007"
- Information from the London Borough of Camden local plan and website
- BGS Open Source Soil Data http://www.bgs.ac.uk/nercsoilportal/maps.html

5.0 Description of Site and Proposed Works

5.1 The site consists of new and old educational buildings sandwiched between Highgate Road to the east and Hampstead heath to the north and west. The school is separated from Parliament Hill School to the south by a linear tree group numbered T73-T96.

5.2 The immediate and distant landscape character is one or urban mixed residential, educational, leisure and retail. The school is screened to and from views of Hampstead Heath to the north and west by strong and mature linear groups of boundary trees.

5.3 The topography of the site varies with areas of gently sloping hardscape areas, level ground, undulating grass areas and a gently sloping access up to Highgate Road. The site levels to the west as it merges into Hampstead Heath. The development area is likely to be the north of the existing buildings upon existing hard surface play areas.

Site Location (OS)	Site Location (BGS Soil)
	

Summary

The soils in relation to the site are known to be London Clay Formation - Clay, Silt and Sand

5.4 The underlying site soil has been identified as CLAY and great care should therefore be taken to ensure no compaction of the soils within the identified RPA's as this soil type is less favourable to tree root growth/ moisture movement and aeration.

5.5 All comments regarding soils should be verified with onsite geotechnical investigations and laboratory testing with foundation depth and design undertaken by a structural engineer in accordance with the requirements of NHBC Chapter 4.2.

6.0 The Trees

6.1 **Tree Numbers:** There were 50 Individual trees and 3 tree groups, surveyed onsite or immediately adjacent to the site boundary. These trees can be grouped into four distinct locations:

1. T73 – T96, T130, TG3 & TG4 – linear tree groups separating William Ellis School and Parliament Hill School along its southern site boundary
2. T122 – T128 – Offsite trees along the site North-Eastern boundary with Hampstead Heath
3. TG8 – Lombardy Poplar group of four mature trees along the sites northern boundary with Hampstead Heath
4. T129 – A single mature Pollarded Willow on the sites western boundary, located offsite on Hampstead Heath.

6.2 **Amenity Value:** The trees on site, when viewed from the public realm, have high amenity value predominantly as linear tree groups, when viewed from Highgate Road to the north and east, and from Hampstead Heath, when viewed from the north and west. Some individual standard trees within the southern tree belt linear group have primarily a skyline contribution to the immediate landscape character. Such trees are the Lombardy Poplar linear group on the northern site boundary, TG8 and the Blue Atlas Cedar trees, T92-T95. The offsite north-eastern boundary trees, particularly the two large mature Turkey Oaks have outstandingly high amenity value, T126 and T129.

6.3 By BS5837:2012 categorisation individually there were;

- 2 ‘A’ category trees,
- 14 ‘B’ category trees
- 16 ‘C’ category trees.

In total there was only 1 ‘U’ category individual tree located onsite which was identified as in poor condition or dead / in decline with less than ten years useful life expectancy. This tree was T88, Lime. A further tree, Lombardy Poplar within TG8, was found to have a pathogenic fungi making that tree ‘U’ category but it is located offsite so was reported to the Hampstead Heath authorities, Corporation of London tree officer. These should be felled and replaced regardless of any impact of the development proposal.

6.4 In total there was 1 ‘B’ category tree group, TG3, and three ‘C’ category tree groups located both on and offsite adjacent or located on the school site boundaries.

7.0 Arboricultural Impact Assessment

7.1 With reference to BS 5837: 2012 'Trees in the relation to design, demolition and construction – Recommendations', an assessment of the tree resource has been undertaken and using the guidance in BS5837 we would comment as follows:

7.1 Tree Removals

7.1.1 The following trees will be removed to facilitate the development

BS 5837 Cat	A	B	C
Tree to be removed	N/A	N/A	T81, T82, T88, T92 and TG4

7.1.2 Every effort has been made to reduce the removal of trees from the site. However, to mitigate the tree loss proposed, the Local Planning Authority is invited to secure a detailed Landscaping Proposal by way of Planning Condition.

7.1.3 Due to its poor condition, T88 - Lime, infected with a significant decay fungus; *Kretzschmaria deusta* has also been recommended to be felled as classified as a 'U' category tree. T78, Silver Birch has been recommended for its removal due to its poor form and likely conflict with demolition proposals for both sites.

7.2 Root Protection Area (RPA) Incursions

7.2.1 The following incursions into the RPA's of trees to be retained have been identified:

BS 5837 Cat	A	B	C	Summary
RPA Incursion	T126	*T73, T83,T86, T87, T93, T95, T123*	*T74, T75, T84, T85, T89, T90, T91, T94, T96, T125*	18 No. trees

7.3 Foundations

7.3.1 The Large offsite Turkey Oaks, T126 & T128 as well as the Lombardy Poplars within TG8, the pollarded Willow T129, the Holm Oak, T130 and Sycamore T73, are all within the current influencing distance of the existing buildings and / or likely development area. These trees have the potential to cause tree related subsidence, if they are not already, given their proximity to existing buildings and their location upon a shrinkable clay soil. Detailed geotechnical investigations and advice from the project structural engineer has been obtained to advise upon foundation design by a structural engineer

7.4 Surfaces

7.4.1 The development requires the installation of new surfaces within the RPA of T73-75, T83-87, T89, T90-91, T93-96, T123, T125 & T126.

7.4.2 To minimise the disruption on the retained trees it is proposed to install a 'reduced / no-dig' surface in the areas indicated on the Tree Protection Plan. These surfaces sit above ground level after surface vegetation removal and ensure no tree roots are severed during their installation. The use of 'no / reduced' dig cellular confinement surfacing is recommended where new pedestrian footpaths or cycleways are required to pass within or adjacent to retained trees RPA's. This is likely where new site pedestrian access arrangements are proposed within the RPA's of the retained trees T92-T95. The construction of this surfacing should be in accordance with detailed site specific arboricultural method statements with all works delivered and supervised by Environmental Services.

7.4.3 The Local Planning Authority is invited to secure full details of the proposed surface by way of a Site Specific Method Statement/ please refer to the accompanying Site Specific Method Statement for full detail on the proposed installation.

Figure 1. - Installed 'Arboraft' system around retained existing trees.

7.5 Services

7.5.1 The route of any services needs to be carefully considered so as to avoid unnecessary encroachment into retained trees RPA's.

7.5.2 These should, where possible, not encroach within the RPAs of retained trees, and currently the precise location of new excavations for services is not known. Where excavations slightly encroach into adjacent tree RPA's their excavation should only be considered when supervised by the consultant arboriculturist from Environmental Services and may need to be undertaken using an 'Airspade' / hand tool combination.>

7.5.3 The Local Planning Authority is invited to secure full detail on the proposed service routes and form of installation by way of appropriate Planning Condition.

7.6 Ground Levels

7.6.1 Issues surrounding changes in levels, mounding, retaining walls, slopes and hard landscaping features apply to both the likely development area to the north of the existing buildings. Any alterations to levels close to or within the RPA's of retained trees should be avoided and this includes hard landscaping features such as new footpaths, retaining walls and works of art. Arboricultural methods and site supervision can be provided as part of any Site Specific Method Statement report (SSMS) required to discharge any conditions of any future planning approval for the site.

7.7 Shading

7.7.1 Where retained trees are located south of new buildings the shade they cast have the potential to constrain them and cause a 'pressure to prune' such trees. This may apply to the largest trees adjacent to / south of the development area and could likely be the large Turkey Oaks T126 & T128.

7.8 Site Supervision/ Monitoring

7.8.1 Most damage to trees on developments sites is caused inadvertently and to ensure continued protection during development a system of site monitoring is proposed.

7.8.2 Basic checks will ensure that protective fencing remains intact. Any unforeseen issues can also be identified and discussed before damage to the tree(s) occurs.

7.8.3 The Local Planning Authority is invited to secure the following schedule by way of Planning Condition. To be effective the Local Planning Authority must provide us with a copy of the formal

Decision Notice to ensure we can then contact and follow up the proposed monitoring. A copy of the Decision Notice should be emailed to planning@innovationenvironmental.co.uk . The number of proposed visits is driven by the scale of the proposal.

7.8.4 A more detailed explanation of what will be assessed during the proposed monitoring visits is contained in Appendix 5.

