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Arboricultural Impact Assessment

- Tree Survey
- Tree Protection Plan
- Arboricultural Method Statement

At:-

23 Kewferry Road
Northwood
London
HA6 2NS

On behalf of:-

Mr and Mrs Carson
27 Chevening Road
Greenwich

Prepared by:

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Survey Date: 20th May 2016
Report Date: 22nd July 2016
Project no: 698

CONTENTS

- 1 BACKGROUND**
- 2 SURVEY DETAILS AND SCOPE**
- 3 SURVEY LIMITATIONS**
- 4 FINDINGS AND PROPOSALS**
- 5 ARBORICULTURAL IMPACT ASSESSMENT**

Appendices

- A Site Plan: drawing no: 698-04**
- B Tree Schedule**
- C BS 5837:2012 - Trees in relation to Design, Demolition and Construction, Table 1**
- D Tree Protection Fencing Detail**
- E Landscape Plan: Rear Garden**
- F Landscape Plan: Front Garden**

1 BACKGROUND

- 1.1** This Arboricultural Impact Assessment relates to the implementation of landscape design proposals. Planning permission has already been approved for extension of the house. This report has been instructed by Mr and Mrs Carson.
- 1.2** 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.
- 1.3** This survey and report have been prepared in accordance with recommendations provided in BS 5837:2012, Trees in Relation to Construction.
- 1.4** Documentation supplied:
 - CMG Ltd, Master Plan – drawing no: 3.1
 - Stephen Ryan Garden Design, front garden landscape proposal.

2 SURVEY DETAILS AND SCOPE

- 2.1 The site survey included trees and shrubs, within influencing distance of the proposed development, with a stem diameter over 75mm at 1.5m height, located within the area shown on the 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 details have been added to the plan received which is included as Appendix A. Tree locations have been taken from the topographical survey provided. Where not included on the topographical survey, they have been determined by measuring distances from features shown on the plan, using a laser measuring device. The following information was recorded for each tree, and is shown in the Tree Schedule included as Appendix B:
- **Number:** an identity number for each tree, prefixed with a "T", which cross references locations shown on the plan with the schedule in Appendix B. Where a number of trees, normally of the same species, are located close together and are similar in character and requirements, they have been treated as a Group under a single Number, prefixed with a "G".
 - **Species:** common name.
 - **Tree height:** approximate height in metres.
 - **Stem diameter:** diameter in millimetres, taken at 1.5m above ground. Where there are a number of stems, stem diameters are recorded in the condition column.
 - **Branch spread:** approximate spread in metres to N,S,W and E 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.
 - **Physiological Condition:** Good, Fair, Poor, Dead.
 - **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, 10+ years, 20+ years, 40+ years.
 - **Category grading:** tree classification taken from BS 5837:2012, Trees in Relation to Construction (see Appendix C for details), as follows:
 - Category U: Unsuitable for retention, trees with less than 10 years life expectancy, normally recommended for removal (Red)
 - Category A: high quality trees, able to make a substantial contribution for at least 40 years. (Green)

- Category B: moderate quality trees, able to make a significant contribution for at least 20 years. (Blue)
- Category C: low quality, in adequate condition to remain for at least 10 years, or young trees <150mm stem diameter.(Grey/Uncoloured)

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 BS5837 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 BS5837, 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 principally for planning purposes. Although any obvious structural defects have been noted, a full Tree Hazard Assessment has not been carried out.

4 FINDINGS AND PROPOSALS

4.1 Site Overview

- 4.1.1 Landscape proposals for the rear garden are included in appendix E, and for the front garden are included in appendix F, and shown on the Tree Protection Plan included as Appendix A.
- 4.1.2 There are two fine mature oak (T10 and T29) in the rear garden, which must be protected. In addition the birch (T30) shows high amenity value. Other trees are of less importance.

4.2 Legal Protection of Trees

- 4.2.1 The London Borough of Hillingdon have a Tree Preservation Order (Ref: TPO118 of 09/01/2001) which covers tree numbers T20, T29, T30, T31, T32 and T35.
- 4.2.2 T33 and T34, shown on the Tree Preservation Order, are no longer present.
- 4.2.3 Trees protected by the Tree Preservation Order are shown hatched green on the Tree Protection Plan.

4.3 Tree Work

- 4.3.1 Details of proposed tree works are included in the Tree Schedule included as Appendix B.
- 4.3.2 23 trees/groups are proposed for removal, as detailed in section 5.1 below.
- 4.3.3 All tree work should be undertaken to the standards set out in BS 3998:2010 British Standard Recommendations for Tree Work.

