

Tree Report

**BS. 5837:2012 Trees in relation to design, demolition and construction-
Recommendations**

**The Mill Cottage
Marchwiell Hall Lane
Marchwiell,
Wrexham
LL13 0SS**

Report Prepared By:

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TREE REPORT

Site: Mill Cottage, Marchwiel, Wrexham.

Grid Ref: SJ 334060 348273 (Property)

Date: 01/11/2019

1. Introduction:

I have been instructed by Ms Megan Boreham to conduct a Tree Impact Assessment in relation to the further development of The Mill Cottage within the grounds of Marchwiel Hall Estate. The Tree Impact assessment has been carried out in relation to trees in Construction BS.5837/2012. The trees have been inspected from ground level only using a ground based Visual Tree Assessment, (VTA).

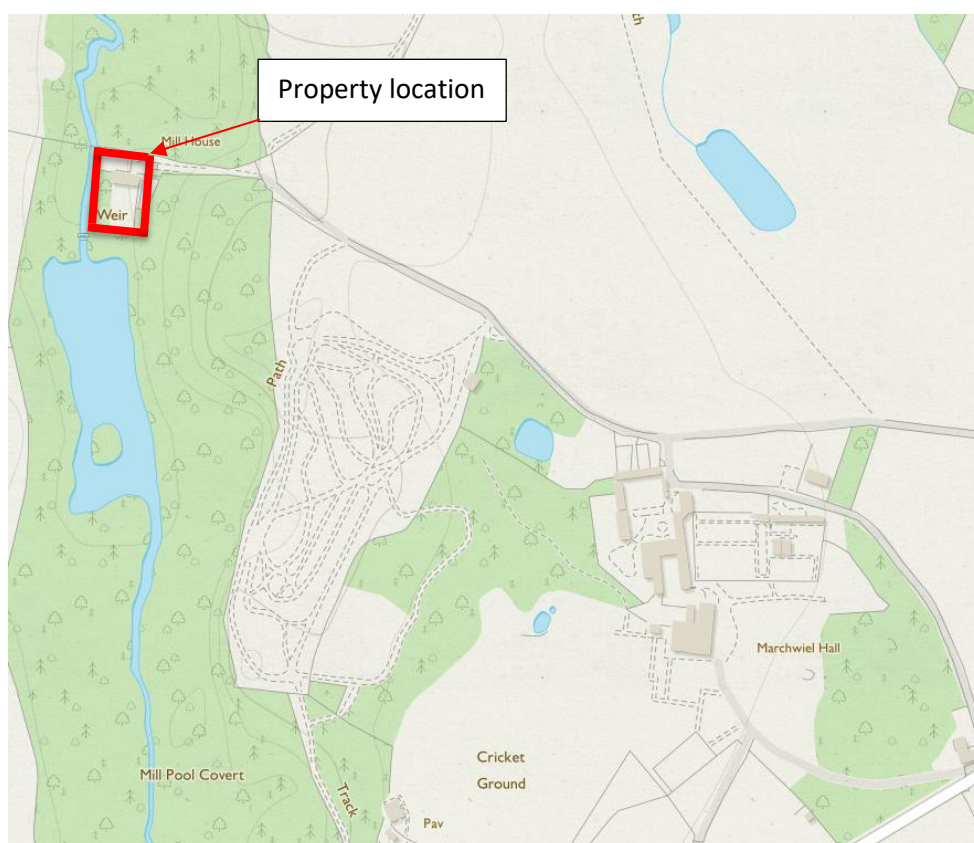
1.1 Proposal

To assess the quality of the trees on the site and how the trees may be affected by the development.

1.2 Landscape

The site is surrounded by woodland to the North owned by the National Trust. The Western boundary leads down a steep bank to Gefeiliau Brook. To the south is the boundary to the Marchwiel Estate and to the East is a steep access track that leads down to the site. The site is well sheltered from prevailing winds as the property is situated next to the brook, and in a deep depression. The property is a Grade 2 listed building which forms part of an old watermill. (Fig1)

Property location Fig1



2.1 Tree schedule:

The survey assessed four trees, two of which were of high quality and value (T1 & T4). T1 is a mature English Oak (*Quercus robur*) which is situated on the Western boundary of the site. The tree has good structural form and is showing good growth at the branch extremities. There is a small proportion of deadwood, up to 150mm in diameter, within the crown which is to be expected of a tree of this age. There were no visible signs of fungal bodies or any structural deformity. T4 is a Lawson Cypress (*Chamaecyparis lawsoniana*) located in the North west corner of the site. It has good form for its location.