8.0 Recommendations

8.1 The preliminary treeworks recommended are included in the tree tables contained within this report within the tree works schedule at Appendix 5.

8.2 That during the construction build phase, following current consultation with the arboriculturist, adequate provision is made for the protection of existing trees on site and the areas to be planted with new trees and shrubs.

8.3 That by liaison with the council tree officer, formal agreement should be sought regarding the tree pruning required and tree protection methods employed to protect retained trees. These will be via the production of a site specific method statement (SSMS) and will include:

- Tree protective fencing as shown on the tree protective plan
- No ground excavations within tree RPAs, unless approved by the tree officer
- Any anti-compaction measures taken
- The specific location of services trenches where possible to avoid excavations within RPAs, or if necessary to be undertaken by hand dig only
- Specific methods for construction of site access routes and new drainage ditches close to or within retained trees RPAs

8.4 Pre-commencement site meetings should be arranged to discuss the recommendations in this and subsequent reports and method statements. Copies of all relevant arboricultural reports should be available on site.

8.5 The SSMS should be developed further with the contractor through the development process to include comments made by them and the client and design team as well as council officers. A copy of the tree report, including the site specific method statements and tree protection plan is kept on site at all times.

8.6 That details of site inspection / supervision visits by the consultant arboriculturist are recorded and sent to the council tree officer with copies retained by the site manager.

9.0 Conclusions

9.1 The site is located within an urban landscape setting, there are many significant amenity value trees on site. Most of which are 'B' and 'C' category standard trees located in linear groups around the site boundaries. The dominant individual tree species on this site is Turkey Oak, Lime, Lombardy Poplar with Sycamore, Willow and Blue Atlas Cedar as other standard trees present. There are no trees protected by Tree Preservation Order but the site is located within the Dartmouth Park Conservation area. Most of the trees are in need of some basic crown pruning works due to their lack of recent management.

9.2 Three 'C' category trees, 1 'C' Category tree group and two 'U' category individual tree, T88, Lime & T92 Blue Cedar, are recommended to be removed. T78, T81, T82 and TG4 as a result of their conflict with the proposed improvements to the site entrance, car parking, access and landscaping. T88 and T92 are recommended to be removed due to its poor condition, and should be felled regardless of the constraining development.

9.3 Tree protection measures, including the use of cellular confinement sub-base systems for the construction of the proposed new surfaces and the installation of tree protective fencing and temporary ground protection will adequately protect the other retained trees RPAs if accompanied by detailed methods and supervision by a consultant arboriculturist.

9.4 Sufficient development room will be available after protection measures are instigated as described within this report. Excavations within retained tree RPAs for construction operations such as; service trenches; changes in levels, foundations excavations and removal of existing hard surfacing will be avoided where possible.

9.5 The development of the site will bring an opportunity for best practice tree management of the remaining trees and group areas on the site and an opportunity for further native tree and hedgerow planting. All tree works, translocation and landscape replacement tree planting will require agreement with the council officers.

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Consultant Arboriculturist
23rd October 2014
Rev 26th November 2014

10.0 Appendices

Appendix 1 Key to Survey Sheets

Appendix 2 Tree Survey Sheets

Appendix 3 Tree Constraints Plan

Appendix 4 Tree Protection Plan

Appendix 5 Tree Works Schedule

Appendix 6 Site Inspection & Monitoring Schedule

Appendix 7 BS5837:2012 Tree Constraints & Protection Methods

Appendix 8 Tree Protection Fencing Specification

Appendix 9 Temporary Ground Protection Specification

Appendix 10 Photographs

Appendix 1 – Key to Tree Survey Sheets

Key

BS 5837 Cat	Description
A	Those of high quality and value: in such a condition as to be able to make a substantial contribution (> 40 years)
B	Those trees of moderate quality and value: those in such a condition as to make a significant contribution (> 20 years)
C	Those trees of low quality and value: currently in adequate condition to remain until new planting could be established (> 10 years)
U	Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed regardless of development

Note: Sub categories are denoted in the tree survey data (A1, B1, C2 etc.). You are referred to the BS for further detail if required.

Tree No.	T (tree), G (group), H (hedge), W (woodland) + Ref No.
Species	Common Name
Ht (m)	Measured height in metres
DBH (m)	Diameter at 1.5m above ground level
Branch Spread	In m to cardinal points
Cr Ht Clearance (m)	Overall height of lowest branches from the ground level on side of proposed development
Life Stage	Young, Semi-Mature, Early-Mature, Mature, Over-Mature
General Observations	Observations on the condition of the tree(s)
Tree Work Specification	Proposed tree works in accordance with BS3998
BS Cat	See above
Life Exp	Estimated remaining contribution in years.
RPA Radius(m)	Radius of the trees Root Protection Area measured from the trunk to the edge of the RPA circle in metres
RPA (m2)	Overall Root Protection Area in m2
*	Indicates where tree data may have been estimated as tree was offsite / restricted access / dense vegetation hindering full inspection

Appendix 2 – Tree Survey Sheets

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
TG5	Hawthorn, Ash Seedlings, Elder	0.25	M/s	8	3	3	3	3	C2	Early-Mature	10_19	1	Average form, shape and condition, mixed species group. predominantly Hawthorn standards with Elder / Ash self-set, pioneer trees.Boundary trees adajcent to highway.	No Works	20
TG6	Hawthorn Lime Purple Leaf Plum (Atropurpurea)	0.1	M/s	6	3	3	3	3	C2	Semi-Mature	20_39	2	Average form, shape and condition. Young newly established trees growing as undertorey to mature Lime and Horse Chestnut.	Young tree maintenance	3
TG7	Lilca, Elder, Cherry x 2, Dead Cherry	0.25	M/s	7	3	3	3	3	C2	Early-Mature	10_19	1	Poor form, shape and condition linear group on boundary of tennis courts. x 2 dead Cherry trees. Self sown Elder.	Fell x 2 dead Cherry trees.	20
TG8	Poplar, Lombardy x 4	0.9	M/s	23	3	3	3	3	C2	Mature	10_19	1	Average form, shape and condition linear group of x 4 Lombardy Poplar. Dense crown, moderate crown deadwood. Central tree in group of 4 infected with pathogenic decay fungi	Central decay infected tree recommended to Hampstead tree officer to fell. Informed the tree was already identifed for removal.	254

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
													likely Rigidiporus ulmarius. Moderate to high crown deadwood. Basal / trunk epicormic growth. 3rd party offsite boundary tree with overhanging branches		
T81	Cherry	0.446	M/s	11	5	4	5.5	6	C2	Mature	10_19	3	Poor average form and condition. x 3 leading stems from low crown break. leading stems included. Previously crown lifted and crown thinned.	Insert x 3 stem flexible restraint.	62
T82	Lime	0.573	1	14	4.5	5	4.5	4.5	C2	Mature	10_19	2	Poor form, shape and condition. Dense upper crown, major crown deadwood. Basal / trunk epicormic growth - included. Large trunk wound on north side from 1-2m.	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 3m	149
T83	Ash	0.43	1	17	7	5	6	7.5	B2	Mature	20_39	4.5	Average form, shape and condition. Subject to past management - Lifted 4m. Dense crown, moderate crown	Remove dead wood >10cm diameter throughout the crown	84

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
													deadwood.		
T84	Lime	0.341	1	12	4.5	4	4.5	3	C2	Early-Mature	20_39	3	Average slightly suppressed form, shape and condition. Dense crown, low crown deadwood. Previosuly crown lifted. Co-dominant tree with included unions. Trunk epicormic growth to 2.5m.	Remove epicormic growth to a height of 4m	53
T85	Lime	0.223	1	10	6	3.5	5	2.5	C2	Early-Mature	10_19	3	Average form, shape and condition. Suppressed asymmetric canopy. Dense crown, low crown deadwood. Subject to past management - Lifted 4m.	No Works	22
T86	Red Oak	0.436	1	17	7	5	8.5	5.5	B2	Mature	20_39	3.5	Average form, shape and condition. Dense crown, moderate crown deadwood. Subject to past management - Lifted 4m. Asymmetric canopy.	Remove dead wood >10cm diameter throughout the crown	86