4.4 Tree and Root Protection

- 4.4.1 Root Protection Areas are shown for all trees in the tree schedule attached as Appendix B. They are also shown for all retained trees, as circular areas centred on the trunk, on the plan enclosed as Appendix A. This shows the distance that construction must normally be kept back from a tree, to provide the Root Protection Area recommended in BS 5837.
- 4.4.2 The location of Tree Protection Fencing to protect the roots of T10 is shown on the Tree Protection Plan. It will not be practical to erect further Tree Protection Fencing, however:-
- where new hard surfacing is proposed within Root Protection Areas, where shown hatched cyan on the Tree Protection Plan, No-Dig construction must be used as detailed in section 4.5 below.
 - where temporary access is required within Root Protection Areas, where shown hatched blue on the Tree Protection Plan, ground protection must be installed, as detailed in section 4.6 below.
- 4.4.3 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 as Appendix D.
- 4.4.4 After erection of Tree Protection Fencing and installation of ground protection, 2 days notice must be given to the Local Planning Authority before any construction, **including any ground work**, starts on site. Tree Protection Fencing must be maintained and retained for the duration of the works, or until such time as agreed in writing with the Local Planning.
- 4.4.5 Notices must be fixed to the Tree Protection Fencing stating:- "Tree Protection Fencing – No construction activity to take place within this area".

4.5 No-Dig Construction Areas

- 4.5.1 The No-Dig areas, shown hatched cyan on the Tree Protection Plan included as Appendix A, must be constructed without excavation apart from the removal of turf/organic matter, which should 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.
- 4.5.2 Engineering details for sections of No-Dig construction must avoid localised compaction, using a three dimensional cellular confinement system as an integral component of the sub-base. As well as being fit for purpose, the design and methodology must protect tree roots, by ensuring the following:-
- topsoil/turf must be removed carefully by hand to a maximum of 75mm, or less if roots are found nearer the surface.
 - following leveling with soil or sand, a permeable, non-woven geotextile membrane, must be laid.
 - pressure treated timber edging boards, supported by driven stakes must be used.
 - a suitable cellular confinement system must then be constructed to manufacturers instructions on top of the geogrid. Products that might be considered include Geoweb, supplied by Cooper Clarke Group Ltd (01204 862 222) or Cellweb, supplied by Geosynthetics Ltd (01455 617 139).
 - the cellular confinement system must be filled with clean (no fines), washed angular, 40/20mm, 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 be then be laid. Either sand bedding and block paving, or gravel, would be suitable.
 - removed turf/topsoil can be used to grade surrounding ground levels.
- 4.5.3 No-Dig construction will result in an increase in levels. This must be fully taken account of in all other aspects of the design.

4.6 Ground Protection Area

- 4.6.1 The temporary construction access, shown as a Ground Protection Area, on the Tree Protection Plan, must be protected either 25mm plywood or side butting scaffold boards, on top of a compressible layer of sand or woodchips, laid onto a geotextile. Alternatively, Trakmats supplied by the Marwood Group, (www.marwoodgroup.co.uk), Ground-Guards, as supplied by Ground Guards (www.ground-guards.co.uk) or a similar approved product, must be used.

4.7 General measures

- 4.7.1 No construction activity whatsoever must be allowed within Root Protection Areas, other than that specifically described above. On no account must these areas be used for routing of underground services, storage of materials or on-site parking.
- 4.7.2 No mixing of cement, or concrete, or storage of fuel must take place within 10m of retained trees, nor in any position where the slope of the ground could lead to contamination of the Root Protection Area.
- 4.7.3 Fires must not be lit in a position where their flames could extend to within 10m of foliage, branches or trunk.
- 4.7.4 Landscape works carried out within Root Protection Areas must be undertaken with great care so as not to damage shallow roots. Tractor mounted rotovators or other heavy mechanical cultivation should not be used within the Root Protection Areas.
- 4.7.5 A copy of the Tree Protection Plan must be kept on site and should be fully understood by the Site Agent.

4.8 Bat roosts

- 4.8.1 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.

