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17 MAY 2019

Arboricultural Impact Assessment

- Tree Survey
- Tree Protection Plan
- Arboricultural Method Statement

At:-

21 Sweetcroft Lane
Hillingdon
UB10 9LD

On behalf of:-

Mr Ashok Thakker
21 Sweetcroft Lane
Hillingdon
UB10 9LD

Prepared by:

Simon Stephens MA Oxon, Dip Arb(RFS), MArborA, C Env. MICFor
Email: simon@sjstephens.co.uk

Survey Date: 30th April 2019
Report Date: 10th May 2019
Project no: 1326

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1 BACKGROUND

1.1 This Arboricultural Impact Assessment relates to the proposed re-orientation of the access at 21 Sweetcroft Lane, together with construction of new boundary walls and entry gate and provides recommendations for the management of trees on the site. It has been instructed by [Prash photo.

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 design, demolition and construction - Recommendations.

1.4 Documentation supplied:

- Proposed Site Plan: HKB Design & Build, drawing no: HBK/2019/215L/02

2 SURVEY DETAILS AND SCOPE

2.1 The site survey included trees and shrubs, within influencing distance of the proposed development, with a stem diameter over 75mm at 1.5m height, located within the area shown on the Tree Protection Plan, included as Appendix A.

2.2 Tree inspection took place from ground level with the use of binoculars, sounding hammer and metal probe using the Visual Tree Assessment method (Mattheck & Breloer 1994). The presence and condition of bark and stem wounds, cavities, decay, fungal fruiting bodies and any structural defects that could increase the risk of structural failure were noted.

2.3 Tree details have been added to the plan received, which is included as Appendix A. Tree locations have been taken from the topographical survey provided. Where not included on the topographical survey, they have been determined by measuring distances from features shown on the plan, using a laser measuring device. The following information was recorded for each tree, and is shown in the Tree Schedule included as Appendix B:

- **Number:** an identity number for each tree, prefixed with a "T", which cross references locations shown on the plan with the schedule in Appendix B. Where a number of trees, normally of the same species, are located close together and are similar in character and requirements, they have been treated as a Group under a single Number, prefixed with a "G".
- **Species**: common name.
- **Tree height**: approximate height in metres.
- **Stem diameter**: diameter in millimetres, taken at 1.5m above ground. Where there are a number of stems, stem diameters are recorded in the condition column.
- **Branch spread**: approximate spread in metres to N,S,E and W of the trunk. The approximate branch spread is drawn on the plan.
- **Canopy clearance**: approximate height of the canopy above ground. Where a significant, low lateral branch is present, its height and direction of growth is included in the Condition column.
- **Age class**: Young, Semi-mature, Early mature, Mature, Over-mature, Veteran.
- **Condition**: features that affect the safe useful life expectancy and amenity of the tree, including the presence of decay or any physical defect.
- **Management Recommendations**: recommendations to ensure the health and safety of the tree, within the future development.
- **Estimated Remaining Contribution**: <10 years, 5-15 years, 10-20 years, 15-30 years, 20-40 years, >40 years.
- **Category grading**: tree classification taken from BS 5837:2012, Trees in relation to design, demolition and construction (see Appendix C for details), as follows:
    - Category U: Unsuitable for retention, trees with less than 10 years life expectancy, normally recommended for removal (Red)
    - Category A: high quality trees, able to make a substantial contribution for at least 40 years, normally retained unless there is an over-riding reason for removal and appropriate mitigation. (Green)

- Category B: moderate quality trees, able to make a significant contribution for at least 20 years, normally retained. (Blue)
- Category B/C: an intermediate category between categories B and C (not specifically described in BS5837). Trees, which should be retained wherever possible, providing retention does not unreasonably constrain the layout. (Blue)
- Category C: low quality, in adequate condition to remain for at least 10 years, or young trees <150mm stem diameter. Trees which can be removed to allow the desired layout or new planting. (Grey)

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

- Subcategory 1: mainly arboricultural values.
- Subcategory 2: mainly landscape values.
- Subcategory 3: mainly cultural values, including conservation.