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T87	Lime	0.509	1	16	5.5	6.5	6	4.5	B2	Mature	20_39	2.5	Average form, shape and condition. Dense crown, low crown deadwood. Subject to past management - Lifted / Crown reduced. Trunk epicormic growth to crown break at 5m.	Remove epicormic growth to a height of 5m	117
T88	Lime	0.503	1	15	3	2.5	6.5	1.5	U	Mature	<10	2	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Upper crown in decline. Asymmetric canopy. Basal wound on south side with advanced decay - Kretzschmeria deusta.	Remove & Replace with suitable species of tree within final landscape scheme	114
T89	Lime	0.462	1	14	6.5	4.5	6	3.5	C2	Mature	10_19	2.5	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Basal / trunk epicormic growth. High crown deadwood. x 3 large trunk wounds on east trunk between	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 4m. Re-inspect for decay at root crown.	97

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
													1-3m.		
T90	Lime	0.462	1	14.5	3.5	4.5	5.5	3	C2	Mature	10_19	2.5	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Upper crown in decline. Basal / trunk epicormic growth - Hindering basal trunk inspection. Fence screed to trunk.	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 4m - re-inspect for basal decay.	97
T91	Lime	0.516	1	14	5.5	4.3	3.5	4	C2	Mature	10_19	2.5	Average form, shape and condition. Dense crown, low/moderate crown deadwood. Basal / trunk epicormic growth - unable to fully inspect. Fenced attached to trunk.	Remove epicormic growth to a height of 4m - re-inspect.	120
T92	Blue Atlas Cedar	0.519	1	18	5	6	6	3.5	U	Mature	20_39	6	Poor form, shape and condition. Open / thin upper crown, moderate crown deadwood.	Remove.	N/A

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
													Asymmetric form. High crown break. Trunk exudate over entire length of trunk. Root crown unable to inspect - dense vegetation hindering inspection.		
T93	Blue Atlas Cedar	0.723	1	19	9	9	8	8	B2	Mature	20_39	4	Average form, shape and condition. Dense crown, moderate crown deadwood. x 4 leading stems from low crown break, included but acute. Dense vegetation hindering root crown inspection.	Remove dead wood >10cm diameter throughout the crown. Remove root crown vegetation and re-inspect.	236
T94	Blue Atlas Cedar	0.5	1	15	3	7	6	4	C2	Mature	20_39	4	Average form, shape and condition. Dense crown, low / moderate crown deadwood. Asymmetric crown. Dense vegetation hindering root crown inspection.	Remove dead wood >10cm diameter throughout the crown. Remove root crown vegetation and re-inspect.	113

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T95	Blue Atlas Cedar	0.4	1	13	3.5	5	5	6	B2	Mature	20_39	4	Average / assymetric form, shape and condition. Dense crown, moderate crown deadwood. Dense vegetation hindering root crown inspection.	Remove dead wood >10cm diameter throughout the crown. Remove root crown vegetation and re-inspect.	72
T96	Lime	0.45	1	11	3.5	3	3	3	C2	Mature	10_19	1	Poor / Average form, shape and condition. Thinning upper crown, moderate/major crown deadwood - large dead limb to south. Dense basal / trunk epicormic growth - hindering inspection..	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 3m - re-inspect	92
T97	Lime	0.414	1	10	2	2	2	2	C2	Mature	10_19	3	Poor form, shape and condition. Subject to past management - 'Topped' at 8m. Dense crown / trunk re-growth, low crown deadwood. Dense basal / trunk epicormic growth.	Remove epicormic growth to a height of 3m - re-inspect root crown.	78

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T98	Hornbeam	0.404	1	13	3	4	6	4	C2	Mature	10_19	3	Poor form, shape and condition. Subject to past management - Lifted. Showing signs of stress with sparse crown extremities / short shoots - moderate crown deadwood. Basal trunk wound with moderate decay.	Remove dead wood >10cm diameter throughout the crown	74
T99	Lime	0.286	1	6	2	2	1	1	U	Early-Mature	<10	4	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Storm damaged crown. Central leader lost in past. Crown in decline - one live branch left on mostly dead trunk.	Remove & Replace with suitable species of tree within final landscape scheme	37
T100	Lime	0.43	1	8	2	2	2	2	C2	Mature	10_19	4	Poor form, shape and condition. Tree 'topped' @ 6m. Dense epicormic re-growth to trunk and root crown. Trunk wound and cavity at 2m.	Remove epicormic growth to a height of 2m	84

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T101	Hawthorn	0.08	1	3	1	1	1	1	C2	Young	10_19	1	Average form, shape and condition. Young newly established tree - still staked. Basal / trunk epicormic growth	Young tree maintenance - remove stake.	3
T102	Lime	0.509	1	12	3.5	3	3	3	C2	Mature	10_19	2	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth.	Remove epicormic growth to a height of 3m - re-inspect root crown.	117
T103	Lime	0.452	1	10	3	3	3	3.5	C2	Mature	10_19	2	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth - hindering root crown inspection.	Remove epicormic growth to a height of 3m - re-inspect	92
T104	Lime	0.477	1	12	4	3.5	3	3.5	C2	Mature	10_19	2	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth - hindering root crown inspection.	Remove epicormic growth to a height of 3m - re-inspect	103

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T105	Horse Chestnut	0.84	1	16	6.5	8	7.5	6	U	Mature	<10	3	Poor form, shape and condition. Open crown, defoliated. Large dead limbs in crown. Trunk epicormic growth. x 2 leding stems including with fresh cracking evident. Tree already condemed by tree officer. To be felled.	Remove & Replace with suitable species of tree within final landscape scheme	319
T106	Lime	0.493	1	15	3.5	4	3.5	3	C2	Mature	10_19	2	Poor form, shape and condition. Tree previously 'topped' @ 8m. Vigourous basal / trunk epicormic growth - hindering root crown inspection. x 1 large dead limb over highway.	Remove epicormic growth to a height of 4m - re-inspect. Remove dead limb over road as soon as practicable.	110
T107	Lime	0.417	1	14	3.5	4	2.5	3	C2	Mature	10_19	2.5	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth - hindering root crown inspection.	Remove epicormic growth to a height of 3m - re-inspect	79

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T108	Beech	0.487	1	18	7.5	7	3.5	7	B2	Mature	20_39	5	Average form, shape and condition. Dense crown, moderate crown deadwood. Asymmetric canopy.	Remove dead wood >10cm diameter throughout the crown	107
T109	London Plane	0.764	1	25	6	12	7	5.5	B2	Mature	>40	5	Average form, shape and condition. Asymmetric canopy. Dense crown, low/moderate crown deadwood. Multiple trunk pruning wounds / cavities on main trunk.	Crown reduce and reshape asymmetric crown by 30% to suitable side growth points retaining a flowing canopy shape. Remove dead wood >10cm diameter throughout the crown	264
T110	London Plane	0.78	1	26	10	8	11	15	B2	Mature	>40	4	Average form, shape and condition. Heavily asymmetric canopy to west. Dense crown, low/moderate crown deadwood. Ivy clad trunk.	Remove dead wood >10cm diameter throughout the crown. Sever / cut ivy to 2m and strip.	275
T111	London Plane	0.455	1	18	2.5	8	5	3	C2	Mature	10_19	10	Poor suppressed form, etioloted shape and condition. Asymmetric canopy. Dense upper crown, moderate crown deadwood. High H:D trunk ratio.	Remove dead wood >10cm diameter throughout the crown	94

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T112	London Plane	0.477	1	15	5.5	7	9.5	3	C2	Mature	10_19	4	Poor asymmetric, etiolated form over road. Average condition. Open crown, low/moderate crown deadwood. Multiple trunk pruning wounds / cavities on main trunk.	Crown reduce and reshape asymmetric crown by 30% to suitable side growth points retaining a flowing canopy shape over road. Remove dead wood >10cm diameter throughout the crown	103
T113	London Plane	0.614	1	17	4	9	7	1	C2	Mature	10_19	5	Poor, asymmetric form over pedestrian site entrance. Open crown, low/moderate crown deadwood.	Crown reduce and reshape asymmetric crown by 30% to suitable side growth points retaining a flowing canopy shape over site access path. Remove dead wood >10cm diameter throughout the crown	171
T114	Horse Chestnut	1.87	1	21	11	9	7.5	7.5	B2	Mature	20_39	4	Good form, shape and condition fro age and species. Dense crown, moderate crown deadwood. Horse Chestnut Bleeding canker exudate on main trunk. Old pruning wound / cavities on main trunk.	No Works	707

