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BS5837:2012 TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT: 7 Nicholas Way, Northwood, HA6 2TR

Dated: 12th August 2024

Our reference: GHA/DS/222160:24

CONTENTS

Section	Subject	Page
	Instructions	3
	Executive Summary	3
	Documents Supplied	4
	Scope of Survey	4
	Survey Method	5
	The Site	6
	Subject Trees	6
	The Proposal	6
	Arboricultural Impact Assessment	7
	Post Development Pressure	8
	Tree Protection Measures and Preliminary Method Statement for Development Works	8
	Conclusion	12
	Recommendations	12
Appendix A	Site Plan / Arboricultural Impact Plan (Attached as a separate PDF file to maintain its integrity / accuracy)	
Appendix B	Tree Table	
Appendix C	Extract from BS5837:2012 – Protective Fencing	

Arboricultural Impact Assessment

Location: 7 Nicholas Way, Northwood, HA6 2TR
Our reference: GHA/DS/222160:24
Client: R Chadha
Dated: 12th August 2024
Prepared by: Glen Harding MICFor, MSc (Forestry), MArborA
Date of Inspection: 24th July 2024

Instructions

Issued by – R Chadha

TERMS OF REFERENCE – GHA Trees were instructed to survey the subject trees within and adjacent to 7 Nicholas Way, Northwood, in order to assess their general condition and to provide a planning integration statement for the indicative proposed development that safeguards the long term wellbeing of the retained trees in a sustainable manner.

Executive Summary

The proposal for the site is to construct a new outbuilding to the rear of the house to replace the existing dilapidated structure. The proposed scheme does not require the removal or pruning of any of the trees on site, or of trees within nearby adjacent sites; therefore, the landscape character of the site will be unaffected by the proposal. The proposal requires a new structure to be installed within the root protection areas of nearby trees; however, mitigations are proposed to ensure these structures will not adversely affect these trees. The retained trees require protection in accordance with industry best practice and BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations, in order to ensure their longevity.

Documents Supplied

The client supplied the following documents:

- Topographical survey
- Existing layout plans
- Proposed layout plans

Scope of Survey

1.1 The survey is concerned with the arboricultural aspects of the site only.

1.2 The planning status of the subject property was not investigated in detail.

1.3 A qualified Arboriculturist undertook the report and site visit and the contents of this report are based on this. Whilst reference may be made to built structure or soils, these are only opinions and confirmation should be obtained from a qualified expert as required.

1.4 Trees in third party ownership were surveyed from within the subject property, therefore a detailed assessment was not possible and some (if not all) measurements were estimated. Where the stem location of a third party tree has been estimated, this is noted on the plan.

1.5 Dense vegetation or climbers (such as ivy) also prohibited full inspections for some trees; this is noted where applicable.

1.6 No discussions took place between the surveyor and any other party.

1.7 The trees were inspected on the basis of the Visual Tree Assessment method expounded by Mattheck and Breleor (The body language of tree, DoE booklet Research for Amenity Trees No. 4, 1994)

1.8 The survey was undertaken in accord with British Standard 5837: 2012 – Trees in relation to design, demolition and construction – recommendations.

1.9 The client's attention is drawn to the responsibilities under the Wildlife and Countryside Act (1981).

Survey Method

2.1 The survey was conducted from ground level with the aid of binoculars if needed.

2.2 No tissue samples were taken nor was any internal investigation of the subject trees undertaken.

2.3 No soil samples were taken.

2.4 The height of each subject tree was estimated using a clinometer and recorded to the nearest half metre.

2.5 The stem diameter for each tree was measured in line with the requirements set out in BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations.

2.6 The crown spreads were measured with an electronic distometer and recorded to the nearest half metre. Where the crown radius was notably different in any direction this has been noted on the Plan (appendix A) and within the tree table (Appendix B). The crowns of those trees that are proposed for removal, or trees where the crown spread is deemed insignificant in relation to the proposed development are not always shown on the appended plan; however their stem locations are marked for reference.

