Tree Survey

of

Land adjacent to Curate's Cottage, Hatfield, Herefordshire.

Peter Quinn Associates

27th May 2021
updated
23rd November 2021

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1.0 Introduction

1.1 The Survey

Peter Quinn Associates were instructed by David Baume of Baume & Co. on behalf of Mr C. Andrews, to undertake a survey of trees and hedges on land adjacent to Curate's Cottage, Hatfield, Herefordshire. This report contains the results and findings of the survey and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*.

The report describes the condition of trees and hedges recorded on the 27th May 2021. From this, it assesses the likely impact on the trees and hedges of the proposed development of the site and the likely constraints that they pose to the development (see *1.4 The Proposals* below). A primary objective of the BS and this report is to provide advice on the sustainable, harmonious integration of suitable existing trees and hedges into the proposed development and to ensure their protection during the development process and beyond.

The schedules record a snapshot of the trees and hedges on the date of the survey and the report makes recommendations solely on this basis. Subsequent changes to the site may thus invalidate the findings contained herein. The growth (or decay) of the surveyed trees and shrubs over time will also render the findings less accurate and the recommendations less reliable. It is reasonable however to expect that recommendations will remain reliable for up to two growing seasons after the date of the survey.

The report is for planning purposes only and does not constitute a tree health, structure or safety report. It should thus not be used to assess the risk posed by trees on the site.

The report does not formally or thoroughly assess the trees or hedges for their ecological value. Noteworthy ecological features may however be recorded in the comments section of the schedules.

Definitions, terms and methodology can be found in the Appendices.

1.2 The Existing Site

The site is located immediately to the northwest of a lane (the C1059) at the northern end of Hatfield, Herefordshire.

The site is set within a field currently used for grazing. It is roughly rectangular in shape and is c.125m along its northeast-southwest axis and c.55m across its northwest-southeast axis. The site covers c.0.7ha.

The northeastern and northwestern boundaries are open and unmarked on the ground. The southeastern boundary is defined by a native agricultural hedge (H1). The southwestern boundary is also marked by a native hedge (H2) near to which a number of trees grow just off-site (T1-T6). Another hedge starts at the westernmost corner of the site and runs north, as the site boundary runs northeast. Only the nearest 25m of the hedge have therefore been included in the survey.

Hedges H1 and H3 appear to be covered by the Hedgerow Regulations 1997. Herefordshire Council's administrative map shows that there are no trees on the site protected by Tree Preservation Orders (TPO) and the site is not within a conservation area.

Please note that TPOs and other statutory protection may have been applied between the date of this report and any proposed tree works. No works should be commenced before appropriate checks are carried out.

1.3 Topsoil

The National Soil Resources Institute (Cranfield University) has identified the topsoil in the general area as being Soilscape 8: slightly loamy and clayey soils with slightly impeded drainage. However, no site-specific information on soil shrinkability, profiles or structure was available at the time of this study. No comments are therefore offered in this report on the effects of existing trees on soil shrinkage or heaving when retained or removed and the subsequent effects on foundations and services.

1.4 The Proposals

It is proposed that the site is developed for residential use. The layout is shown on the *Proposed Site Layout* drawing No 7872-02E of February 2021 which is appended to this report.

It is proposed that 2 semi-detached and 3 detached dwellings are constructed. Vehicular access to the adjacent lane would be via 2 new entrances made through the existing southeastern hedge. Pedestrian access would be via 3 new entrances in the hedge.

Four hedges are proposed within the site: three beside access drives and one between two of the plots. A number of trees are proposed near to the southeastern hedge and along part of the northwestern boundary. Two other trees are proposed near to the southwestern boundary and a scattering of shrubs is proposed within the verges of the drives. No other shrub or tree planting is proposed.

The closest proposed building (or other significant structure) to any of the existing hedges is the garage of plot 1, which is 3.9m from the southeastern boundary hedge. The closest building to any tree is the same garage at 18.6m from tree T1.