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T115	Horse Chestnut	1.73	1	20	9	12	11	8	B2	Mature	20_39	3	Good form, shape and condition fro age and species. Dense crown, moderate crown deadwood. Horse Chestnut Bleeding Canker exudate on main stem. Old pruning wounds and cavities. Long lateral extended limbs with high end weight x 3.	Remove dead wood >10cm diameter throughout the crown. Insert x 3 flexible restriants (Cobra Brace) to x 3 extended limbs.	707
T116	Cherry	0.446	1	14	4.5	6	5	4	C2	Mature	10_19	5	Average form, shape and condition. Dense upper crown, low crown deadwood. Subject to past management - Lifted. Basal trunk wound with surface root damage - mowing.	No Works	90
T117	Ash	0.191	1	10	5	4	5	5	B2	Early-Mature	20_39	2	Good form, shape and condition. Dense crown, low crown deadwood	No Works	17

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T118	Mountain Ash	0.245	1	7	3	3	4.5	4.5	C2	Mature	10_19	2.5	Average form, shape and condition. Dense crown, low crown deadwood	No Works	27
T119	Ornamental Apple	0.477	2	8	2.5	4	7	6	C2	Mature	10_19	3	Poor, asymmetric form, shape and condition. Dense crown, moderate/major crown deadwood. Ivy clad crown and stem.	Remove/ ring Ivy. Crown reduce and reshape by 20-30% to suitable side growth points retaining a flowing canopy shape to reshape asymmetric crown.	71
T120	Ginkgo	0.719	M/s	17	3	3.5	3.5	3.5	B2	Mature	20_39	6	Good form, shape and condition for species. Dense crown, low crown deadwood. Co-dominant tree with included unions - acute.	No Works	162
T121	Sycamore	0.8	2	14	7	7	7.5	7	B2	Mature	20_39	4	Average form, shape and condition. Co-dominant tree with included unions. Dense crown, low crown deadwood.	Insert x 2 Flexible restraint (Cobra Brace) between co-dominant stems.	201
T122	Silver Birch	0.509	1	13	4	6.5	7.5	6.5	B2	Mature	20_39	4	Good form, shape and condition. 3rd party, offsite boundary tree with overhanging branches. Subject to past management - Lifted. Dense	No Works	117

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
													crown, low crown deadwood.		
T123	Yew	0.652	1	10.5	7.5	7.5	7.5	8	B2	Mature	>40	0	Good form, shape and condition. 3rd party offsite tree boundary tree with overhanging branches. Dense crown, moderate crown deadwood. Low branches over park side of crown, school side ofcrown previously crown lifted over access road.	No Works	192
T124	Cherry	0.188	1	7	4	6	5.5	2	C2	Early-Mature	10_19	4	Poor form, shape and condition. Asymmetric canopy. 3rd party offsite boundary tree with overhanging branches.	No Works	16
T125	Whitebeam	0.433	1	8.5	7.5	6	5.5	3	C2	Mature	10_19	3	Poor form, shape and condition. Asymmetric canopy. Dense crown, major crown deadwood. 3rd party offsite boundary tree	Request tree owner removes dead limb and major deadwood overhanging school	85

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
													with overhanging branches. Dead hanging limb overhanging school. Basal trunk cavities with moderate decay. Leaning trunk.		
T126	Turkey Oak	0.943	1	25	11	10	8	9.5	A2	Mature	>40	2.5	Good form, shape and condition. Dense crown, moderate crown deadwood. 3rd party offsite boundary tree with overhanging branches.	No Works	402
T127	Norway Maple	0.509	1	12	5.5	6	6.5	3.5	B2	Mature	20_39	3	Average form, shape and condition. Asymmetric canopy. Dense crown, low crown deadwood. 3rd party offsite boundary tree with overhanging branches.	No Works	117
T128	Turkey Oak	0.997	1	21	15	15	12	12	A2	Mature	>40	3	Good form, shape and condition. Dense crown, moderate crown deadwood. 3rd party offsite boundary tree with overhanging branches.	No Works	450

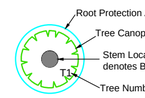
Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T129	Crack Willow	1.527	M/s	14	10	12	8	9	C2	Mature	10_19	1	Poor form, shape and condition. Multiple stemmed tree - with basal included unions. Subject to past management - Pollarded at 8m. Asymmetric canopy. 3rd party offsite boundary tree with overhanging branches. Dense crown, moderate crown deadwood. Large basal cavity with aparent 'mammal' use.	Re-pollard to previous pollard points	707
T130	Holm Oak	0.732	1	14	3.5	6	7.5	6.5	B2	Mature	20_39	3	Average form, shape and condition. Asymmetric canopy. Subject to past management - Reduced/Cut back from adjacent building. Dense crown, moderate crown deadwood. Ivy clad crown and stem.	Crown reduce and reshape by 20-30% to suitable side growth points retaining a flowing canopy shape to re-balance asymmetric crown.	242

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
SG1	Mixed shrub species	0.1	M/s	6	3	3	3	3	C2	Early-Mature	10_19	1	Average form, shape and condition un-managed shrub group.	No Works	3

Appendix 3 – Tree Constraints Plan

Tree No	Species	DBH(m)	No of Stems	Ht (m)	BS Cat
T73	Sycamore	0.541	1	17	B2
T74	Pear	0.509	M/s	12	C2
T75	Pear	0.439	M/s	12	C2
T76	Cedar of Lebanon	0.528	1	15	B1
T77	Sycamore	0.617	1	17	B1
T78	Silver Birch	0.286	1	11	C2
T79	Silver Birch	0.309	1	15	B2
T80	Silver Birch	0.213	1	13	B2
T81	Cherry	0.446	M/s	11	C2
T82	Lime	0.573	1	14	C2
T83	Ash	0.43	1	17	B2
T84	Lime	0.341	1	12	C2
T85	Lime	0.223	1	10	C2
T86	Red Oak	0.436	1	17	B2
T87	Lime	0.509	1	16	B2
T88	Lime	0.503	1	15	U
T89	Lime	0.462	1	14	C2
T90	Lime	0.462	1	14.5	C2
T91	Lime	0.516	1	14	C2
T92	Blue Atlas Cedar	0.519	1	18	C2
T93	Blue Atlas Cedar	0.723	1	19	B2
T94	Blue Atlas Cedar	0.5	1	15	C2
T95	Blue Atlas Cedar	0.4	1	13	B2
T96	Lime	0.45	1	11	C2
T122	Silver Birch	0.509	1	13	B2
T123	Yew	0.652	1	10.5	B2
T124	Cherry	0.188	1	7	C2
T125	Whitebeam	0.433	1	8.5	C2
T126	Turkey Oak	0.943	1	25	A2
T127	Norway Maple	0.509	1	12	B2
T128	Turkey Oak	0.997	1	21	A2
T129	Crack Willow	1.527	M/s	14	C2
T130	Holm Oak	0.732	1	14	B2
TG3	Mixed species group of: Holm Oak, Sycamore and Hawthorn	0.8	M/s	20	B2
TG4	Yew, Hawthorn, Cherry, Elder, Sycamore Seedling trees	0.3	M/s	10	C2
TG5	Hawthorn, Ash Seedlings, Elder	0.25	M/s	8	C2
TG8	Poplar, Lombardy x4	0.9	M/s	23	C2

Tree Survey Drawing Key



See Marishal Thompson Tree Survey for Individual Tree Details

KEY

Please refer to Marishal Thompson arboricultural report for details

- Category A - high quality and value
- Category B - moderate quality and value
- Category C - low quality and value
- Category U - removal

RPA - root protection area as defined by Table 2 BS 5837:2012

Category U - removal

Shading Arc

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REV AMENDMENTS DRAWN DATE AUTHD

PROJECT
William Ellis School
Highgate Road
London NW5 1RN

CLIENT
Urban Design Limited

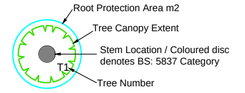
TITLE
Tree Constraint Plan (TCP)

Job	Scale	DRG NO	Revision
D1909131355	1:500 @ A2	9597	-
Date 30/08/2013	Type MT.TCP.9597.v1		