- Trees have been classified irrespective of the possible proximity to future construction. The BS 5837 category is colour coded, as indicated above, on the plan included as Appendix A.
- **Protection Distance:** the protection distance in metres required to provide the Root Protection Area recommended in BS 5837, assuming a circular area centred on the tree.
- **Root Protection Area (RPA):** the area in m^2, as recommended in BS 5837, to provide sufficient rooting area to ensure tree survival and which, in most situations, should be fenced off to prevent root damage from construction activities.

3 SURVEY LIMITATIONS

3.1 No internal decay devices, or other invasive tools to assess tree condition, were used.

3.2 No soil excavation or root inspection was carried out.

3.3 This survey has not considered the effect that trees or vegetation may have on the structural integrity of future building through subsidence or heave.

3.4 The tree survey has been undertaken for planning purposes. Although any obvious structural defects have been noted, a Tree Hazard Assessment has not been carried out. Mature trees close to highly populated areas or public highways should normally be checked for safety annually, by a suitably qualified person.

4 LEGAL PROTECTION OF TREES

4.1.1 The London Borough of Hillingdon website was viewed on 10-05-2018, showing that the site does not contain any Tree Preservation Orders, however it does fall within a Conservation Area. The presence of Planning Conditions currently attached to the site, was not checked.

4.1.2 Since the site is covered by a Conservation Area, six weeks notification must be given to the Local Planning Authority of any intended tree surgery works, to allow them the option of placing a Tree Preservation Order.

5 ARBORICULTURAL METHOD STATEMENT

5.1 Site Overview

5.1.1 The proposal is for the re-orientation of the access at 21 Sweetcroft Lane, together with construction of new boundary walls and entry gate. The proposed site plan is shown, along with tree details, on the Tree Protection Plan attached as Appendix A.

5.1.2 The existing two access points will be closed off and a single new access created in the centre of the plot.

5.1.3 There are three early mature oak trees in the front garden which are all showing signs of stress, probably as a result of many years of soil compaction.

5.1.4 The trees are important features in the streetscape and could regain vigour if their rooting environment can be improved.

5.2 Tree Work

5.2.1 Details of proposed tree works are included in the Tree Schedule included as Appendix B.

5.2.2 A group of low quality Lawson cypress (G4) are proposed for removal, as detailed in section 6.1 below.

5.2.3 All tree work must be undertaken to the standards set out in BS 3998:2010 Tree work – Recommendations.

5.3 Root Protection Areas

5.3.1 Root Protection Areas are shown for all trees in the tree schedule attached as Appendix B. They are also shown for all retained trees, as circular areas centred on the trunk, on the Tree Protection Plan attached as Appendix A. This shows the distance that construction must normally be kept back from a tree, to provide the Root Protection Area recommended in BS 5837.

5.4 Tree Protection Fencing

5.4.1 Tree Protection Fencing must be erected where shown on the Tree Protection Plan, attached as Appendix A. This will provide full protection of the Root Protection Areas of all retained trees, other than for:

- areas shaded cyan on the Tree Protection Plan, where No-Dig Construction must be used, as described in section 5.5 below, to protect underlying roots.
- existing areas of hard surfacing areas shaded grey on the Tree Protection Plan, indicating Ground Protection Areas, where roots must be protected, as described in section 5.6 below.
- areas shaded green on the Tree Protection Plan, where there will be excavation required within Root Protection Areas, but where hand excavation must be used, as described in section 5.7, to minimise potential root damage.

5.4.2 Tree Protection Fencing must be from weldmesh panels, at least 2m high, securely fixed, with wire or scaffold clamps, to a rigid framework. This framework must be constructed from scaffold tubes with vertical tubes, at a maximum interval of 3m and driven into the ground at least 0.6m. The structure must be well braced to resist impacts, constructed as per Figure 2 of BS5837:2012, which is reproduced in Appendix D. Alternatively, weldmesh panels can be supported on blocks, providing the blocks are pinned to the ground with road pins, or similar, and the panels are braced, as per Figure 3 of BS5837:2012, which is also reproduced in Appendix D.

5.4.3 After erection of Tree Protection Fencing and installation of ground protection, 2 days notice must be given to the Local Planning Authority before demolition or construction, including any ground work, starts on site. Tree Protection Fencing must be maintained and retained for the duration of the works, or until such time as agreed in writing with the Local Planning Authority.