1.5 The developing proposals

The first version of this report was based on the *Illustrative Site Proposals* drawing No 7872-02 of February 2021. This was used in the development of the final design shown in the appended *Proposed Site Layout* drawing.

Copies of the *Illustrative Site Proposals* and the earlier version of this report are available upon request.

2.0 Tree survey schedule

NOTES:

1. The positions of all trees are based on the *Existing Layout* drawing (No MG1997-S1) of February 2021 by Monument Geomatics.

2. See Appendix 3.0 for abbreviations etc.

3. A thorough inspection of the trees was not possible due to a combination of ivy cover, difficult access due to the hedge in which the trees grow and the difficulty of gaining access to the adjacent property. Comments are thus limited to those features that were visible. Measurements relating to trunk diameter, crown spread, height to crown and height to lowest branch are estimates.

Tree table 1: measurements.

No	Species	Dbh mm	Ht m	Crown spread				Height to crown m branch m	Age	Vig	Rem. yrs	Cat	RPAr m	RPA sqm
				N	E	S	W							
T1 Off-site	Birch	400 est	18.0	6.0 est	7.0 est	7.0 est	1.5 est	3.0 2.5 N est	M	G	40+	A2	4.8	72
T2 Off-site	Birch	300 est	16.0	4.0 est	1.0 est	2.0 est	1.0 est	10.0 10.0 N est	M	G	20+	B2	3.6	41
T3 Off-site	Birch	350 est	16.0	5.0 est	3.0 est	3.0 est	3.0 est	4.0 3.5 N est	M	G	40+	B2	4.2	55
T4 Off-site	Birch	350 est	13.0	6.0 est	4.0 est	5.0 est	6.0 est	2.0 3.0 NE est	M	G	40+	B2	4.2	55
T5 Off-site	Apple	MS 350,75, 100 Est CD=372	6.0	4.0 est	3.0 est	3.0 est	3.0 est	1.5 1.5 SE est	M	G	20+	C1	4.5	64
T6 Off-site	Oak	1000 est	20.0	12.0 est	9.0 est	9.0 est	11.0 est	3.0 4.0 E est	M	G	40+	A1	12.0	453
T7 Off-site	Oak	800 est	8.0	5.0 est	6.0 est	5.0 est	6.0 est	2.5 2.5 NE est	M	G	40+	B1	9.6	290

Tree table 2: comments.

No	Comments
T1	Birch An attractive tree in an important screening position next to the road. Sited within the adjacent private garden. Telegraph pole and wires within canopy. Ivy up main trunk and larger branches to c.12m above GL.
T2	Birch Sited within the adjacent private garden. Ivy up main trunk and larger branches to c.12m above GL. Canopy much constrained, apparently by adjacent trees. An unremarkable tree that would be assigned a C category if it were not part of the group T1-T4.
T3	Birch Sited within the adjacent private garden. Ivy up main trunk and larger branches to c.11m above GL. Would be assigned a C category if it were not part of the group T1-T4. An unremarkable tree that would be assigned a C category if it were not part of the group T1-T4.
T4	Birch An attractive tree sited within the adjacent private garden. Ivy up main trunk and larger branches to 6m above GL.
T5	Apple A small garden tree of limited arboricultural interest but overhanging the site boundary. Not marked on survey.
T6	Oak A very attractive tree clearly visible from the road.
T7	Oak A tree with an unusually small canopy given the size of its trunk. Not marked on survey.

3.0 Hedge survey schedule

NOTES:

1. The positions of all hedges are based on the *Existing Layout* drawing (No MG1997-S1) of February 2021 by Monument Geomatics.

2. The spread of hedges are approximate only & should be accurately checked on site before any development is started.

3. Hedge RPArs are based solely on the maximum stem diameter as surveyed and applied to the hedge along its entire length.

Hedge table 1: measurements and comments.