MT Group

Appendix 4 – Tree Protection Plan

Tree Survey Drawing Key



See Marishal Thompson Tree Survey for Individual Tree Details

KEY

- Tree to be retained
- Tree to be Pruned
- Tree to be re-pollarded
- Tree to be removed
- Tree protective fencing
- No Dig Surface

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REV	AMENDMENTS	DRAWN	DATE	AUTH'D
G	Additional Fencing Added, T82, & T92 now Cat. U	SPB	24/10/14	P Allen
F	NEW BASEPLAN ADDED	SPB	05/10/14	P Allen
E	NEW BASEPLAN ADDED	SPB	19/08/14	P Allen
D	NEW BASEPLAN ADDED	SPB	28/06/14	P Allen
C	NEW BASEPLAN ADDED	SPB	15/01/14	P Allen
B	NEW BASEPLAN ADDED	SPB	21/12/13	P Allen
A	NEW BASEPLAN ADDED	SPB	24/11/13	P Allen

PROJECT
William Ellis School
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Urban Design Limited

TITLE
Planning
Tree Protection Plan (TPP)

Job	Scale	DRG NO	Revision
D1909131355	1:500 @ A2	9597	G
Date 30/08/2013	Type MT.TPP.9597.v8		

MT Group

scale bar 1:500 — 5m 0 10m 50m

Appendix 5 – Tree Works Schedule

NOTE: All tree works to be undertaken in accordance with BS 3998:2010 'Treework - Recommendations'. All pruning cuts to be made at suitable growing points, in line with the principles of natural target pruning. *<(In accordance to the current proposed design layout provided>).*

Tree Works Schedule

Tree No.	Species	Proposed Tree Works	Reason	BS Cat
TG6	Hawthorn Lime Purple Leaf Plum (Atropurpurea)	Young tree maintenance	Average form, shape and condition. Young newly established trees growing as undertorey to mature Lime and Horse Chestnut.	C2
T81	Cherry	Insert x 3 stem flexible restraint.	Poor average form and condition. x 3 leading stems from low crown break. leading stems included. Previously crown lifted and crown thinned.	C2
T82	Lime	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 3m	Poor form, shape and condition. Dense upper crown, major crown deadwood. Basal / trunk epicormic growth - included. Large trunk wound on north side from 1-2m.	C2
T83	Ash	Remove dead wood >10cm diameter throughout the crown	Average form, shape and condition. Subject to past management - Lifted 4m. Dense crown, moderate crown deadwood.	B2
T84	Lime	Remove epicormic growth to a height of 4m	Average slightly suppressed form, shape and condition. Dense crown, low crown deadwood. Previosuly crown lifted. Co-dominant tree with included unions. Trunk epicormic growth to 2.5m.	C2
T86	Red Oak	Remove dead wood >10cm diameter throughout the crown	Average form, shape and condition. Dense crown, moderate crown deadwood. Subject to past management - Lifted 4m. Asymmetric canopy.	B2
T87	Lime	Remove epicormic growth to a height of 5m	Average form, shape and condition. Dense crown, low crown deadwood. Subject to past management - Lifted / Crown reduced. Trunk epicormic growth to crown break at 5m.	B2
T89	Lime	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 4m. Re-inspect for decay at root crown.	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Basal / trunk epicormic growth. High crown deadwood. x 3 large trunk wounds on east trunk between 1-3m.	C2
T90	Lime	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 4m - re-inspect for basal decay.	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Upper crown in decline. Basal / trunk epicormic growth - Hindering basal trunk inspection. Fence screed to trunk.	C2
T91	Lime	Remove epicormic growth to a height of 4m - re-inspect.	Average form, shape and condition. Dense crown, low/moderate crown deadwood. Basal / trunk epicormic growth - unable to fully inspect. Fenced attached to trunk.	C2
T92	Blue Atlas Cedar	Remove	Poor / Average form, shape and condition. Open / thin upper crown, moderate crown deadwood. Asymmetric form. High crown break. Trunk exudate over entire length of trunk. Root crown unable to inspect - dense vegetation hindering inspection.	U
T93	Blue Atlas Cedar	Remove dead wood >10cm diameter throughout the crown. Remove root crown vegetation and re-inspect.	Average form, shape and condition. Dense crown, moderate crown deadwood. x 4 leading stems from low crown break, included but acute. Dense vegetation hindering root crown inspection.	B2
T94	Blue Atlas Cedar	Remove dead wood >10cm diameter throughout the crown. Remove root crown vegetation and re-inspect.	Average form, shape and condition. Dense crown, low / moderate crown deadwood. Asymmetric crown. Dense vegetation hindering root crown inspection.	C2
T95	Blue Atlas Cedar	Remove dead wood >10cm diameter throughout the crown. Remove root crown vegetation and re-inspect.	Average / assymetric form, shape and condition. Dense crown, moderate crown deadwood. Dense vegetation hindering root crown inspection.	B2
T96	Lime	Remove dead wood >10cm diameter throughout the crown Remove epicormic growth to a height of 3m - re-inspect	Poor / Average form, shape and condition. Thinning upper crown, moderate/major crown deadwood - large dead limb to south. Dense basal / trunk epicormic growth - hindering inspection..	C2

Tree No.	Species	Proposed Tree Works	Reason	BS Cat
T97	Lime	Remove epicormic growth to a height of 3m - re-inspect root crown.	Poor form, shape and condition. Subject to past management - 'Topped' at 8m. Dense crown / trunk re-growth, low crown deadwood. Dense basal / trunk epicormic growth.	C2
T98	Hornbeam	Remove dead wood >10cm diameter throughout the crown	Poor form, shape and condition. Subject to past management - Lifted. Showing signs of stress with sparse crown extremities / short shoots - moderate crown deadwood. Basal trunk wound with moderate decay.	C2
T100	Lime	Remove epicormic growth to a height of 2m	Poor form, shape and condition. Tree 'topped' @ 6m. Dense epicormic re-growth to trunk and root crown. Trunk wound and cavity at 2m.	C2
T101	Hawthorn	Young tree maintenance - remove stake.	Average form, shape and condition. Young newly established tree - still staked. Basal / trunk epicormic growth	C2
T102	Lime	Remove epicormic growth to a height of 3m - re-inspect root crown.	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth.	C2
T103	Lime	Remove epicormic growth to a height of 3m - re-inspect	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth - hindering root crown inspection.	C2
T104	Lime	Remove epicormic growth to a height of 3m - re-inspect	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth - hindering root crown inspection.	C2
T106	Lime	Remove epicormic growth to a height of 4m - re-inspect. Remove dead limb over road as soon as practicable.	Poor form, shape and condition. Tree previously 'topped' @ 8m. Vigourous basal / trunk epicormic growth - hindering root crown inspection. x 1 large dead limb over highway.	C2
T107	Lime	Remove epicormic growth to a height of 3m - re-inspect	Poor form, shape and condition. Tree previously 'topped' @ 10m. Vigourous basal / trunk epicormic growth - hindering root crown inspection.	C2
T108	Beech	Remove dead wood >10cm diameter throughout the crown	Average form, shape and condition. Dense crown, moderate crown deadwood. Asymmetric canopy.	B2
T109	London Plane	Crown reduce and reshape asymmetric crown by 30% to suitable side growth points retaining a flowing canopy shape. Remove dead wood >10cm diameter throughout the crown	Average form, shape and condition. Asymmetric canopy. Dense crown, low/moderate crown deadwood. Multiple trunk pruning wounds / cavities on main trunk.	B2
T110	London Plane	Remove dead wood >10cm diameter throughout the crown. Sever / cut ivy to 2m and strip.	Average form, shape and condition. Heavily asymmetric canopy to west. Dense crown, low/moderate crown deadwood. Ivy clad trunk.	B2
T111	London Plane	Remove dead wood >10cm diameter throughout the crown	Poor suppressed form, etioloted shape and condition. Asymmetric canopy. Dense upper crown, moderate crown deadwood. High H:D trunk ratio.	C2
T112	London Plane	Crown reduce and reshape asymmetric crown by 30% to suitable side growth points retaining a flowing canopy shape over road. Remove dead wood >10cm diameter throughout the crown	Poor asymmetric, etiolated form over road. Averagevcondition. Open crown, low/moderate crown deadwood. Multiple trunk pruning wounds / cavities on main trunk.	C2
T113	London Plane	Crown reduce and reshape asymmetric crown by 30% to suitable side growth points retaining a flowing canopy shape over site access path. Remove dead wood >10cm diameter throughout the crown	Poor, asymmetric form over pedestrian site entrance. Open crown, low/moderate crown deadwood.	C2
T115	Horse Chestnut	Remove dead wood >10cm diameter throughout the crown. Insert x 3 flexible restriants (Cobra Brace) to x 3 extended limbs.	Good form, shape and condition fro age and species. Dense crown, moderate crown deadwood. Horse Chestnut Bleeding Canker exudate on main stem. Old pruning wounds and cavities. Long lateral extended limbs with high end weight x 3.	B2
T119	Ornamental Apple	Remove/ ring Ivy. Crown reduce and reshape by 20-30% to suitable side growth points retaining a flowing	Poor, asymmetric form, shape and condition. Dense crown, moderate/major crown deadwood. Ivy clad crown and stem.	C2