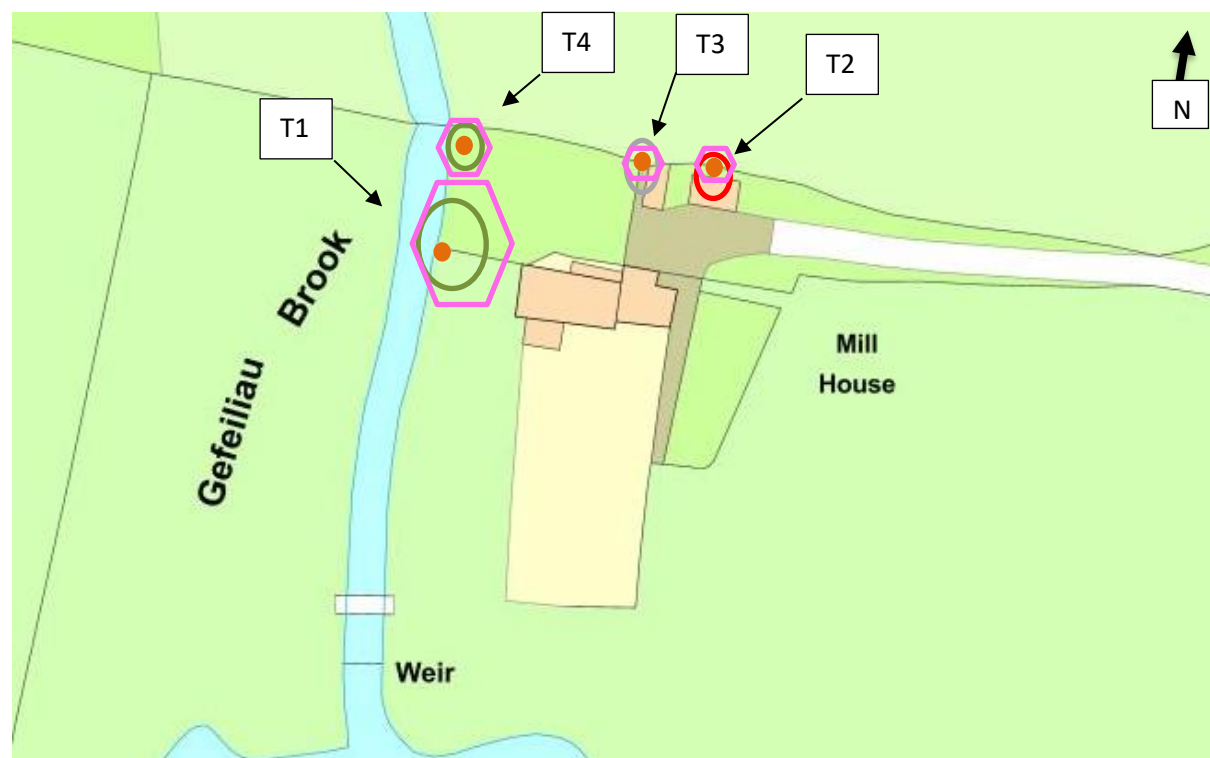
The Root Protection Areas (RPA) is annotated on the Tree Constraints Map. (Fig2).

This report focuses on the trees which should be retained and protected. The trees outlined for retention should be protected throughout the entire construction process to include tree protective fencing and Construction Exclusion Zones (CEZ).

All tree works must only be carried out by a suitably qualified and experienced arboriculturalist and should conform to British Standard 3998:2010 'Tree work recommendations'.