No	Species	Dia mm	Ht m	Width m	Age	Vig	Cat	Comments	RPAr m
H1	Hawthorn, hazel, field maple, holly, willow (S. alba), Dog rose, ash.	50	3.0	1.6-2.7	M	G	A2	Previously maintained to a height of around 1.0m. Features a 900mm high sheep-netting fence along the site side. Forms a screen with a density of c.100% in its lower half.	0.60
H2	Hawthorn, holly, blackthorn, dogwood.	120 est	3.5	2.0	M	F	C2	Located just the other side of the boundary fence between the site and the adjacent garden (1100mm high sheep-netting). Forms a poor screen with a density of c.60% with gaps along its length. Much variation in height.	1.44
H3	Holly, field maple, hawthorn,	300 est	2.0-7.0	2.5-7.0	V	G	B3	Only a short stretch of the hedge was surveyed where the site boundary was closer than c.10m. Comments refer only to the stretch of hedge running north from the westernmost corner of the site for c.25m. Forms a poor screen with a density of c.60% with gaps along its length, especially in its lower parts. Much variation in height: mostly overgrown but with a short stretch that in recent years has been poorly maintained to a height of c.1.5m.	3.60

4.0 Arboricultural impact assessment (AIA)

4.1 General

This AIA is offered in response to *Proposed Site Layout* drawing No 7872-02E of February 2021 which is appended to this report.

4.2 Trees: general.

The RPAs of the trees shown on the *Tree Protection plan* should be subject to the recommendations in this section and as described in *A4.0 Tree and Hedge Protection* in the appendices.

In particular, any construction within the RPA including services and footpaths and any excavations or reductions in ground level are likely to cause damage and should be avoided. Any significant increases in ground level (ie >150mm) are also likely to cause damage and should not be proposed without the application of special measures to avoid harm.

Where services or footpaths and other surfacing are proposed within RPAs then special engineering solutions should be applied to avoid significant damage to roots.

Also, significant changes to levels *near to* the RPA that would be likely to cause changes to ground water content should also be avoided. Proposed overhead services and lighting should be positioned so that they do not interfere with the canopies of retained trees and should take into account their likely growth.

Any trunks and larger branches of any trees that are felled on site should be retained as wildlife habitat within the site.

A number of trees are proposed within the RPAs of trees T3, T4 and T7. Excavation of tree pits by machine within RPAs could damage the root systems of existing trees and should not take place. Excavation should instead be carried out by hand to avoid damage to roots in excess of 25mm in diameter. Alternatively proposed trees should be removed or relocated beyond the RPAs.

4.3 Hedges: general.

Existing hedges provide a good level of screening to the site and every effort should be made to retain as much of their length as possible. Proposed entrances should be made as narrow as possible and retained lengths fully protected.

The RPAs of the hedges shown on the Tree Protection plan should be subject to the recommendations described in *A4.0 Tree and Hedge Protection* in the appendices.

A number of trees are proposed within the RPAs of hedges H1 and H3. Excavation of tree pits by machine within RPAs could damage the root systems of existing hedges and should not take place. Excavation should instead be carried out by hand to avoid damage to roots in excess of 25mm in diameter. Alternatively proposed trees should be removed or relocated beyond the RPAs.

Retained sections of hedge H1 should, subject to ownership and maintenance responsibilities, be cut in mid-February to maintain shape and screening density. The faces of the hedge should be cut with reciprocating bar or similar to within c.700mm of the centreline at an angle of c.10% to produce a hedge broader at the base than the top. Height should be reduced to 2m above GL to limit growth whilst retaining a good screen.

The northeastern face of hedge H2, subject to ownership and maintenance responsibilities, should be cut as above. H3 should not be cut as it is not on site.

Larger branches removed during works should be retained on site as part of habitat piles or similar.

4.4 T1 and H2.

It is proposed that the existing field gate is not used as an entrance but is instead planted with a new hedge. The line of this infill hedge coincides with the RPA of the A category Birch T1 and hedge H2.

As well as being important elements in the general landscape, the tree and hedge are within the garden of the adjacent property. Any damage to the tree and hedge caused directly by the proposed works could leave the developer liable to a claim for damages from the owner.