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

TREE PROTECTION AREA
KEEP OUT
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND CONSERVATION AREA STATUS
CONTRAVENTION MAY LEAD TO CRIMINAL PROSECUTION
THE FOLLOWING MUST BE OBSERVED BY ALL PERSONS:

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

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

5.5 No-Dig Construction Area

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

5.5.2 The new walls, where within the No-Dig Construction area, must be constructed without strip foundations. Instead, screw piles must be used to support concrete beams, set at ground level on which the walls must be built. Before driving screw piles, trial holes must be dug by hand to a depth of 0.75m. If roots over 25mm in diameter are found the screw pile location must be moved.

5.5.3 Engineering details for the new drive must avoid localised compaction, using both a two dimensional geogrid, and a three dimensional cellular confinement system as integral components of the sub-base. A typical section is shown on the Tree Protection Plan included as Appendix A. As well as being fit for purpose, the design and methodology must protect tree roots, by ensuring the following:-

- topsoil/turf can be removed carefully by hand to a maximum of 50mm, but less if roots are found nearer the surface.
- following leveling with soil or sand, a permeable, non-woven geotextile membrane, must be laid.
- a suitable two dimensional geogrid, such the TriAx Geogrid supplied by Tensar International (www.tensar.co.uk), or the Biaxial Geogrid supplied by Geosynthetics Ltd (www.geosyn.co.uk), must be laid over the entire area and underneath the edging.
- pressure treated timber edging boards, supported by driven stakes must be used.
- a suitable cellular confinement system must then be laid to manufacturers instructions on top of the geogrid. Products that might be considered include Geoweb, supplied by Greenfix (www.greenfix.co.uk) or Cellweb, supplied by Geosynthetics Ltd

(www.geosyn.co.uk). The depth of the system must be adequate to take the maximum axle weight, as per manufacturers guidance.

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

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

5.6 Ground Protection Area

5.6.1 The Ground Protection Areas, which is shaded grey on the Tree Protection Plan, contains existing hard surfacing which is protecting any underlying roots.

5.6.2 Where existing hard surfacing is to be replaced with new hard surfacing, no excavation must be permitted beneath the base course and the new hard surfacing must be permeable.

5.6.3 Where existing hard surfacing is to be lifted and replaced by turf, this must only be undertaken at the end of the project after all other works are complete - so that it provides root protection for underlying roots while construction works are in progress.

5.7 Hand Dig Areas

5.7.1 Where the new drive meets the road, levels will have to be reduced. Within the Hand Dig area, shown shaded green on the Tree Protection Plan, all excavation must be by hand, neatly severing any roots found, using secateurs or a hand saw.

5.7.2 On no account must use of an excavator be permitted in the Hand Dig areas, which would rip roots and cause unnecessary damage.

5.7.3 The new drive build up within the Hand Dig area must be as detailed for No-Dig construction in section 5.5.2 above.

5.8 Knee rail fencing

5.8.1 Knee rail fencing must be included to protect the ground around the trees from vehicles and ground compaction.

5.8.2 Post holes must be dug by hand. If roots over 10mm are found the post holes must be moved. Heavy duty polythene must then be used to line holes before concrete is poured, to prevent the toxic affects of concrete on tree roots.

5.9 Lifting of hard surfacing, decompaction and turfing

5.9.1 An excavator must only be used for the removal of the existing hard surfacing, if it can work only from areas of hardstanding. A banksman must be present during this operation and excavation must go no deeper than the existing base course and must cease immediately if roots are found.

5.9.2 Once hard surfacing has been removed, the areas must immediately be covered in good quality topsoil supplied to the standards included in BS3882:2015.

5.9.3 The areas shown cross hatched green on the Tree Protection Plan must then be decompacted, using a specialist contractor either, by using an air spade, to turn over the top 300mm of soil, or by injecting high pressure air and nutrients into the root zone using a tool such as the Vogt Geoinjector (see ww.apextreesurgeons.uk).

5.9.4 Following decompaction, 50mm of green recycled compost (supplied to the PAS100 standard) must be raked into the surface and turf laid.