2.7 The Root Protection Area (RPA) for each tree is included in the tree table, both as an area, and as the radius of a circle.

2.8 The crown clearance was measured using a clinometer and recorded to the nearest half metre. Where it is significantly lower in one direction, this is noted within the tree table at appendix B.

2.9 All of the trees that were inspected during the site visit are detailed on the plan at Appendix A; this plan was produced in colour and **MUST** only be scanned or reproduced in colour. The trees on this plan are categorised and shown in the following format:

COLOUR CODING AND RATING OF TREES:

Category A – Trees of high quality with an estimated remaining life expectancy of at least 40 years. Colour = light green crown outline on plan.

Category B – Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Colour = mid blue crown outline on plan.

Category C – Trees of low quality with an estimated remaining life expectancy of at least 10 to 20 years, or young trees with a stem diameter below 150mm. Colour = uncoloured crown outline on plan.

Category U – Those in such a condition that they cannot realisitically be retained as living trees in the context of the current land use for longer than 10 years. Colour = red crown outline on plan.

All references to tree rating are made in accordance with BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations', Table 1.

The Site

3.1 The site is located on Nicholas Way, a residential road located to the south of Northwood.

3.2 A good tree cover is present on the site itself as well as adjacent sites, with many semi-mature and mature trees of both native and exotic origin characterising the local area.

3.3 Access to the property is currently gained via a driveway to the front of the site.

The Subject Trees

4.1 The details of the subject trees are set out in the Schedule at Appendix B.

4.2 Of the twenty-five individual trees and groups of trees surveyed, twelve have been assessed as BS 5837 category A, five have been assessed as BS category B, seven have been assessed as BS category C with the remaining tree being assessed as BS 5837 category U.

Category A	12 trees
Category B	5 trees
Category C	7 trees / groups
Category U	1 tree

The Proposal

5.1 The proposal for the site is to construct a new outbuilding to the rear of the house to replace the existing dilapidated structure.

5.2 The proposed location of the above structures can be seen on the appended plan.

Arboricultural Impact Assessment

PROPOSED TREE REMOVAL / RETENTION:

6.1 The proposed site layout and all of its associated structures allows for the healthy retention of all of the trees on the site itself, and within nearby adjacent sites; therefore, the arboricultural landscape character of the site will be retained.

TREE PRUNING TO ACCOMODATE THE PROPOSAL OR ACCESS TO THE SITE

6.2 The implementation of the proposal does not lead to the requirement to prune any of the retained trees, or shrubs.

6.3 There is a slight overhang of the new structure from the crowns of T20 and T21. The defining branch structure of these trees is however well clear of the proposed upper building line and therefore building works can progress safely without the need for any facilitation pruning.

ASSESSMENT OF RETAINED TREES ROOT PROTECTION AREAS

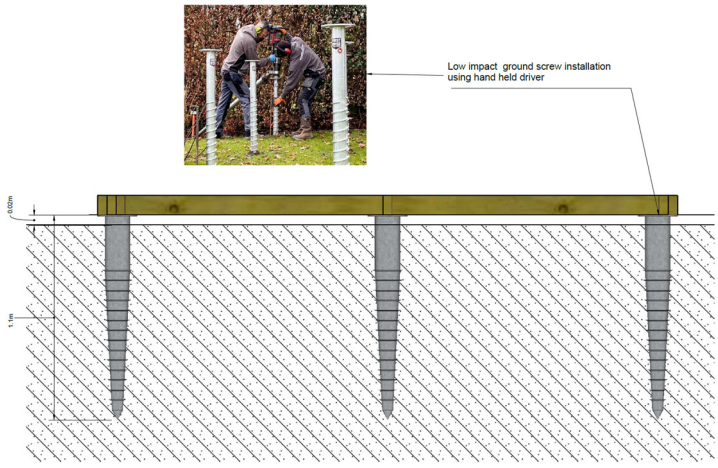
6.4 Section 4.6.3 of BS 5837: 2012 states that the Root Protection Area (RPA) of each tree should be assessed by an arboriculturalist considering the likely morphology and disposition of the roots, when known to be influenced by past or existing site conditions.