In order to avoid any adverse effect, any proposed works to remove gate posts etc should be carried out with care. It may be necessary to relieve existing compaction at the entrance to facilitate planting. This should be carried out either by hand or with a narrow, toothed bucket attached to an excavator sited beyond the RPA of the tree. Works with this and any other machinery should be monitored at all times to ensure that roots greater then 25mm in diameter are not severed.

All planting should be carried out, with care, by hand: neither a trench nor individual holes should be made by machine.

Construction access to the site should, as soon as possible after commencement, be made via the proposed vehicular entrances to the site through hedge H1 to limit damage to the roots of T1 and H2. Should large machinery be brought to site before the sections of H1 are removed, then a protective layer should be installed across the RPA of T1 before any machines are brought in. This should be in line with ***Ground protection within Construction Exclusion Zone*** in section ***A4.2 Protection on site*** below**.**

4.5 T2-T7 and H3.

The proposed development does not appear to threaten the RPAs of trees T2-T7 and hedge H3 other than the planting of trees (see section 4.2 above) and the installation of fencing. Any fence posts within RPAs should be excavated by hand to avoid damage to roots in excess of 25mm in diameter.

4.6 H1.

The *Proposed Site Layout* drawing shows the removal of 5 sections of H1, with a combined length of just less than 20m. Whilst regrettable in screening terms, access is essential if the site is to be developed. This would however mean that certain lengths of H1 would become disconnected from the existing, local network of hedges and this established, arboricultural feature would be adversely affected.

The proposed planting of a short stretch of hedge across the existing site entrance is welcome as this would partially mitigate the loss of connectivity. The proposed hedges within the site would also offer significant mitigation in terms of the overall length of hedge habitat. They would also contribute in terms of amenity when viewed obliquely from the lane.

Replacing the proposed pedestrian access paths through H1, with paths parallel to H1, direct from the proposed drives, would obviate the need for the the three, smaller, proposed openings in H1 without causing undue inconvenience or layout modification. This would help retain the existing connectivity along a significant length of the hedge.

All openings made in the hedge should be the minimum width required to provide access.

5.0 Mitigatory works

Adverse impacts on the arboricultural resources of the site likely to be caused by the proposed development would be mitigated by the following actions:

- Plant additional native hedges along the boundaries of the site and gardens where appropriate. This action would mitigate for the loss of hedge length and connectivity caused by the creation of breaks in H1 and would enhance the overall arboricultural value of the site.
- Replace proposed pedestrian access paths through H1 from the front of plots 3-5, with paths parallel to H1, linking each house directly with the proposed drives.
- Fence posts within RPAs should be excavated by hand to avoid damage to roots in excess of 25mm in diameter.
- Proposed trees within the the RPAs of existing trees and hedges should be relocated beyond the RPAs.

The above actions have been applied, as appropriate, to the appended *Detailed Landscape Proposals* drawing.