The trees are shown on the accompanying Tree Constraints Map. (Fig.2)

Tree Constraints Map Fig2



-  Tree Location
-  Tree crown spread
-  Root Protection Area

Tree survey:

Tree No	Species	Height (M)	DBH (M)	Crown Spread	Age Class	Condition	Recommendation	Work Priority	SULE yrs	RPA radius (M)	BS5837 m2,	BS 5837 Retention category.
T1	Common Oak <i>Quercus robur</i>	25	1.02	N:14 E:15 S:10 W:6	M	Good. Minor scattered deadwood throughout crown. Low branches over proposed building works .	Remove all deadwood over 100mm in diameter on property side only. Prune all low overhanging branches on the main stem to a height of 2m. Reduce the long low branch on the property side by 2 metres to a suitable growing point.	Low	50+	12.24	475	A1
T2	Goat Willow <i>Salix caprea</i>	10	0.27	N:0 E:2 S:6 W:2	EM	Poor. T2 is located on the northern boundary overhanging a structurally unstable building	Fell to ground level	Low	5+	3.30	34	U1
T3	Common Ash <i>Fraxinus excelsior</i>	9	0.37	N:0 E:1 S:5 W:1	EM	Fair T3 is located behind an outbuilding and on the boundary to the property	Fell to ground level.	Low	10+	4.50	64	C1
T4	Lawson Cypress <i>Chamaecyparis lawsoniana</i>	19	0.56	N:5 E:5 S:5 W:5	SM	Good	No Work Required	Low	40+	6.60	137	A1

The grading retention system is summarised as follows:

U grade – trees for removal, effective for less than 10 years

A grade – trees of high quality and value, effective for more than 40 years

B grade – trees of moderate quality and value, effective for more than 20 years

C grade – trees of low quality and value, effective for 10 years

2.2 Arboricultural Impact Assessment

Most tree roots occur in the top 60cm of the soil. Most damage to the future stability and vigour of a tree can therefore occur during the construction phase. Mature trees can survive serious damage for up to five years before they may suddenly decline resulting in usually wind-throw or death. Simple wounding to the bark or branches by insensitive construction operators can result in sources of infection and later decline. Dead or dying trees may also reduce the amenity of the site.

Based on the proposed site layout from the initial plans T1 and T4 are within a zone of influence from the potential root damage from heavy plant and machinery and as such the appropriate construction exclusion zones and root protection areas must be adhered to.

As building work is proposed over a section of a Grade 2 listed building which borders the RPA of T1 careful consideration will need to be given to foundation design. These techniques must be adhered to in order to lessen future impacts that may result in higher maintenance costs for T1 in the future.

2.3 GENERAL CONSTRAINTS DATA

The constraints arising from retention of trees is classified as the Construction Exclusion Zone (CEZ) and (Root Protection Area - RPA) as illustrated on the Tree Constraints Plan. The protective fencing plan has not been provided for the purposes of this report.

Construction Exclusion Zone (CEZ) & Root Protection Area (RPA).

The Root Protection Area is calculated in m² and must be protected during and preserved intact after construction, in order to facilitate the healthy retention of the tree concerned by adequately protecting functioning tree roots. This area is based on a radial measure from the centre of the stem of the tree, which is found by multiplying the stem diameter of the tree concerned, by a factor of twelve (or by a factor of ten when measuring basal diameter immediately above the root flare for multi-stemmed trees).

The CEZ includes all area up to and including the RPA (Root Protection Area) from the protective fencing.

During this Arboricultural Impact Assessment, the derived radial measure has been converted into the actual area to be protected, having due regard to prevailing site conditions and how these may have affected the trees, particularly in relation to factors affecting their likely rooting disposition. The means of protecting the RPA will include the installation of tree protection fencing prior to the start of work on site, including all demolition. Various activities within the RPA are prohibited (e.g. mechanical excavation, soil stripping, fire lighting, materials storage, lowering levels and creating excessive sealed surfacing), and may include the use of temporary ground protection and/or special engineering solutions where construction is proposed near to retention trees or within the RPA. This is the area above ground occupied by the crown of the tree, along with allowances for working space and if appropriate, for future growth.

2.4 Tree Constraints Plan.

The Tree Root Protection Area for each tree is shown as a pink line so it cannot become confused with the true crown spread. The crown spread is shown as either red, green blue or grey according to their quality categorization.

3. Arboricultural Method Statement.

After a site consultation between the client and the arborist, the following may be carried out: -

- a) Carry out any necessary Arboricultural pre-construction works, removal of hard surfaces and demolition of existing structures.
- b) Erect protective fencing, root barriers and ground protection as per BS: 5837/2012
- c) Carry out any development in accordance with the Tree Impact Assessment. Any amendments must be agreed in accordance supervising arborist.
- d) Removal fencing and ground protection.
- e) Final landscaping and any remedial tree surgery that may be required.