Tree No.	Species	Proposed Tree Works	Reason	BS Cat
		canopy shape to reshape asymmetric crown.		
T121	Sycamore	Insert x 2 Flexible restraint (Cobra Brace) between co-dominant stems.	Average form, shape and condition. Co-dominant tree with included unions. Dense crown, low crown deadwood.	B2
T125	Whitebeam	Request tree owner removes dead limb and major deadwood overhanging school	Poor form, shape and condition. Asymmetric canopy. Dense crown, major crown deadwood. 3rd party offsite boundary tree with overhanging branches. Dead hanging limb overhanging school. Basal trunk cavities with moderate decay. Leaning trunk.	C2
T129	Crack Willow	Re-pollard to previous pollard points	Poor form, shape and condition. Multiple stemmed tree - with basal included unions. Subject to past management - Pollarded at 8m. Asymmetric canopy. 3rd party offsite boundary tree with overhanging branches. Dense crown, moderate crown deadwood. Large basal cavity with aparent 'mammal' use.	C2
T130	Holm Oak	Crown reduce and reshape by 20-30% to suitable side growth points retaining a flowing canopy shape to re-balance asymmetric crown.	Average form, shape and condition. Asymmetric canopy. Subject to past management - Reduced/Cut back from adjacent building. Dense crown, moderate crown deadwood. Ivy clad crown and stem.	B2

To Be Removed

Tree No.	Species	Proposed Tree Works	Observations	BS Cat
TG7	Lilca, Elder, Cherry x 2, Dead Cherry	Fell x 2 dead Cherry trees.	Poor form, shape and condition linear group on boundary of tennis courts. x 2 dead Cherry trees. Self sown Elder.	C2
TG8	Poplar, Lombardy x 4	Central decay infected tree recommended to Hampstead tree officer to fell. Informed the tree was already identifed for removal.	Average form, shape and condition linear group of x 4 Lombardy Poplar. Dense crown, moderate crown deadwood. Central tree in group of 4 infected with pathogenic decay fungi likely Rigidiporus ulmarius. Moderate to high crown deadwood. Basal / trunk epicormic growth. 3rd party offsite boundary tree with overhanging branches	C2
T88	Lime	Remove & Replace with suitable species of tree within final landscape scheme	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Upper crown in decline. Asymmetric canopy. Basal wound on south side with advanced decay - Kretzschmeria deusta.	U
T92	Blue Cedar	Remove & Replace with suitable species of tree within final landscape scheme	Poor form, shape and condition. Extensive crown die-back and sparseness	U
T99	Lime	Remove & Replace with suitable species of tree within final landscape scheme	Poor form, shape and condition. Showing signs of stress with sparse crown extremities / short shoots. Storm damaged crown. Central leader lost in past. Crown in decline - one live branch left on mostly dead trunk.	U
T105	Horse Chestnut	Remove & Replace with suitable species of tree within final landscape scheme	Poor form, shape and condition. Open crown, defoliated. Large dead limbs in crown. Trunk epicormic growth. x 2 leding stems including with fresh cracking evident. Tree already condemed by tree officer. To be felled.	U

Appendix 6 – Site Inspection & Monitoring Schedule

In order to ensure that the principals of tree protection set out in the statement are adhered to, it is important to set out communication details for key individuals and tasks that require supervision. These details should be retained by all relevant parties and available on site at all times. Relevant parties will be advised of any changes in personnel or contractor during the development process.

To ensure that the construction process is undertaken with minimal disturbance to the retained tree stock, we recommend that an experienced Environmental Services arboricultural consultant be appointed to undertake regular inspections of the site according to a site inspection / supervision schedule below.

It is our experience that a mix of scheduled and unannounced site visits are appropriate these unannounced inspections will serve to identify any damage to the Tree Protection Fencing, poor working practices, potential problems and points of conflict between the construction process and the health of the trees. These reports will include recommendations for remedial action.

During these visits any changes to the proposed works will be discussed, their impact assessed and recommendations for best practice will be outlined. After each of these visits a copy of the report should be sent to the Site Agent, Local Authority Tree Officer and Client. The remedial action undertaken will be recorded on the next visit.

It should be noted that these visits will only be undertaken if a written instruction is received from the client prior to commencement of works on site.

With reference to relevant published guidance, the methodology of this statement follows a logical sequence essential to the efficacy of the protection measures. References may include: British Standard 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'; British Standard 3998:2010 'Tree Work - Recommendations' and National Joint Utilities Group 'Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees, Volume 4' 2007.

It is essential to the successful implementation of the principals set out in this document that effective supervision and enforcement are implemented from the outset as detailed in the following construction phases.

Constraints Item	Site Supervision required	Number of Visits Expected	Timing of Site Visits	Actual Visit Date
Tree works operations	Yes	Visit 1	Prior to construction	
Pre-commencement meeting between relevant parties informing Council of development start date	Yes	Visit 2	Prior to site clearance	
Establishment & protection of Root Protection Areas (RPA) for retained trees	Yes	Visit 2	Prior to site clearance	
Changes in soil levels in close proximity to retained trees	Yes	Visit 3	During site clearance phase	
Location of temporary access route through / adjacent to the retained trees	Yes	Visit 3	During construction phase	
Protection and prevention of damage to retained tree canopies during construction	Yes	Visit 3	During construction phase	
Site access for construction vehicles and avoidance of compaction to the RPA of retained trees	Yes	Visit 3	During construction phase	
Excavation of services trenches in close proximity to retained trees	Possible	Visit 3	During construction phase	
Installation of 'No-Dig' footpath surfacing within the RPAs of T92-T95	Yes	Visit 4	During construction phase	
Generic construction site constraints: **1 Site office / Welfare unit location** **2 Temporary toilets** **3 Siting of bonfires** **4 Location of contaminant storage and washout areas** **5 Location of stripped topsoil**	Yes	Visit 3	During construction phase	
Post construction tree assessment with remedial recommendations made	Yes	Visit 5	Post construction	

Appendix 7 – BS5837: 2012 Tree Constraints & Protection Methods

Phase 1 Pre-Construction Meeting

Prior to commencement of the works an onsite meeting will be held with all relevant parties including the site agent and appointed Environmental Services arboricultural consultant of works. The purpose of this meeting is to record site features including tree condition, agree tree works (See Tree Works Schedule, location of site storage and welfare facilities and the location of tree protection measures.

Phase 2 Tree Protection Measures

Subject to planning the Tree Protection Measures outlined in this report will be revisited in detail based on the working drawings, construction programme and method statement to be prepared.

Tree protection fencing should be installed prior to any demolition or ground-works commencing, remain in place throughout construction and be removed only after completion.

The provision of tree protection and light tree surgery will reduce the risk of direct damage to the retained trees. The demolition and construction process should not be commenced until the tree surgery works has been completed and the protective areas have been fenced off.

Tree protection will be installed as per the Tree Protection Plan which will be agreed with the Local Authority Tree Officer and with reference to the British Standard 5837 2012 'Trees in relation to design, demolition and construction – Recommendations'. Prior to commencing any demolition or construction works, the fencing will be inspected by the appointed Environmental Services Arboricultural consultant.

Within the fenced zone, no materials or chemicals should be stored at any time, no fires should be lit, no pedestrian or vehicle traffic, and level changes within these areas should be kept to an absolute minimum. Every effort should be taken to protect a maximum possible area of the root system.

Within the Root Protection Area no level changes or excavation within the RPA should be undertaken without the consent of the LPA Tree Officer.