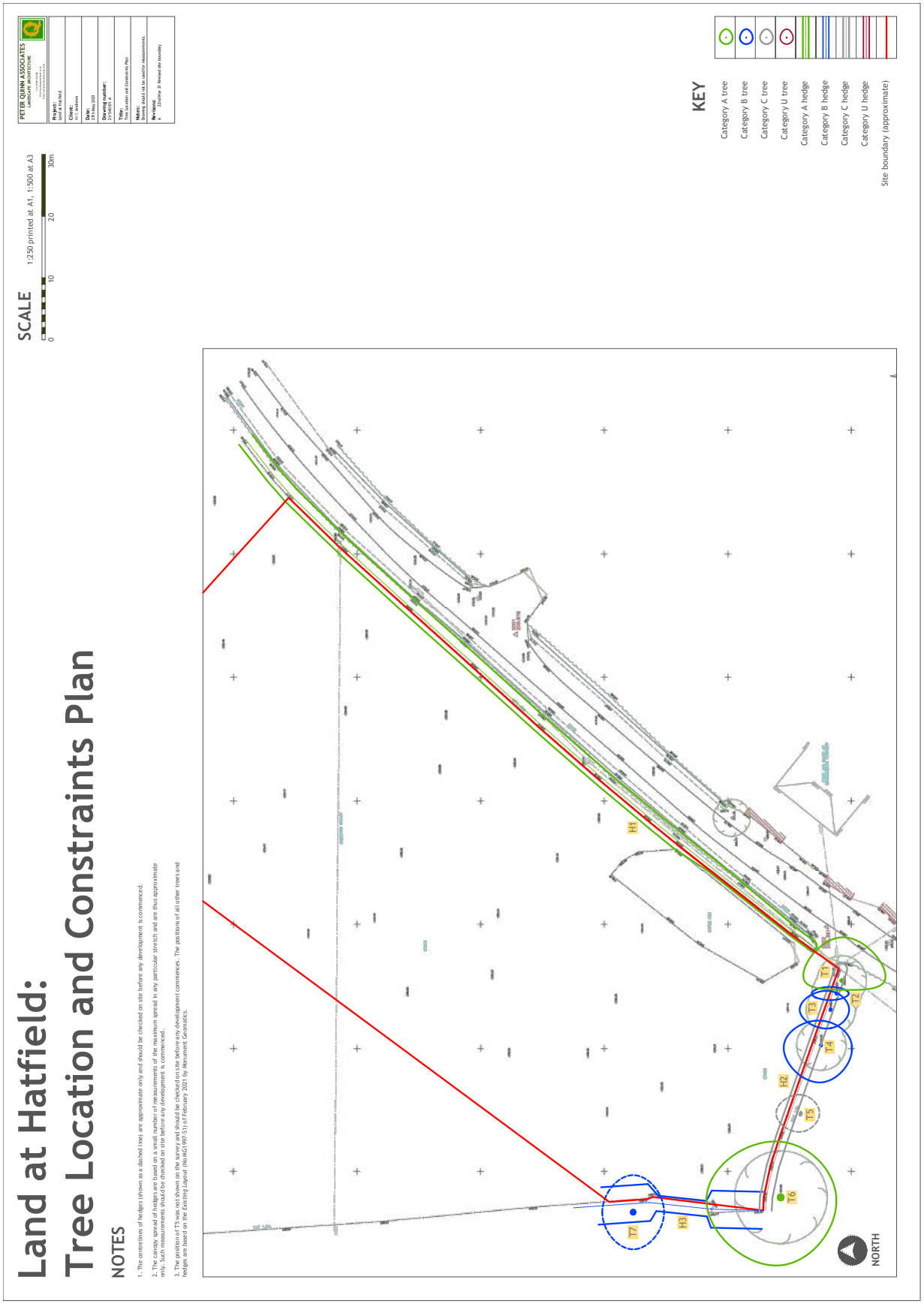
6.0 Conclusion

It is likely that, should the recommendations described in sections 5.0 and 6.0 above be followed, the site could be developed without unnacceptable negative effects on the existing arboricultural resources.

Appendices

A1.0 Tree location and constraints plan

The original of this drawing was produced in colour: a monochrome copy should not be relied upon.



A2.0 Tree protection plan

The original of this drawing was produced in colour: a monochrome copy should not be relied upon.

A3.0 Methodology, terms and definitions

A3.1 General

The trees and hedges were inspected from ground level. No invasive techniques such as tree boring were used. The survey methodology for trees is based on the guidance and recommendations contained within BS 5837:2012 *Trees in Relation to Design, Demolition and Construction - Recommendations*.

Trees were surveyed individually and are labelled T in the schedule and on the plans. Hedges are labelled H.
Measurements of height, crown spread and crown clearance of less than 10m are recorded to the nearest half metre. Measurements over 10m are recorded to the nearest whole metre.

A3.2 Trees

All trees on the site with a diameter at breast height of ≥75mm were surveyed and the information recorded in this report. Other trees bordering the site and either overhanging the boundary or otherwise likely to affect the site were also recorded. Note that access to trees off-site was restricted and some information recorded about such trees was estimated.