5.10 General measures

5.10.1 No construction activity whatsoever, including routing of underground services, storage of materials or on-site parking, must be allowed within Root Protection Areas, other than that specifically described above.

5.10.2 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.

5.10.3 Fires must not be lit in a position where their flames could extend to within 10m of foliage, branches or trunk.

5.10.4 Landscape works carried out within Root Protection Areas must be undertaken with great care so as not to damage shallow roots. Tractor mounted rotovators or other heavy mechanical cultivation must not be used within the Root Protection Areas.

5.10.5 A copy of the Tree Protection Plan must be kept on site and must be fully understood by the Site Agent.

5.11 Arboricultural Supervision

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

- to review engineering details for the build up of the new drive and the walls and advise on suitability.

- to meet with/ liaise with the contractor, prior to construction starting on site, to ensure this Arboricultural Method Statement is fully understood and can be complied with in full. If any revisions are required, a revised Arboricultural Method Statement must be approved by the Local Planning Authority, prior to construction or demolition starting on site.

- to visit site during the first 3 days of construction to inspect Tree Protection Fencing and ensure works are progressing as per the Arboricultural Method Statement.

- as necessary, to advise on any issues at the request of the local planning authority, the developer, architect or contractor.

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

6 ARBORICULTURAL IMPACT ASSESSMENT

6.1 The following tree groups, categorized as per BS 5837 (see Appendix C for details), are proposed for removal:

- Category C – low quality: 15 low quality Lawson cypress (G4)

6.2 The three oak trees are showing signs of stress and this project provides an opportunity to improve their rooting environment which can allow them to improve in health and grow on for further decades.

6.3 Some excavation within the Root Protection Areas will be essential to allow the new drive to marry with the level of the public highway. However, this is in an area of made up ground (shown in the photo in Appendix E) where there has been previous ground disturbance to build a small retaining wall. Although, some root damage is possible, this will be more than outweighed by the benefit to the trees if areas of existing hard surfacing are lifted and if these areas, and the existing "soft" areas which have become severely compacted, are de-compacted, and protected by knee rail fencing.

6.4 Replacing the existing hard surfacing with a permeable build up will provide further benefit to the trees.

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

7 REFERENCES

- *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.*
- *BS3998:2010 Tree Work. Recommendations.*
- *Common sense risk management of trees (FCMS024). Published by the National Tree Safety Group (www.ntsgroup.org.uk)*
- *The Body Language of Trees: A handbook for Failure Analysis. Mattheck & Breloer.*

APPENDIX A

Key

- Category U
- Category A
- Category B
- Category C
- Crown spread: retained trees
- Trees For Removal
- Root Protection Area
- Tree Protection Fence
- Hand Dig Area
- No-Dig Construction
- Existing drive Ground Protection Area

19

25

21

3782

MAIN ENTRANCE

Proposed drive (orange hatch)

Kneerail fencing

Existing drive (grey shading)

Removal of hard surfacing, decompaction and turfing (hatched green)

SIDE BOUNDARY WALL WITH BRICK PIERS AND BRICK INFILL

T2 Oak B2

T1 Oak B2

ENTRY GATE

DRIVE ENTRY 21 SWEETCROFT LANE

DRIVE ENTRY 25 SWEETCROFT LANE

FRONT WALL WITH METAL RAILINGS

FRONT WALL WITH METAL RAILINGS

WATER COLLECTION CAHANEL INDICATED WITH DOTTED LINE

SWEETCROFT LANE

T3 Oak B–C2

G4 Lawson cypress C2

N

W E

S

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JOB TITLE
21 SWEETCROFT LANE