6.5 The RPAs of several trees have been amended to take account of the existing structures; these adjustments can be seen on the appended plan.

ASSESSED IMPACT ON RPAS BY PROPOSED STRUCTURES & PROPOSED MITIGATIONS

6.6 A portion of the proposed new structure would be situated within a section of the assessed Root Protection Areas of T20, T21 and 24 as can be seen on the appended plan. The construction design process has shown consideration of this issue (of working within the RPA) by specifying the use of 'screw pile' footings (https://www.groundscrewcentre.co.uk); these footings will ensure minimal root disturbance occurs near these trees as the new building will sit above the existing levels with the new screw piles being the only below ground part of the structure. The locations of the new screw piles will be confirmed following hand dug trial digs to check for the presence of any significant (over 25mm) roots which **MUST** be retained and avoided if found. **There MUST be an air void beneath the new structure and rain water must be gathered from the roof and redistributed beneath the new structure to allow any root growth present to be allowed to continue to thrive.**

Below: screwpile and above ground beams



6.7 The proposed new structure is situated outside of the assessed RPAs of all of the other trees; therefore, these trees pose no below ground constraints on the new structure or vice versa.

INSTALLATION OF SERVICES

6.8 The full details of existing and proposed new services have not been made available at the time of writing.

6.9 The installation of underground apparatus and drainage systems with the use of mechanical excavators will undoubtedly sever any roots that may be present and can change the hydrology and structure of the nearby soil in a way that will adversely affect the health of any nearby trees. Particular care should therefore be taken when assessing the layout of new services and consideration must be given to the methods of installation of all underground apparatus.

Post Development Pressure

FUTURE TREE AND STRUCTURE RELATIONSHIPS

7.1 The retained trees are at a satisfactory distance from the proposed new building and highly unlikely to give rise to any inconvenience.

7.2 Regular inspections of the retained trees by a suitably qualified Arboriculturalist and subsequent remedial works will ensure that the trees are maintained in a suitable manner, to exist in harmony with the new structures and its occupants for many years to come.

Tree Protection Measures and Preliminary Method Statement for Development Works

8.1 TREE WORK

A list of all tree works that are required (including trees to be removed) is included in the tree table at Appendix B. Where any tree work is needed, this work **MUST** be in accordance with British Standard 3998 – 2010 (Tree Work - Recommendations).

8.2 TREE PROTECTION BARRIERS

The position of the fence **MUST** be marked out with biodegradable marker paint on site and agreed with appropriate representatives from the LPA and contractor. The fencing **MUST** be erected **prior** to any works in the vicinity of the trees and removed only when all development activity is complete. The protective fencing **MUST** be as that shown in BS 5837 (see Appendix C). The herras panels **MUST** be joined together using a minimum of two anti-tamper couplers which **MUST** be installed so they can only be removed from the inside of the fence. The panels **MUST** supported by stabilizer struts, which **MUST** be installed on the inside and secured to the ground using pins or appropriate weights.

The Fence must be marked with a clear sign reading:

"Construction Exclusion Zone – No Access"

8.3 GROUND PROTECTION – LIGHTWEIGHT ACCESS ONLY

Where any additional ground protection is required, these areas **MUST** be covered with a permeable membrane, with 150mm layer of compressible woodchip overlaying it; an 18mm marine ply boards will then be secured on top of the woodchip to allow a 1.5tonne mini-digger to access the area without causing major compaction or soil erosion.

Above: ground protection make-up

8.4 REMOVAL / DEMOLITION OF THE EXISTING STRUCTURE METHODOLOGY:

- If the fencing detailed in section 8.2 requires relocation, this **MUST** be moved to the edge of the structures which are to be removed, in order to protect the adjacent trees and their surrounding soil. This must be consulted with the retained arboriculturalist.