The following information was recorded about each tree in the report and is laid out in tree tables 1 and 2:

No.
A land survey of the site was supplied by the client.

Each tree was ascribed a number and this is indicated on the attached plans. The trees have not been tagged as the location of each tree is relatively clear. The canopy spreads of trees not shown on the land survey are shown as dashed lines on the *Tree Location and Constraints* plan.

Species.
The generic English name of the tree species was recorded. Where no positive identification was possible a question mark follows the name.

dbh (diameter at breast height)
Wherever possible, the diameter of the tree at breast height (1.5m above ground level) was measured in millimetres. Trees with a trunk diameter of <75mm were not surveyed individually (except in the case of significant multi-stemmed trees).
Where the measurement is made approximate by the presence of ivy, this is noted in the column.
Where the tree was situated on sloping ground, the measurement was taken 1.5m above the highest point around the base of the tree.
Where the tree was multi-stemmed (**MS**) or comprised a number of stems from a common root-stock (such as a coppiced tree), the number of stems was recorded and the diameter recorded for each one or a range of sizes recorded. The combined stem diameter (**CD**) was calculated and appears in this column.
Trees with an irregular swelling at breast height were measured at the narrowest point below the swelling.
Low branching trees were measured at the narrowest point below the fork.

Ht.
The height of the tree in metres was calculated from measurements taken from the ground using a clinometer.

Crown Spread.
The crown spread was measured on the ground from the base of the tree to the edge of the canopy in four directions. The measurements in metres are recorded in the order north, east, south, west. The canopy shapes shown on the plans are formed by interpolating these measurements.
Where any of the four measurements are an estimate (usually due to a difficulty with access) this is noted as ***est*** in the column.

Height to crown/branch
The height of the canopy above ground level is recorded on the left of the column. The height to the level of the lowest branch was measured in metres and recorded on the right hand side of the column. The direction of the branch's growth was also recorded where this was deemed significant.

Age.
The tree was ascribed to one of five age classes as follows:

- Y Young.
- SM Semi-mature.
- EM Early maturity.
- M Mature
- OM Over mature.

Vig (vigour)
A brief estimate of physiological condition based on general observation from the ground was made. Each tree was described as G, good (as expected for species and age), F, fair (impaired condition) or P, poor (significantly reduced vigour).

Rem. yrs (remaining years)
The estimated remaining useful life expectancy of the tree in years was ascribed to one of four categories:

- <10 Less than 10 years
- 10 - 20 Between 10 and 20 years
- 20 - 40 Between 20 and 40 years
- 40+ Over 40 years

Cat. (category).
Each tree was assessed with regard to its overall quality as an amenity tree according to BS 5837: 2012. The trees were ascribed to one of four classes:

A: Green on plan:
Trees of high quality, and/or good form and/or of particular visual importance with an estimated lifespan of >40 years. Retention very desirable.

B: Blue on plan:
Good trees of moderate quality and/or slightly poorer form with an estimated lifespan of >20 years. Retention favoured.

C: Grey on plan:
Trees of low quality and/or no particular merit but in adequate condition for retention with an estimated lifespan of >10 years or a stem diameter of <150mm.

U: Red on plan:
Trees that are dangerous or are of low value and cannot be retained in the context of the **current** land use for >10 years.

Trees in class A, B and C were also assigned a number to describe their main value:
1 Mainly arboricultural value
2 Mainly landscape value
3 Mainly cultural/conservation value

RPAr (root protection area radius)
Using the formula in BS 5837:2012, the Root Protection Area radius was calculated and recorded in the schedules in metres. For individual trees this is shown as a turquoise circle on the Tree Protection Plan. Tree groups were surveyed in the same way as individual trees where applicable and appropriate. Certain measurements are however described as being less than or equal to (≤) to indicate the maximum size recorded in the group. The ≤dbh figure was used to generate a measurement equivalent to the RPAr and this is also shown as a turquoise line on the Tree Protection Plan.