Clear notices are to be fixed to the outside of the fencing with words such as 'TREE PROTECTION AREA – NO ACCESS OR WORKING WITHIN THIS AREA'. See Appendix 8.

The site agent, all contractors and other relevant personnel are to be informed of the role of the Tree Protection Fencing and their importance. A copy of the Tree Protection Plan will be displayed on site at all times during construction.

Phase 3 Demolition and Enabling Works

Prior to any works commencing on site the Tree Protection Fencing will be erected. During demolition programme and enabling works the existing front access will be in use. Any plant or vehicles engaged in the demolition works will operate outside the fenced off No-Dig / Root Protection Areas.

Phase 4 Locations of Site Offices Compound and Storage Area

The site office, welfare facilities, storage yard and contractors parking area need to be located within an area of the site that is outside the Root Protection Area (RPA). The compound will remain at least 1 metre outside the RPA with access from the main access road.

All fuel storage and loose cement / sand to be batched and stored in the compound area.

Phase 5 Groundworks, Level Changes, Foundations and Services

All spoil, including excavated soil and demolition material will be removed from site or stored in a location remote from any tree protection barriers.

With regard to the drawings provided the construction of foundations for the new build is located beyond the Root Protection Area (RPA) of retained trees, therefore with regard to the health of the retained trees no specialised foundation design is required. If the subsoil is found to be plastic, the foundations will be specified to take into account the potential influence of the vegetation on the moisture content and volume of the subsoil.

We recommend that all drainage and underground service routes are located beyond the RPA of all the retained trees. If the service runs are to be located within the RPA, we recommend that this matter is dealt with by method statement secured by planning condition. If services are located within the RPA special implementation techniques such as moleing, airspade, or hand digging may be required by the LPA. In the majority of cases, however, careful excavation with a low tonnage mechanical excavator supervised by the Environmental Services consultant arboriculturist can adequately undertake services excavations. When tree roots are encountered, hand digging and root protection can then be undertaken as and when they are observed.

Phase 6 Dismantling Protection Barriers

Dismantling the protection barriers around retained trees may be required to allow completion of final surface treatments and landscaping. Supervision of this exercise and control of the landscaping thereafter will be administered by the appointed Environmental Services arboricultural consultant. The removal of the Tree Protection Fencing is not an opportunity for machinery to access the previously fenced off area.

No further excavation will be carried out during this process and soils levels will not be raised above that existing by greater than 100mm and not within 2m of the trunk. Any removal of existing structures within the Root Protection Area including gardens type walls or paths will be carried out by hand.

Appendix 8 – Tree and Ground Protection Specification

on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

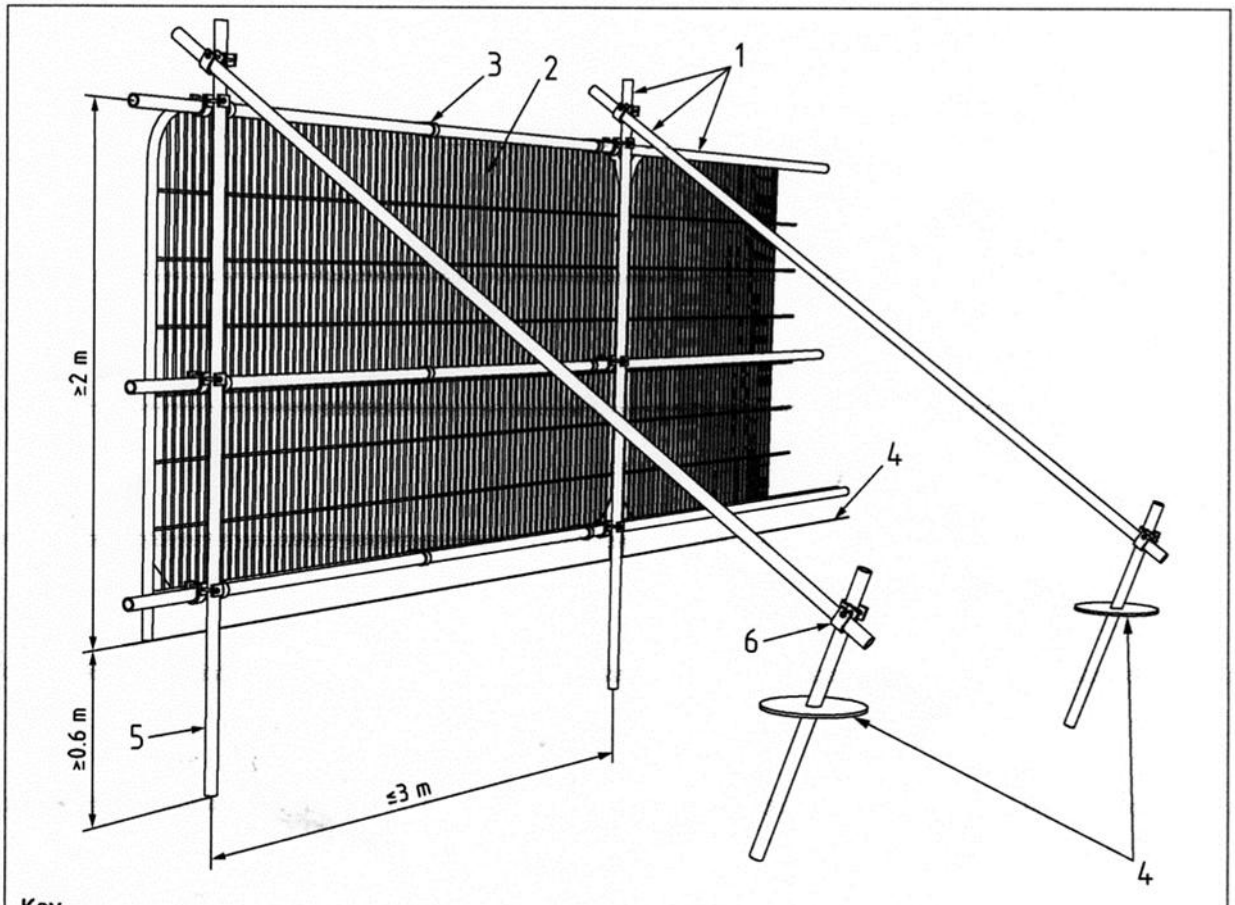
NOTE 1 Examples of configurations for steel mesh perimeter fencing systems are given in BS 1722-18.

NOTE 2 It might be feasible on some sites to use temporary site office buildings as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.