DRAWING TITLE
TREE PROTECTION PLAN

DRAWING NUMBER	REV
1326–01	

REVISIONS

SCALE	DATE	DRAWN BY
1:150 at A3	MAY 19	S Stephens

Tree/ Group No.	Species	Height (m)	Stem Diam. at 1.5m (mm)	Branch Spread (m)				Canopy Clearance (m)	Age Class	Observations	Management Recommendations	Estimated Remaining Contribution (years)	BS 5837 Category Grading	Protection Distnce (m)	Root Protect. Area (m2)
				N	S	E	W								
T1	Oak	15	560	2	8	5.5	5	3.5	Early mature	Major limb to south from 3.5m. Main stem showing some crown dieback, with further minor dieback at branch extremities. Ground around base is either block paved or compacted.		20-40	B2	6.7	142
T2	Oak	15	540	5.5	1.5	5	4	3.5	Early mature	Minor dieback throughout canopy, with dead branches up to 50mm diameter.		20-40	B2	6.5	132
T3	Oak	15	490	5	6	5	4	3.0	Early mature	Heavily pruned to south. Basal bark wound to south, with some underlying decay beginning. Cavities beginning in a number of pruning wounds. Minor dieback throughout canopy.		15-30	B-C2	5.9	109
G4	Lawson cypress	1	80	0	0	0	0	0.3	Semi-mature	Stem diameter 50-80mm. 15 trees- majority repeatedly topped. All low amenity value.	Remove.	5-15	C2	1.0	3

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

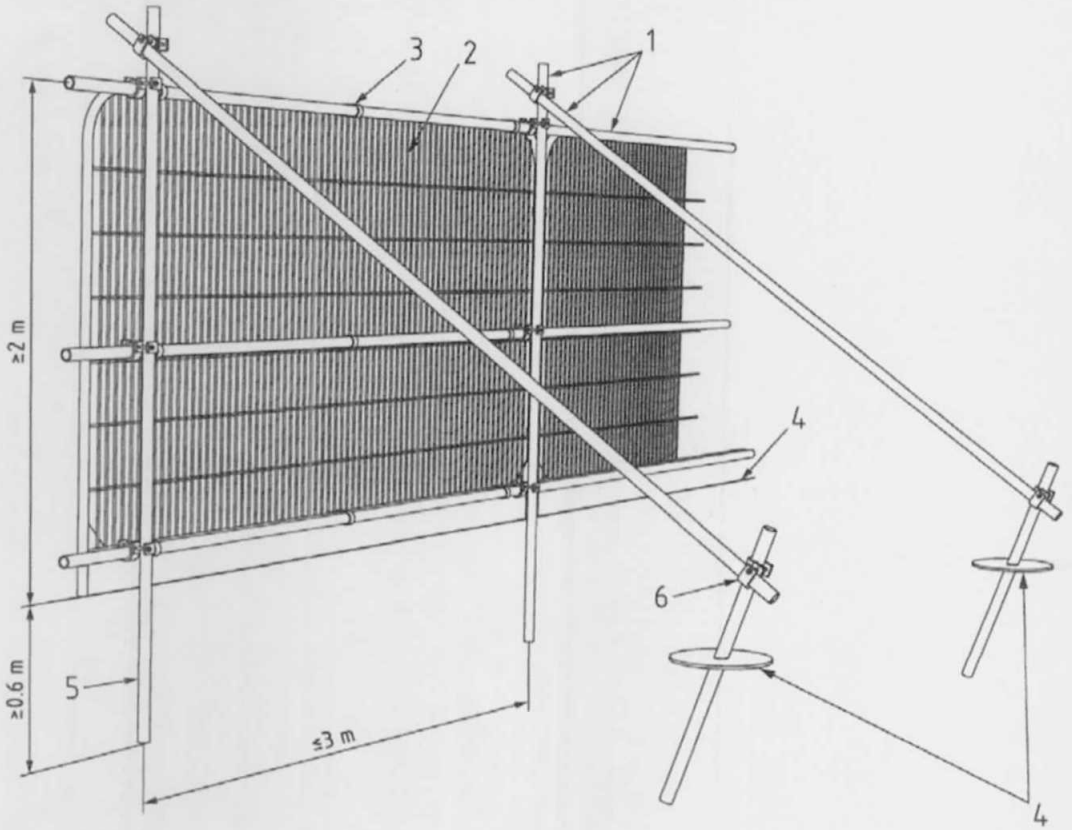
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10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