- The above ground parts of the structure **MUST** be removed by hand, using hand tools only (to include hand held pneumatic drill assuming compressor is positioned outside RPAs).

- The removed material **MUST** be moved to and stored outside of the RPA of all of the retained trees. This can either be done by transporting small pieces by hand or using a machine to lift this material; any such machine **MUST** be parked outside the RPA of on appropriate ground protection.

- The sub bases **MUST** be broken up using a small, lightweight "kango" drill into pieces that can be lifted by hand and removed.

- If during the work, any roots from the retained trees are discovered in excess of 25mm, the retained arboriculturalist **MUST** be contacted immediately to assess the roots and arrange subsequent working methods that will cause no damage to the tree(s).

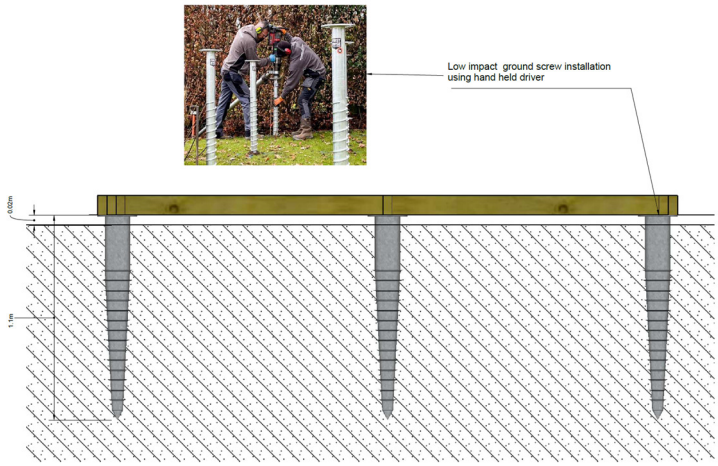
- Care **MUST** be taken to avoid damage to the soil beneath these structures. If any roots are exposed, these should be covered immediately and the retained arboriculturalist **MUST** be contacted immediately to assess the roots and arrange subsequent working methods that will cause no damage to the tree(s).

8.5 NEW STRUCTURE INSTALLED ON GROUND SCREWS

The construction design process has shown consideration of the issue of working within the RPA by specifying the use of 'screw pile' footings; these footings will ensure minimal root disturbance occurs near the nearby affected trees, as the

new building will sit above the existing levels with the new screw piles being the only below ground part of the structure. The locations of the new screw piles will be confirmed following hand dug trial digs to check for the presence of any significant (over 25mm) roots which **MUST** be retained and avoided if found.

Below: screw pile example



METHODOLOGY

- **NOTE: any excavations in the RPAS with the use of mechanical excavators will undoubtedly sever any roots that may be present and can change the hydrology and structure of the nearby soil in a way that will adversely affect the health of any nearby trees.**

- The design of the new screw piles layout must have sufficient flexibility that the locations of the supporting screw piles is changeable. The location for these screw piles will be confirmed following hand excavated, trial digs of the top 1000mm of each potential hole (this is where the majority of roots exist).

- The foundation design must also incorporate a void that will allow for water to reach the area beneath the structure and ensure that gaseous exchanges are not restricted.

- Hand tool excavations will only be undertaken by fully briefed site personnel. This operation will be done slowly and carefully to ensure the retention and protection of any roots that are discovered that are in excess of 25mm. These roots **MUST** then be covered and protected using damp hessian whilst further excavation commences; hessian must be left in situ until backfilling commences and re-wetted if needed to avoid root desiccation. **NOTE: OPERATIVES MUST CHECK FOR THE PRESENCE OF ANY EXISTING UNDERGROUND SERVICES PRIOR TO THE COMMENCEMENT OF SUCH WORK.**

- Any roots discovered in these trial pits in excess of 25mm diameter will immediately signal the requirement for a change of pit location.