4.9 Birds

- 4.9.1 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 ARBORICULTURAL IMPACT ASSESSMENT

- 5.1** The following trees / tree groups, categorized as per BS 5837 (see Appendix C for details), are proposed for removal:
- Category U – unsuitable for retention: 2 trees.
 - Category C – low quality: 17 trees, of which removal of 3 has already been approved under the planning consent to extend the house. Category B/C – between categories B and C
 - T4 – a 4m ironwood, to make way for landscape proposals
 - T5 – a 4m thorn in the front garden, to allow reconfiguration of parking arrangements
 - T14 – a 7.5m leaning pear
 - T17 – a 12.5m goat willow, with dead and broken branches
- 5.2** Protection measures have been specified to protect all retained trees, including a specification for No Dig construction to protect the roots of T10 and T29, by far the most important trees on the site.
- 5.3** Proposed and existing levels, shown on the Tree Protection Plan, demonstrate that no excavation, other than minor leveling, will be required within the Root Protection Areas.
- 5.4** Although 23 trees are proposed for removal, the majority are very low quality and removal will make way for new, higher quality, tree planting.
- 5.5** Provided the recommendations in this report are followed, the arboricultural impact of these proposals is considered acceptable.

Key

-  Category U
-  Category A
-  Category B
-  Category C
-  Crown spread: retained trees
-  Trees For Removal
-  Root Protection Area
-  TPO tree to be retained
-  TPO tree to be removed
-  Tree Protection Fence
-  No Dig Construction
-  Ground Protection Area
-  New Tree Planting



DRAWING TITLE
TREE PROTECTION PLAN

REVISIONS

SCALE	DATE	DRAWN BY
1:200 at A3	JUL 16	S Stephens

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Single(1) Multi(m)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect ion Distnce (m)	Tree Protect. Area (m2)
					N	S	E	W								
T1	Birch	9.5	270	1	0.5	5	4	6	3.0	Early mature	Leaning to south, with majority of crown over neighbouring garden. Bent stem.	Remove to allow TPO birch, T30, to develop a more balanced crown.	10-20	C2	3.2	33
T2	Pear	4	100	1	0.5	0.5	0.5	0.5	2.0	Semi- mature	Low vigour.	Remove to facilitate development as per previous Planning Permission	10-20	C2	1.2	5
T3	Lawson cypress	4	130	1	1	1	2	1	0.2	Semi- mature	Stem leans, then straightens. Growing against building.	Remove to facilitate development as per previous Planning Permission	5-15	C2	1.6	8
T4	Ironwood	4	120	1	2	2	2	2	1.5	Semi- mature	Bushy form, but attractive shrubby tree.	Remove to install new landscape scheme.	15-30	B-C2	1.4	7
T5	Thorn	4	250	1	3	3	3	3	1.6	Mature	Attractive form.	Remove to install new landscape scheme.	15-30	B-C2	3.0	28
G6	4 No. Cupressus	2 - 2.5	100 - 150	1					0.2	Semi- mature	Four different varieties. Low amenity value.	Remove to install new landscape scheme.	10-20	C2	1.8	10
T7	Lawson cypress	4	70	1	0.5	0.5	0.5	0.5	0.5	Semi- mature	Unattractive tree.	Remove to install new landscape scheme.	20-40	C2	0.8	2
T8	Lawson cypress	4	100	1	0.5	0.5	0.5	0.5	0.8	Semi- mature	Low amenity value.	Remove to install new landscape scheme.	20-40	C2	1.2	5
T9	Lawson cypress	3.5	130	1	0.6	0.6	0.6	0.6	0.3	Semi- mature	Twin stem from base - 80 & 100mm. Foliage thinning. Low amenity value.	Remove to install new landscape scheme.	10-20	C2	1.6	8
T10	Oak	21	1320	1	8	9.5	10	9	2	Mature	Fine tree, showing good vigour. Occasional dead and broken branches.	Remove four lowest horizontal laterals growing to south (100mm, 160mm, 160mm & 200mm diameter) to allow more light into the garden. Remove major deadwood.	>40	A2	15.0	707
T11	Cherry	3.5	110	1	0.5	4	2	1	1.4	Semi- mature	Leaning to south. Basal stem - dead. Shaded by oak - low vigour.	Remove.	10-20	C2	1.3	5
T12	Plum	3	100	1	1.5	1.5	2	2.3	1.3	Early mature	Leaning to west. Shaded by oak.		5-15	C2	1.2	5
T13	Damson	2.5	80	1	0	1.5	1	1	0.1	Semi- mature	Twin stem from base - poor structure.	Remove to implement new landscape plan.	10-20	C2	1.0	3
T14	Pear	7.5	180	1	4	1.5	3.5	3	2.4	Mature	Leaning to east, with majority of crown over neighbouring property. Moderate vigour.	Remove	15-30	B-C2	2.2	15
T15	Apple	4.5	280	1	4	3	2	4	1.6	Mature	Previously pruned.		15-30	B-C2	3.4	35
T16	Apple	4.5	210	1	2	2.5	2	2	1.7	Mature	Only moderate vigour as overshadowed.		15-30	B-C2	2.5	20
T17	Goat willow	12.5	430	1	6	5	5	5	1.8	Mature	Twin stem from 0.3m. Occasional dead and broken branches.	Remove to open up garden.	10-20	B-C2	5.2	84
T18	Apple	3	250	1	1	1	1	1	1.5	Mature	Old stump with occasional new shoots.	Remove.	<10	U	3.0	28
G19	3 No. Holly	3	50 - 80	1					0.2	Semi- mature		Remove to open up garden.	15-30	C2	1.0	3