Following this report if it is found that underground services or any construction that is carried out within the Root Protection Area a full method statement for operating within these areas in accordance with the standard can be provided as part of this report. At present we do not have enough information to provide this and it is hoped that the development will be able to avoid tree RPA's.

3.1 Schedule of works, Arboricultural monitoring and supervision.

The schedule below may be subject to change and determined by operational constraints, any amendments must be agreed between the client and the supervisory arborist.

3.2 Pre-Development Stage

1. Carry out an on-site meeting including the Arboricultural consultant, client and Project manager.
2. Agree on all access to the site.
3. Discuss and agree on site compound burning and mixing areas.
4. Carry out any pruning works needed for access.
5. Carry out and demolition work on site
6. Carry out any works to trees that are directly affected by the development.
7. Carry out any trees works on trees that are indirectly affected by the development.
8. Install all identified tree protection measures.
9. Carry out a site inspection by the Arboricultural consultant.

3.3 The Development Stage

1. Ensure that the site is accessible for all construction traffic
2. All construction staff to be briefed (toolbox talk) by the arboricultural consultant, as per method statement.
3. Any ground works within the RPA to be supervised by the arboricultural consultant.
4. To carry out regular site monitoring during this stage. Timing to be discussed in with contractor.

3.4 Completion.

Arboricultural consultant to carry out a site inspection.

3.5 Post Development Stage

1. To remove all protective fencing
2. All landscaping staff to be briefed by the arboricultural consultant.
3. To carry out all Landscaping

Site monitoring should be in place to make sure that tree protection measures stipulated within the report are adhered to, and any amendments or issues are carried out with the correct process and ensuring notification to the client.

Supervision within the RPA and CEZ is to ensure there is no undue damage caused to the affected tree.

All tree works and clearance of scrub must be carried out in advance of the erection of the protective fencing.

All tree protection fencing must remain in situ throughout the duration of the construction work up until completion. The fencing can only be removed after a final site inspection.

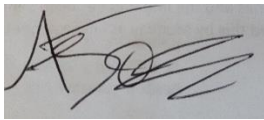
3.6 Arborist.

All tree contractors working near to trees must always have access on site to all relevant sections referred to in this report.

- BS5837:2005 'Trees In Relation To Construction'.
- NJUG Guidelines for the planning, installation and maintenance of utility apparatus in close proximity to trees (Volume 4) Issue 2 July 2007.

REFERENCES

- BS 5837/2012 'Trees in Relation to Construction - Recommendations' British Standards Institute, London.
- BS 3998/2010 'Recommendations for Tree Work' British Standards Institute, London.
- 'Visual Amenity Valuation of Trees & Woodlands' 2003. The Helliwell System (Arboricultural Association publication)
- 'Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees' 1995 National Joint Utilities Group (NJUG) Publication No. 10.
- Tree Roots in the Built Environment 2006 - Dept. for Communities & Local Government (DCLG)



Mr Andrew O'Brien, HND Arboriculture

Disclaimer

The tree(s) referred to in this report are living entities and are therefore subject to natural processes. They will also be subject to changes to their environment caused by human's activities and to exceptional weather conditions. The inspection undertaken by our qualified staff relies on visual attributes of tree health and structure which can be assessed from a ground based inspection. Hidden defects which are not readily visible may not be detected. We therefore cannot wholly guarantee the condition and safety of the trees inspected beyond what can be reasonably assessed from the procedure used. We would recommend that the trees are regularly inspected and our staff will advise on the suitable frequency of these inspections.