- Ground protection as that detailed above **MUST** be placed over the working area whilst the deeper excavation of the final locations commences, with the use of or hand tools. This will alleviate the possibility of excessive compaction or erosion within the RPA's.

- Once the screw piles are installed, the excavated holes **MUST** then be backfilled and the soil compacted using hand tools only, to ensure not air pockets are left as these can be damaging to tree roots.

8.6 INCOMING SERVICES, DRAINAGE AND SOAKAWAYS

Any new underground services which are to be located within (any portion of) the RPAs of any trees which are to be retained **MUST** be installed in accord with the guidance given in BS5837 together with the National Joint Utilities Group Booklet 4: 2007 Guidelines for the planning, installation and maintenance of utility services in proximity to trees (NJUG4). Service installation layouts **MUST** be planned to keep apparatus together in common ducts, in order to minimise the need for excavations. Service trench excavation within the RPAs **MUST NOT** be undertaken with the use of any mechanised machinery (minidiggers, JCBs or alike).

8.7 ON SITE SUPERVISION

Regular site supervision is essential to ensure all potentially damaging activities near to trees are properly supervised. A pre start site meeting **MUST** occur to ensure all parties are aware of their responsibilities relating to tree protection on site; this **MUST** include a site induction for key personnel.

Key personnel:

Name	**Position**	**Contact number / email:**
Glen Harding	Retained arboriculturalist	07884 056 025 Or info@ghatrees.co.uk
TBC	Local authority Arboricultural Officer	TBC
TBC	Site manager	TBC

After this pre start meeting, day-to-day responsibility for tree protection will be devolved to the site manager who will make contact with the retained arboriculturalist as needed.

8.8 OTHER TREE PROTECTION PRECAUTIONS

- **NO** fires lit on site within 20 metres of any tree to be retained.
- **NO** fuels, oils or substances with will be damaging to the tree shall be spilled or poured on site.
- **NO** storage of any materials within the root protections zone.

8.9 HARD / SOFT LANDSCAPING NEAR RETAINED TREES

All new pathways and hard landscaping areas within the Root Protection Areas (RPA's) of the retained trees **MUST** be designed using no-dig, up and over construction techniques, and be specified in close co-ordination with the retained Arboriculturalist. Porous materials **MUST** also be used when surfacing near the trees. No machinery will be used for this work, which **MUST** all be done by hand.

8.10 DISMANTLING PROTECTIVE BARRIERS

Protective barriers must only be completely removed when all machinery, and equipment has left site.

Conclusion

9.1 In conclusion, the principal arboricultural features within the site can be retained and adequately protected during development activities.

9.2 Subject to precautionary measures as detailed above, the proposal will not be injurious to trees to be retained.

Recommendations

10.1 Site supervision – An individual e.g. the Site Agent, must be nominated to be responsible for all arboricultural matters on site. This person must:

a. Be present on the site the majority of the time.
b. Be aware of the arboricultural responsibilities.
c. Have the authority to stop any work that is, or has the potential to cause harm to any tree.
d. Be responsible for ensuring that all site personnel are aware of their responsibilities towards trees on site and the consequences of the failure to observe those responsibilities.
e. Make immediate contact with the local authority and / or retained arboriculturalist in the event of any related tree problems occurring whether actual or potential.

10.2 It is recommended, that to ensure a commitment from all parties to the healthy retention of the trees, that details are passed by the architect or agent to any contractors working on site, so that the practical aspects of the above precautions are included in their method statements, and financial provision made for these.