British Standard BS 5837:2012
Default specification for protective barrier

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

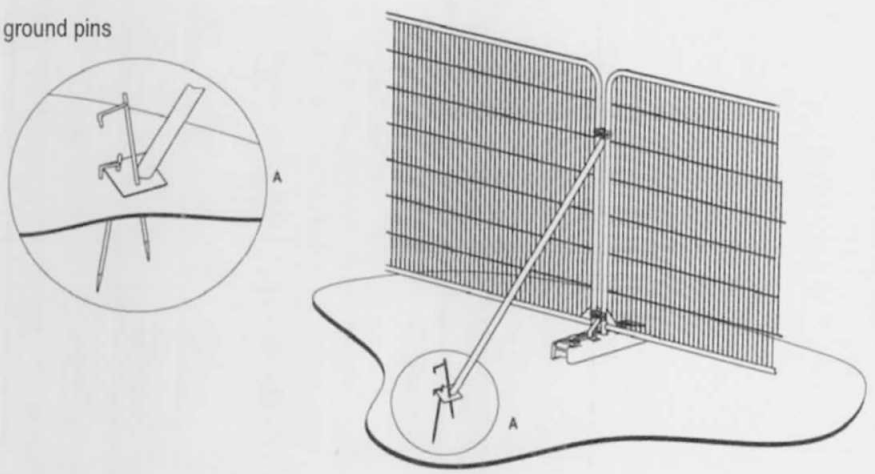
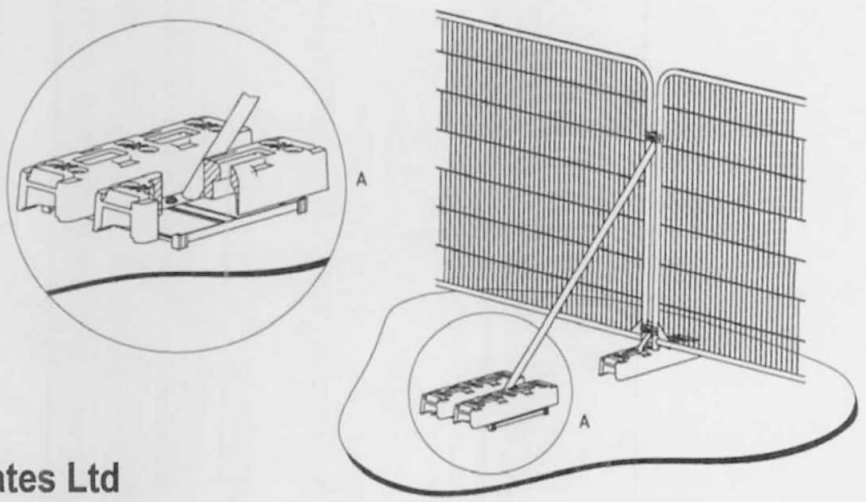
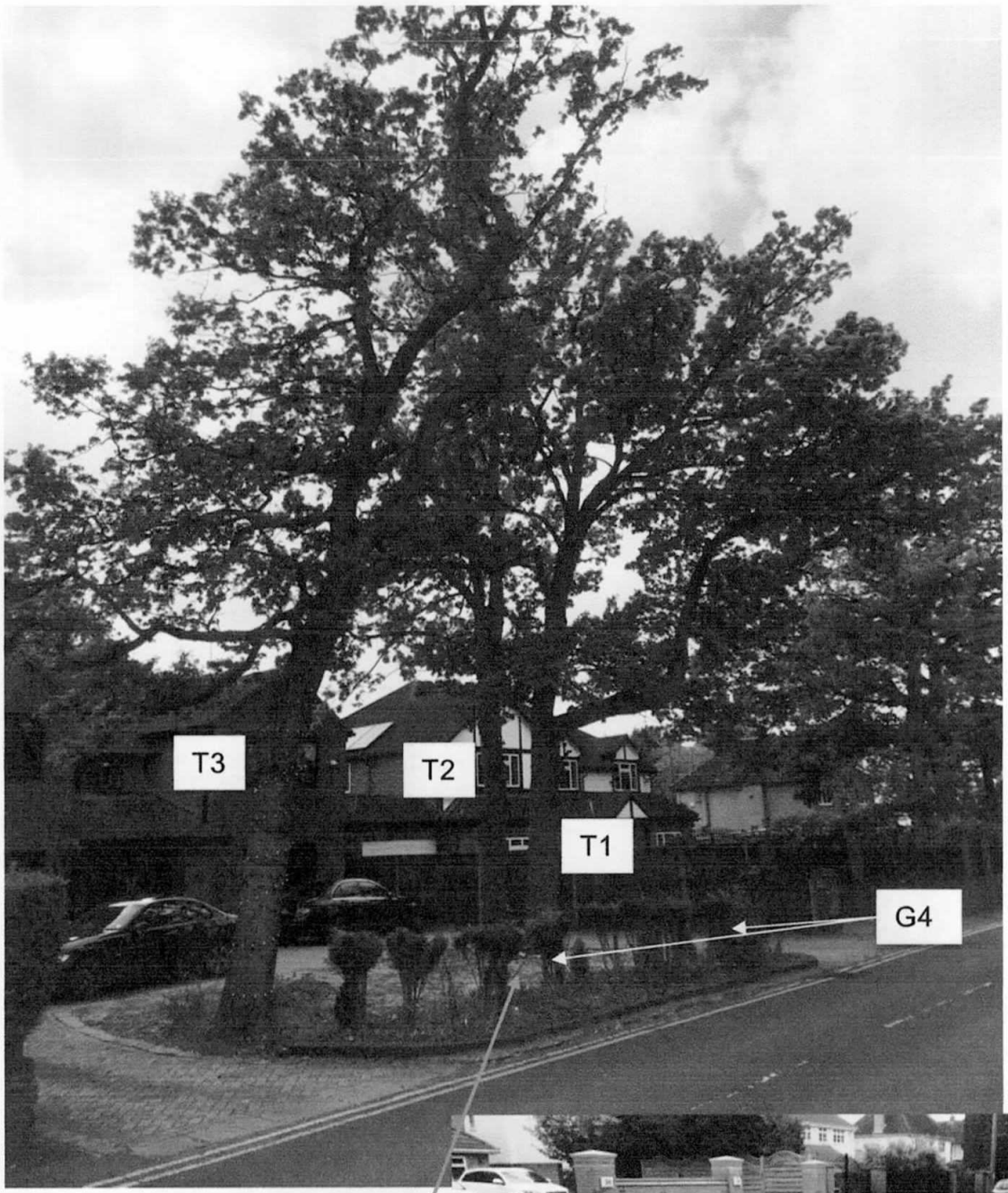