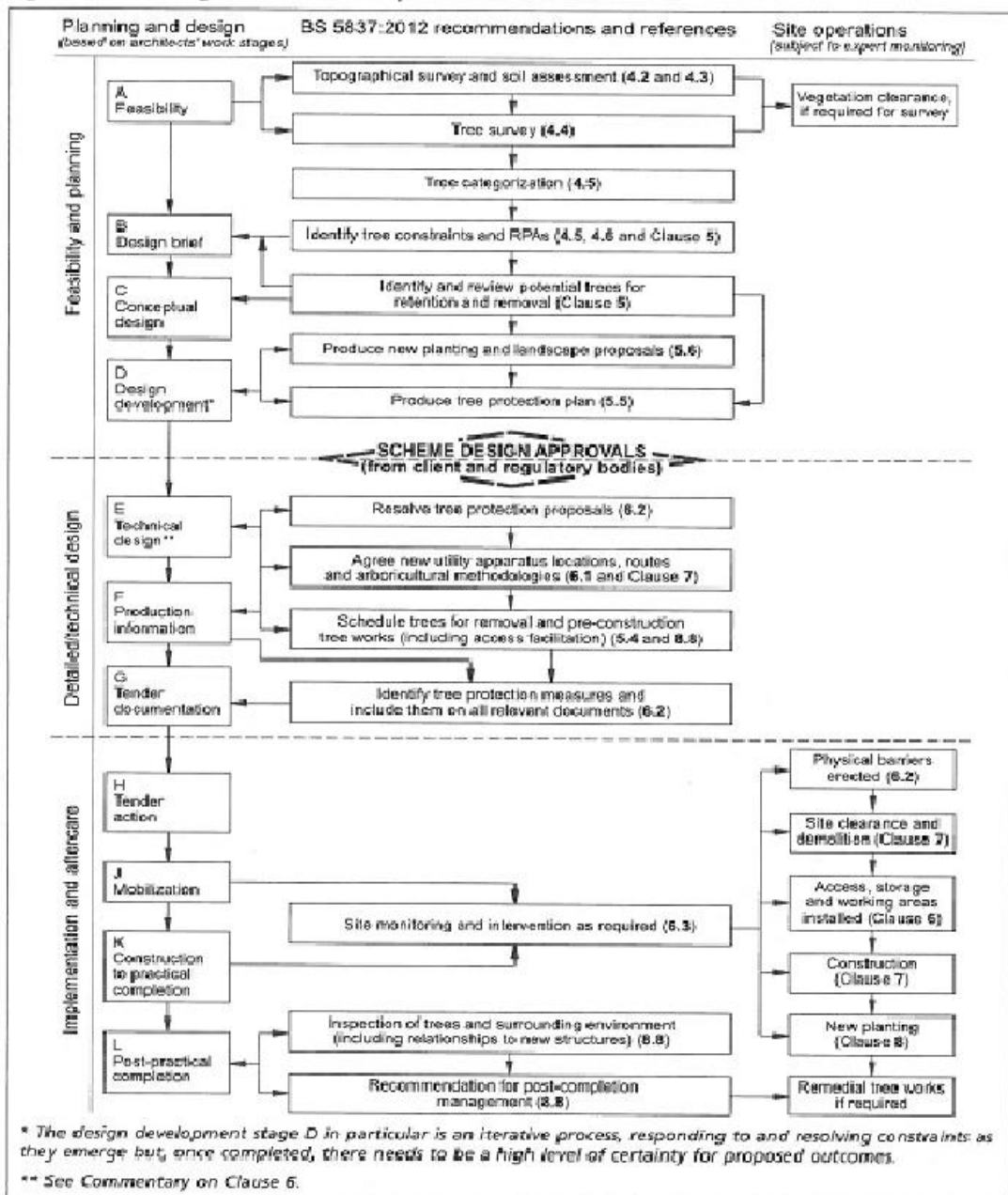
Appendix.