12th August 2024
Signed:

Glen Harding MICFor, MSc (Forestry), MArborA
For and on behalf of GHA Trees

Appendix A
TREE PLAN
(see separate PDF)

Appendix B
TREE TABLE

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	N (m)	E (m)	S (m)	W (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T1	Oak	15	400	1	4.80	2	4	4.5	4.5	M	5 over site	40+	A1	Off site - full inspection not possible. Some measurements estimated.
T2	Oak	13	416	2	4.99	1	1	5	5	M	5	Less than 10	U	80% dead. Off site
T3	Oak	19	790	1	9.48	4	2	9	7	M	6	40+	A1	No significant / notable defects observed during inspection.
T4	Oak	12	510	1	6.12	4	4	6	7	M	5	40+	A1	No significant / notable defects observed during inspection.
T5	Hornbeam	11	250	1	3.00	4	4	4	4	M	2	20-40	B1	No significant / notable defects observed during inspection.
T6	Cypress	9	150	1	1.80	1	1	1	1	M	5 over site	10-20	C1	Off site - full inspection not possible. Some measurements estimated.
T7	Palm	7	150	1	1.80	1.5	1.5	1.5	1.5	M	5 over site	10-20	C1	Off site - full inspection not possible. Some measurements estimated.
T8	Oak	18	570	1	6.84	4	3	7	2	M	5	40+	A1	No significant / notable defects observed during inspection.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	N (m)	E (m)	S (m)	W (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T9	Oak	16	530	1	6.36	5	6	7	4	M	5	40+	A1	No significant / notable defects observed during inspection.
T10	Oak	18	640	1	7.68	7	8	10	8	M	5	40+	A1	No significant / notable defects observed during inspection.
T11	Hornbeam	24	850	5	10.20	4	7	7	8	M	5	20-40	B1	No significant / notable defects observed during inspection.
T12	Poplar	20	350	1	4.20	1	5	5	2	M	4	10-20	C1	Off site - full inspection not possible. Some measurements estimated.
T13	Hornbeam	14	487	4	5.85	5	5	5	5	M	4	20-40	B1	No significant / notable defects observed during inspection.
G14	Leyland cypress	22	250	1	3.00	3	3	3	3	M	4	10-20	C2	Lapsed hedge.
T15	Oak	22	810	1	9.72	2	5	10	6	M	6	40+	A1	No significant / notable defects observed during inspection.
T16	Hornbeam	22	926	7	11.11	6	7	4	7	M	4	20-40	B1	No significant / notable defects observed during inspection.
T17	Oak	20	500	1	6.00	5	6	0	3	M	5	40+	A1	No significant / notable defects observed during inspection.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	N (m)	E (m)	S (m)	W (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T18	Oak	20	680	1	8.16	8	3	5	7	M	8 plus epicormic	40+	A1	No significant / notable defects observed during inspection.
T19	Spruce	18	300	1	3.60	3	3	3	3	M	6	10-20	C1	Sparse crown. Off site - full inspection not possible. Some measurements estimated.
T20	Oak	21	1010	1	12.12	4	6	9.5	8	M	10 norh	40+	A1	No significant / notable defects observed during inspection.
T21	Hornbeam	15	415	3	4.98	4	5	4	6	M	6 south	20-40	B1	No significant / notable defects observed during inspection.
T22	Oak	22	400	1	4.80	7	7	3	3	M	8	40+	A1	Off site - full inspection not possible. Some measurements estimated.
T23	Oak	22	600	1	7.20	7	4	7	8	M	8	40+	A1	Off site - full inspection not possible. Some measurements estimated.
T24	Sycamore	15	320	1	3.84	0	0	5	4	M	6 south	10-20	C1	Growing in fence line. Self set, one sided tree.
T25	Cypress	8	180	1	2.16	1.5	1.5	1.5	1.5	M	4 over site	10-20	C1	Off site - full inspection not possible. Some measurements estimated.