RPA sqm (root protection area)
The RPA is described in square metres and is shown on the Tree Protection Plan hatched in turquoise. It is the area enclosed by the RPAr and represents the minimum area around any given tree within which development (including buildings, paths, roads, services, soil strip, vehicular movements, ground modelling, storage and associated activities) should not be carried out. Its area in square metres is described in the schedules.

Where the area is interrupted by existing features, the shape of the RPA may be amended to a shape of equivalent or greater area showing the likely root distribution.

Comments.
Comments on trees are described in tree table 2 and comprise pertinent observations about the form and condition of the tree and any works necessary to ensure its removal or successful retention. Where no comments are made, the tree was observed to be in apparently good condition requiring no immediate attention. This does not however suggest that the tree is without defect or disease. Further arboricultural studies should be carried out should a full health check and risk assessment be required. Where an individual tree is judged to exhibit physical or physiological characteristics that suggest structural weakness or instability, a further, more detailed, tree safety report is recommended in the comments section.

Most trees have some dead wood in their canopy. It should be assumed that, where there is no specific comment, there is at present no obvious or easily anticipated danger to users from dead wood falling from the tree.

Further comments on works to trees are offered in the arboricultural impact assessment.

A3.3 Hedges

BS5837 makes little comment on the surveying of hedges, and the methodology for the surveying of trees it recommends cannot be applied in its entirety to hedges. This report records the information on hedges that the BS recommends but also includes other information judged relevant by the author to the proposed development of the site.

For the purposes of this report, hedges are considered to be lines of trees and shrubs greater than 7m in length.

All hedges on the site conforming to these criteria were surveyed. Other hedges bordering the site and either overhanging the boundary or likely to affect the site were also recorded. Note that access to those hedges off-site was restricted and thus some of the recorded information about them was estimated.

The woody species listed in the schedules for any particular hedge was compiled by walking the length of that hedge. This method gives an overall picture of the hedge but may not include every species growing within it especially if such species are very young, are growing within the body of the hedge or are otherwise obscured.

The following information was recorded about each hedge:

No.
A land survey of the site showing the location of hedges was supplied by the client. Each hedge was ascribed a number and this is indicated on the attached plans.

Species.
The generic English name of the dominant species is shown first. Where a number of species are co-dominant, they are listed in alphabetical order and separated by "&". All other woody species observed follow in brackets. Where a particular species could not be positively identified, a question mark follows the name.

Dia.
The size of the observed maximum stem diameter is recorded in millimetres. Diameters are measured between ground level and the first branch, where practical.

Ht.
The height of the highest point of the hedge in metres. Where there is evidence that the hedge is generally maintained to a certain height, this is described in the text. Where the hedge has been unmaintained over a number of years, the top of the highest branch is measured as the height.

Where the hedge varies significantly in height, a height range is described in the comments section.

Width.
The width of the hedge in metres showing the average measurement. The width is approximate, as precise measurements are generally not possible.

Where the hedge varies significantly in width over significant lengths, a width range is described in the comments section

Age.
The hedge was ascribed to one of three age classes as follows:

- Y Young: recently planted with small diameter stems and no evidence of laying.
- M Mature: an established hedge with a complex structure.
- V Veteran: an apparently very old hedge with a mixed age and species profile.

Vig (vigour)
A brief estimate of physiological condition based on general observation from the ground was made. Each hedge was described as Good (as expected for species mix and age), Fair (impaired condition) or Poor (significantly reduced vigour).

Cat. (category).
Each hedge was assessed with regard to its overall quality based on BS5837. Each hedge was ascribed to one of four classes:

A: Green on plan:
Hedge of high quality, and/or good form and/or of particular visual importance with an estimated lifespan of >40 years. Retention very desirable.

B: Blue on plan:
Good hedge of moderate quality and/or slightly poorer form with an estimated lifespan of >20 years. Retention favoured.