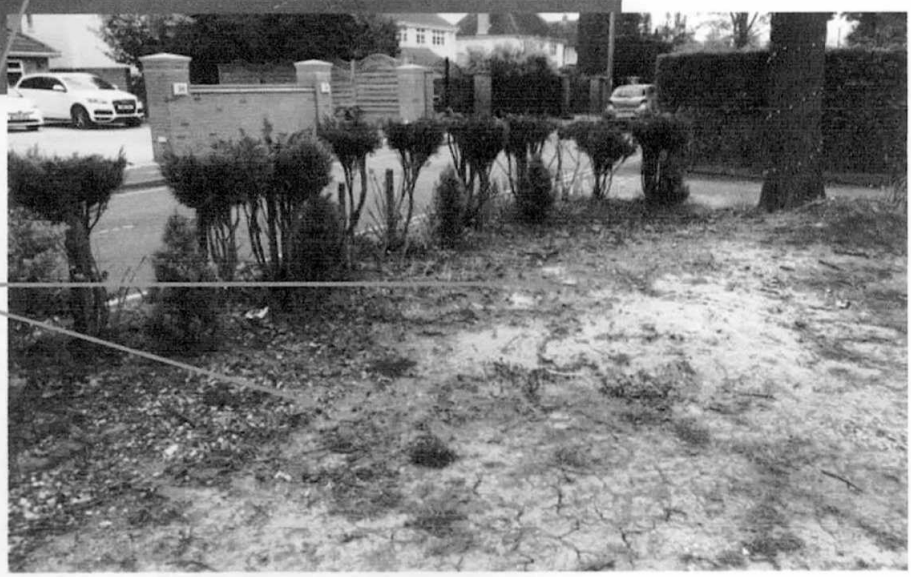
Figure 3b

Stabiliser strut mounted on block tray



Appendix E





Area of made up ground where reduction in levels required