KEY :

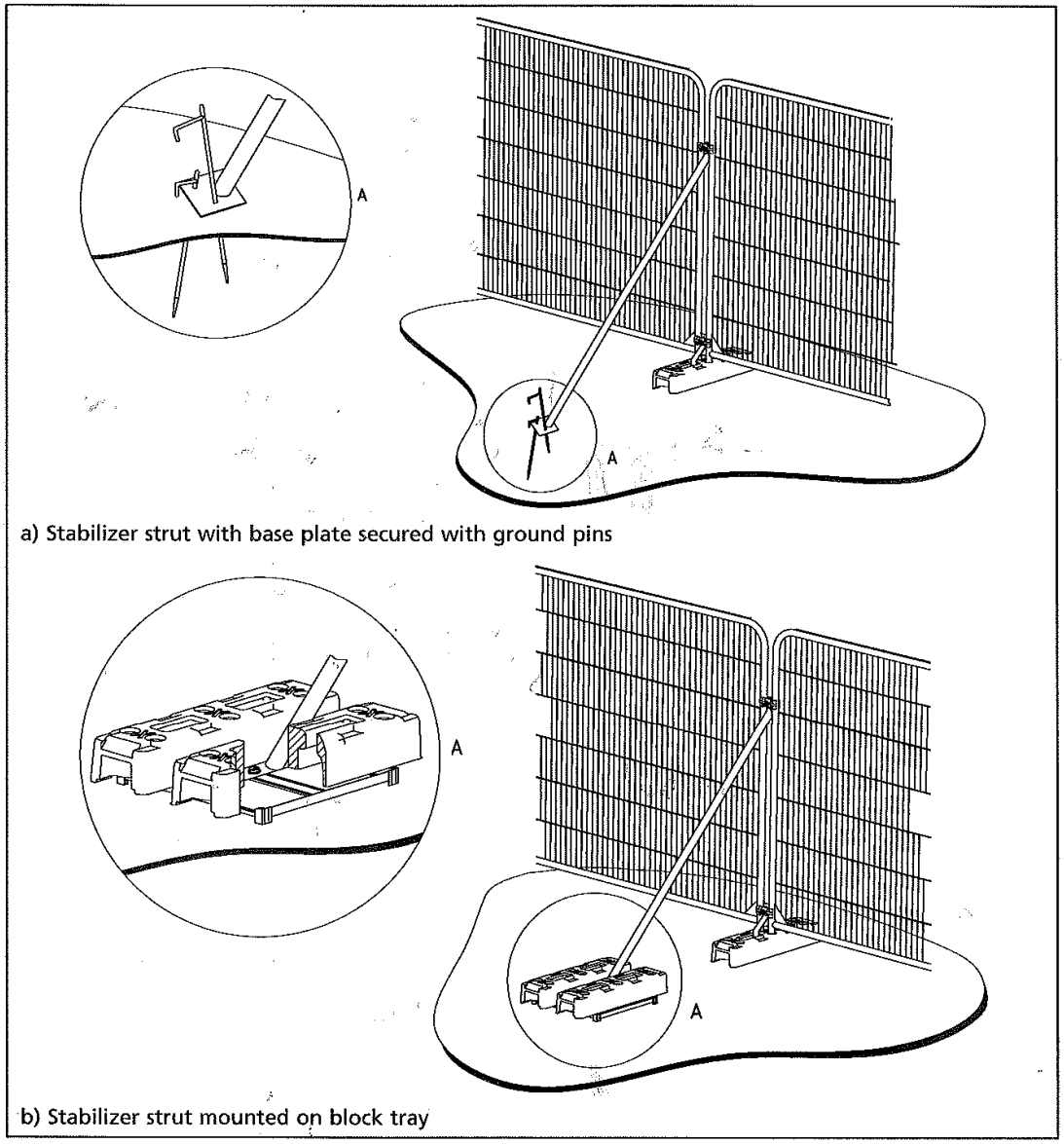
Tree No: (T= individual tree, G= group of trees, W= woodland)

Age class: Young (Y), Middle aged (MA), Mature (M), Over mature (OM), Veteran (V)

Height (Ht): Measured in metres +/- 1m

Appendix C
TREE FENCING DETAIL

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