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Single(1) Multi(m)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protect ion Distance (m)	Tree Protect. Area (m2)
					N	S	E	W								
T20	Lawson cypress	5.5	180	1	1.5	1.5	1.5	1.5	1	Early mature	Tree Preservation Order. Growing in adjacent garden. Strangled by washing line. Poor quality specimen.		10-20	C2	2.2	15
T21	Cherry	3.5	70	1	1.5	1.5	1.5	1.5	1.7	Semi- mature	Three stems from 0.5m. Poor structure. Decay points.	Remove.	5-15	C2	0.8	2
T22	Lilac	3	130	1	1.5	1.5	4	1.5	0.4	Mature		Remove two older stems leaning to east, to encourage fresh growth.	5-15	C2	1.6	8
T24	Lawson cypress	12.5	310	1	2	2	2	3	1.6	Early mature	Tree Preservation Order tree. Main stem bifurcates at 3.5m. Only moderate vigour. Leaning to east. Low amenity value.	Remove to open up garden.	10-20	C2	3.7	43
T25	Lawson cypress	12	290	1	2	2	2	2	1.6	Early mature	Tree Preservation Order tree. Tight fork at 2.2m. Only moderate vigour. Low amenity value.	Remove to open up garden.	10-20	C2	3.5	38
T28	Birch	15	340		4	4	4	4	1.5	Mature	Tree Preservation Order tree. Good form and structure.		20-40	B2	4.1	52
T29	Oak	22	1050	1	7.5	7.5	7.5	7.5	1.6	Mature	Tree Preservation Order tree. Reduced in the past. Occasional dead branches, but showing good vigour. Cavities in old pruning wounds at 4m and 7m.	Remove major deadwood. Probe cavities. Crown lifting to provide 6m crown clearance.	>40	A2-3	12.6	499
T30	Birch	14.5	300	1	3	3	3	3	2.0	Early mature	Tree Preservation Order tree. Attractive tree. Only moderate vigour. Minor deadwood.		15-30	B2	3.6	41
T31	Birch	8	140	1	1	1	1	1	1.8	Dead	Tree Preservation Order tree. Leaning to north. Dead.	Remove as per previous Planning Permission.	<10	U	1.7	9
T32	Lawson cypress	13	280	1	1.5	1.5	1.5	1.5	0.2	Early mature	Tree Preservation Order tree. Twin leaders from 9.5m. Foliage beginning to thin. Low amenity value.	Remove to facilitate development as per previous Planning Permission	10-20	C2	3.4	35
T35	Holly	3.5	210	1	2	2	2	2	1.7	Mature	Tree Preservation Order tree. Only moderate vigour, with extensive crown dieback.		10-20	C2	2.5	20
T36	Goat willow	12	500	7	2	5	8	2	1.5	Mature	Four stems from base. Decay pockets. Minor deadwood.	Remove to implement new landscape plan.	10-20	C2	6.0	113
T37	Lawson cypress	6.5	110	1	1.2	1.2	1.2	1.2	0.1	Semi- mature	Low amenity value.	Remove.	20-40	C2	1.3	5
T38	Goat willow	12	410	1	3	4	4	3	2.5	Mature	Three stems from base - 150, 240 & 290mm.	Remove to reduce competition with TPO oak, T29.	10-20	C2	4.9	76