6.2.2.4 All-weather notices should be attached to the barrier with words such as:

"CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

Figure 2 **Default specification for protective barrier**

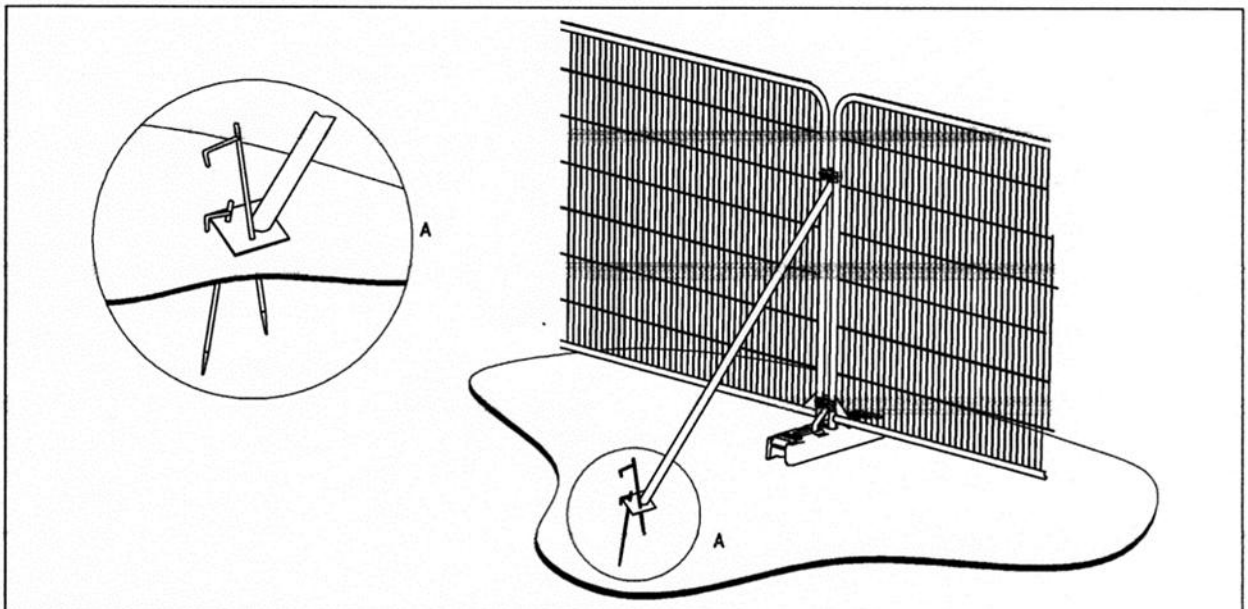


Key

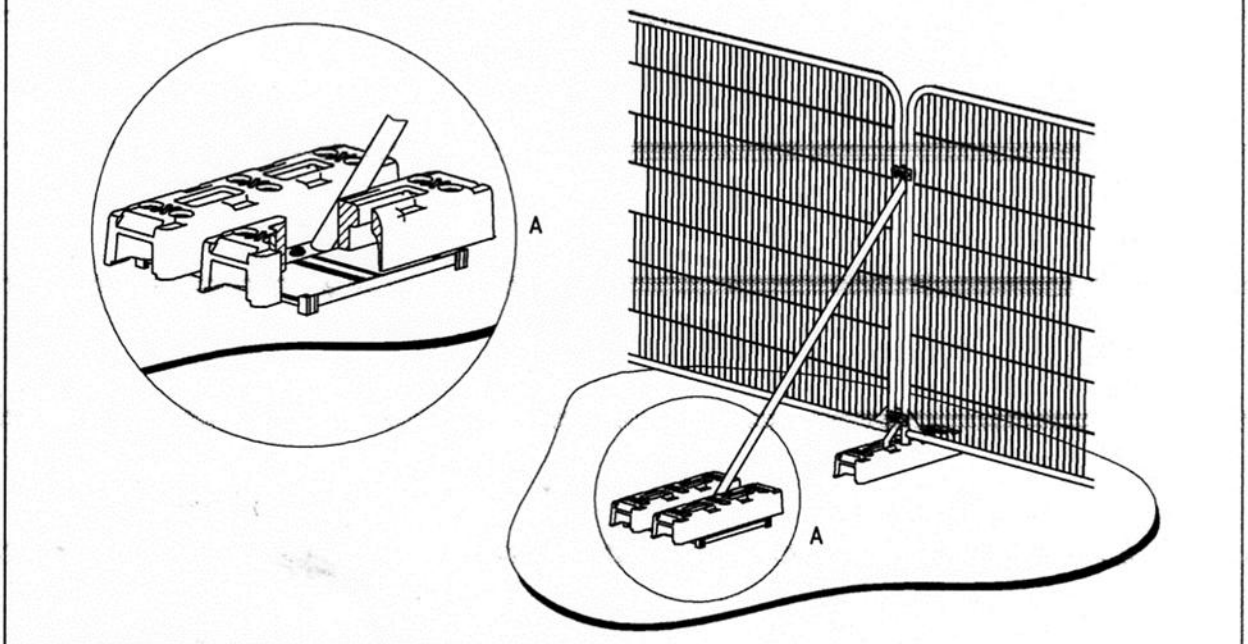
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

BRITISH STANDARD **BS 5837:2012**

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

6.2.3 Ground protection during demolition and construction

6.2.3.1 Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.

Suggested protective fencing warning sign format

TREE PROTECTION AREA

KEEP OUT

(TOWN & COUNTRY PLANNING ACT 1990)

THE VEGETATION PROTECTED BY THIS FENCE IS PROTECTED BY PLANNING CONDITIONS AND/OR IS THE SUBJECT OF A TREE PRESERVATION ORDER.

IF YOU REQUIRE ACCESS INTO THIS AREA PLEASE CONTACT

planning@ innovation-environmental.co.uk

T: +44 (0)330 380 1036

Appendix 9 – Temporary Ground Protection Specification

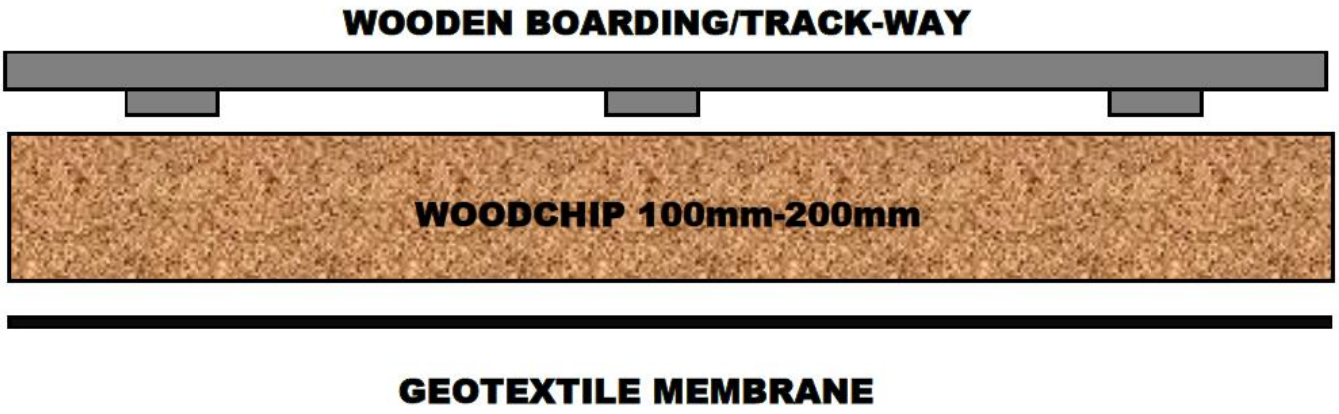
BS5837 recognizes that incursions in to the construction inclusion zones will be required at times during some developments.

The objective is to minimize soil compaction

Example 1 - *for pedestrian movements only, a single thickness of scaffold boards places either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g.) 100mm depth of woodchip), laid on to a geotextile membrane.*

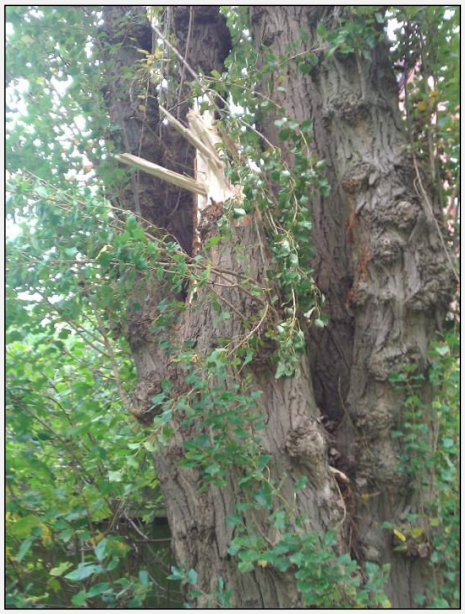
Example 2 - *For pedestrian-operated plant up to a gross weight of 2 t, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;*

Example 3 - *For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*



Appendix 10 – Photographs

TG8, Lombardy Poplar

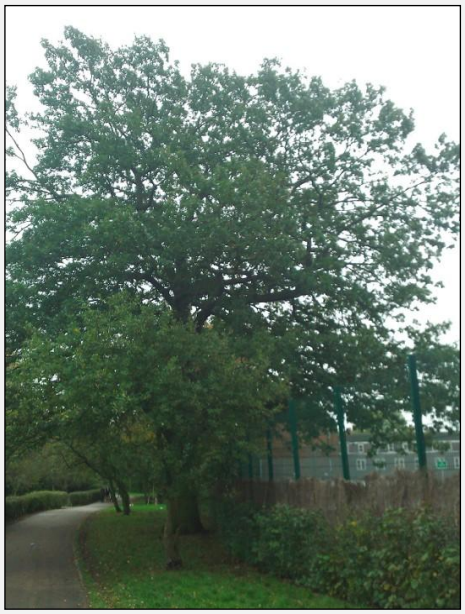


Failed leading stem on T62, L.Poplar

T116, Windblown Cherry

T123, Yew

T126, Turkey Oak



T128, Turkey Oak

T129, Pollarded Willow

T130, Holm Oak