1 – Planning Flow Chart

BS 5837:2012

BRITISH STANDARD

Figure 1 The design and construction process and tree care

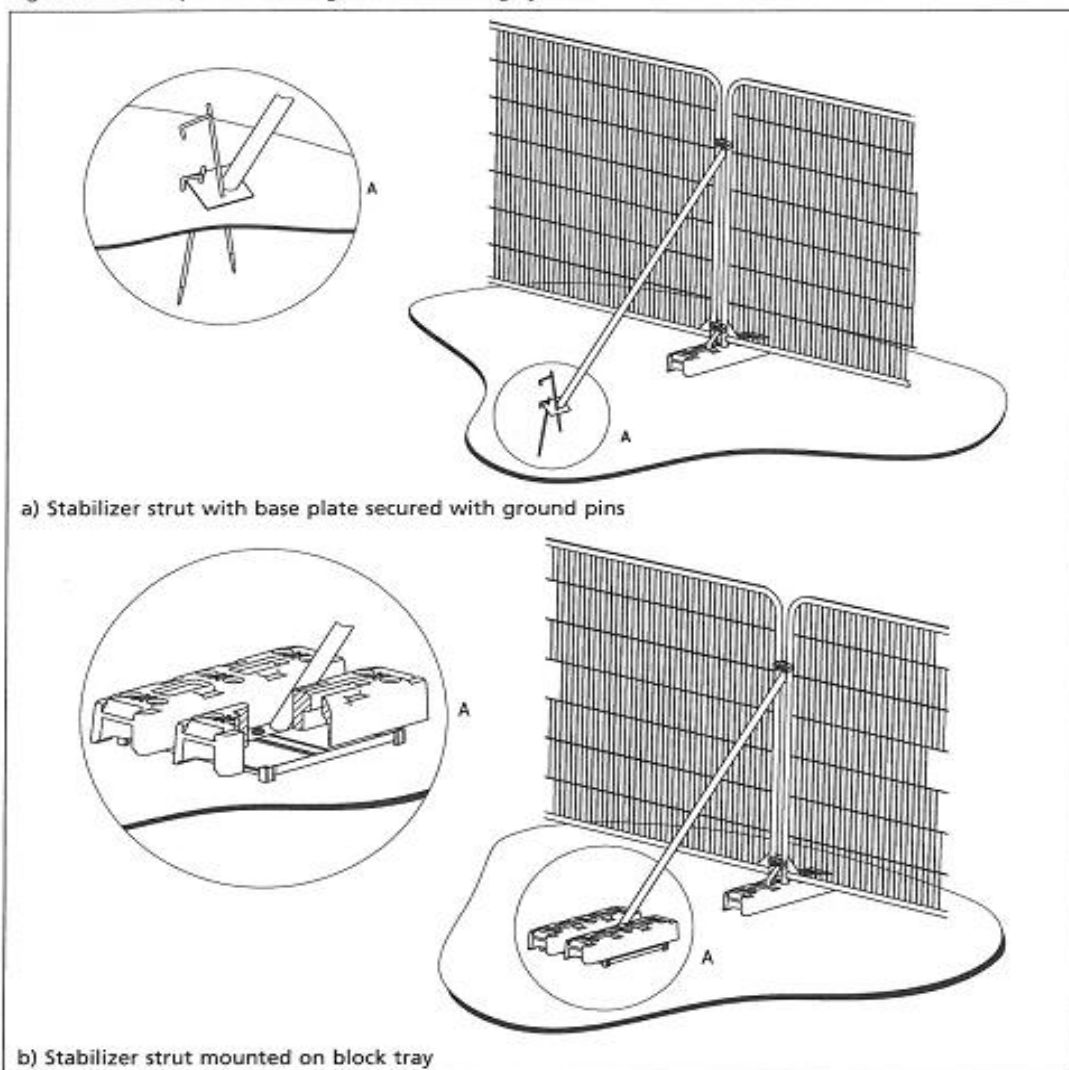


2. Protective fencing (BS.5837.2012)

BRITISH STANDARD

BS 5837:2012

Figure 3 Examples of above-ground stabilizing systems



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.

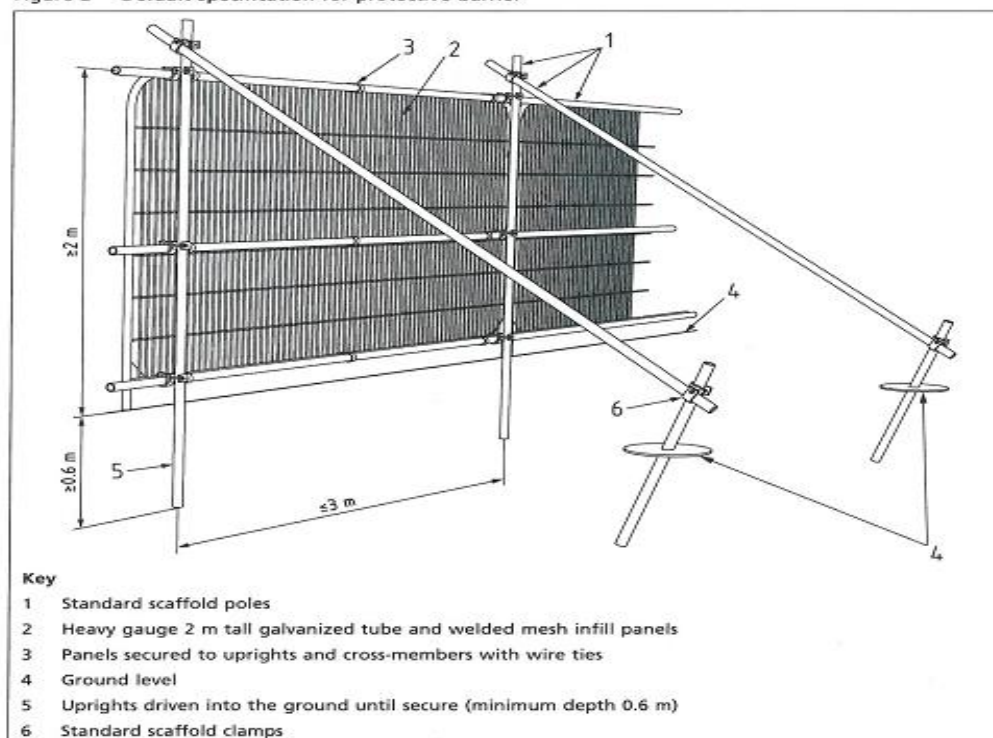
on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