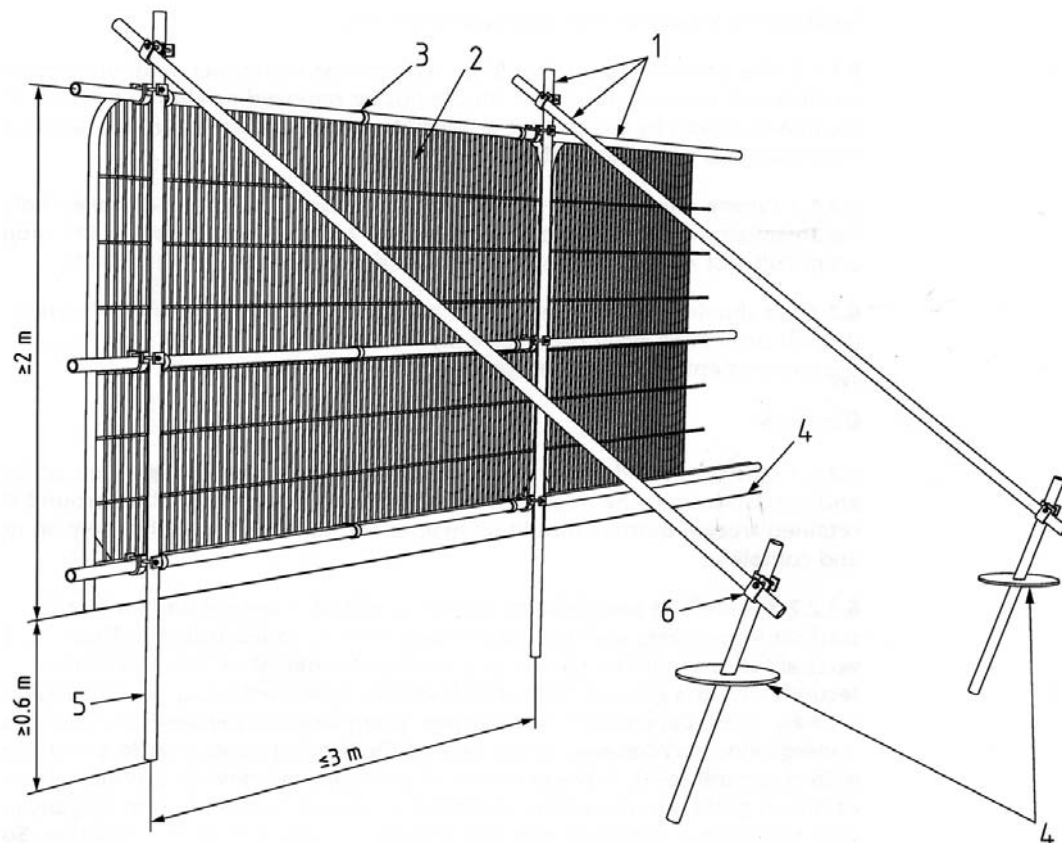
BS 5837:2012, Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan			
Trees unsuitable for retention (see Note)					
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>	See Table 2			
<table border="1"> <thead> <tr> <th>1 Mainly arboricultural qualities</th><th>2 Mainly landscape qualities</th><th>3 Mainly cultural values, including conservation</th></tr> </thead> </table>			1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
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 significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)			
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			
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 with material conservation or other cultural value			
	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			

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

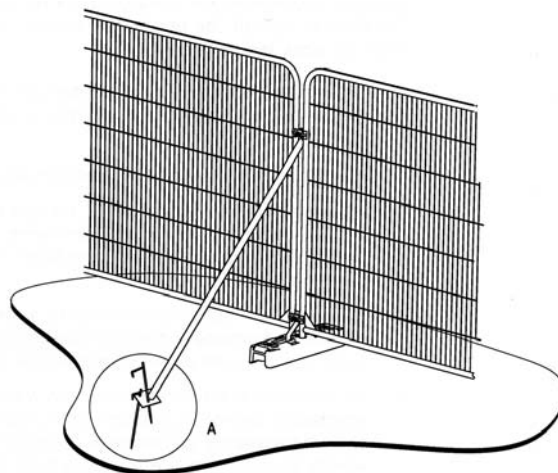
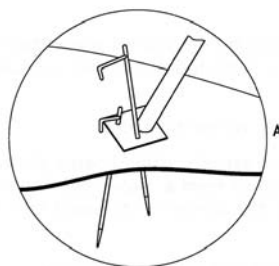


Figure 3b

Stabiliser strut mounted on block tray