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



3. Cascade chart for tree quality assessment.

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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
	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

4. Arboricultural site inspection form.

Shropshire Council Natural Environment Development Guidance Note 7

Appendix 3: Arboricultural Site Inspection Form

Arboricultural Site Inspection			
Site: _____			
Application Ref: _____			
Developer: _____			
Site agent: _____			
Arboricultural consultant: _____			
Date of inspection: _____		LPA Tree Officer: _____, Shirehall, Shrewsbury	
Accompanied by: _____			
Fencing / Ground Protection			
In place / intact?	☐	Information signs present?	☐
Erected according to approved details?	☐	Any evidence of breach?	☐
Details, including action taken / required: _____			

Construction Exclusion Zone			
CEZ to approved dimensions?	☐	Any evidence of tree damage?	☐
Any evidence within the CEZ of:			
Excavations?	☐	Changed soil levels?	☐
Ground contamination?	☐	Vehicle movements?	☐
Storage of materials / equipment / waste?	☐	Fires?	☐
Details, including action taken / required: _____			

Any special works potentially damaging to trees proposed for coming building period? ☐			
Any amendments to proposed plans? ☐			
Details: _____			

Copied to:		Site Manager	☐
		Site Agent	☐
		LPA tree officer	☐
		Site owner / Client	☐

5. Glossary.

Tree Number

Refers to the tree as numerically tagged on site. Tags are to be place in visual position at eye level on surveyed trees.

Species

Common and vernacular name of the tree – Vernacular- Latin names displayed in small italics.

Height

Approximate height of the tree from base to the tips of the crown.

DBH

Diameter at Breast Height (1.5m) in metres.

Crown spread

Measured diameter of crown at four cardinal compass points

Age class

The appearance of at what stage of life the tree may be in:

Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, FM = FULLY MATURE,

PM = POST MATURE.

Condition

The general condition of the tree (poor, Fair, good, excellent), including disease and pests that may prove of detriment to the health, and longevity of the tree.

Keys in relation to condition.

Condition	
Excellent	Tree in excellent condition with good vitality and no defects present
Good	Tree in displaying good vigour, vitality, only very minor defects
Fair	Tree showing some signs of stress, minor defects present
Poor	Tree showing signs of major die back, major defects – intervention needed
Dead	Tree no longer alive

Recommendations

Recommend tree work in order to reduce risks to an acceptable level during a pre-determined inspection period. Such recommendations will be made to procure a trees vitality and longevity as well as future safety.

Work Priority.

Trees given a priority should have the recommendations carried out within the timescales assigned. Denoted by the attached key.

Work urgency (Priority)	
Very High	Urgent – Works required within 24 hours
High	Works required within 7 days
Moderate	Work required within 1 month
Low	Works required within 6 months
Very low	Low priority – within 1-3 years
Non-Required	No target

SULE

Safe Useful Life Expectancy in years (a subjective assessment of how long the tree may live).

BS:5837 RPA Radius:

Radius from stem to the line of the tree protection.

BS:5837 Root Protection Area (square metres)

Area around base of tree to ensure adequate root protection

BS 5837 Retention Category

Retention value based on Table 1 BS 5837(2012)