C: Grey on plan:
Hedge of low quality and/or no particular merit but in adequate condition for retention with an estimated lifespan of >10 years or recently planted.

U: Red on plan

Hedges that are dangerous or are of low value and cannot be retained in the context of the **current** land use for >10 years.

Hedges in class A, B and C were also assigned a number to describe their main value:

1 Mainly arboricultural value
2 Mainly landscape value
3 Mainly cultural/conservation value

Comments.
Comments comprise pertinent observations about the form and condition of the hedge and any works necessary to ensure its removal or successful retention. Where no comments are made, the hedge was observed to be in apparently good condition requiring no immediate attention. This does not however suggest that the hedge is without defect or disease.

RPAr (root protection area radius)
The maximum diameter recorded in the schedule was applied to the formula in the BS and used to generate a measurement equivalent to the RPAr. This is recorded in metres and is shown in turquoise on the Tree Protection Plan as a line parallel to the hedge line. The RPA is hatched in turquoise and shows the area enclosed by the RPAr line.

A4.0 Tree and hedge protection

A4.1 Statutory protection

It should be noted that any recommendations outlined in this document do not constitute permission to carry out such works.

In general terms, a Tree Preservation Order (TPO) prevents wilful damage or destruction to trees or woodlands without the prior consent of the local planning authority. Any works should only be carried out after all necessary checks are made and approvals obtained. Note that TPOs or other statutory protection (such as Conservation Area status) may have been applied between the date of this report and the proposed tree works.

Proposed works to certain hedgerows are subject to the regulations laid out in the Hedgerow Regulations 1997. Notification of the LPA of the intention to remove a hedgerow is *not* required if:

- The hedge is <20m long (but not if it is part of a hedge which is ≥20m long and not if it is <20m long but meets another hedge at each end)
- The hedge is in or borders a domestic dwelling
- A new opening is being made to replace existing access to the land. Note that the existing access must be filled by planting a hedge within 8 months of making the new opening.
- The hedge is being correctly managed by laying or coppicing
- There is no other way of obtaining access to the land except by disproportionate cost.
- A temporary access point is being created for emergency purposes
- The hedge is needed for national defence purposes
- The hedge is for carrying out work for which planning permission has been granted (but see the Regulations for restrictions on this)
- The hedge is required to fulfil a statutory plant or forest health order to eradicate or prevent disease or tree pests
- The hedge is required to fulfil a statutory notice preventing interference with electric powerlines and apparatus
- The hedge is required to complete statutory drainage or flood defence works
- New trunk roads or motorways are being built on the site

No works to trees or shrubs should be carried out during the bird-nesting season. The season might be considered to start at the beginning of March and continue until the end of August though certain species may nest outside this period and particular weather conditions may extend the season. Checks should be thus made beyond this period to ensure that trees and shrubs scheduled for removal or other works do not contain nests. Any work which harms birds or destroys their nests may constitute an offence under the Wildlife and Countryside Act 1981. An ecologist should be employed to advise further and to carry out all necessary checks.

A4.2 Protection on site

General

All trees and hedges within and bordering the site should be protected from direct and/or indirect damage during the construction process (including demolition) except where removal or surgery is specifically described elsewhere in this document. The RPA (root protection area) is designated in order to protect the roots of trees and hedges to be retained. The RPAs are shown hatched in turquoise on the Tree Protection Plan.

The plan also shows the location of temporary fencing which should be erected to entirely enclose the RPAs for the duration of the demolition, clearance and construction period. This is shown as an orange line on the Tree Protection Plan. The fencing should be constructed along or beyond this line in accordance with BS5837 as described below.

The area enclosed by the temporary fencing is known as the Construction Exclusion Zone (CEZ). It is shown hatched in orange on the Tree Protection Plan. The temporary fencing may be located beyond the RPA to protect aerial parts of the tree. This is likely where the canopy is particularly lopsided or otherwise extends beyond the RPA.

NOTE that the Tree Protection Plan within DRAFT reports will show neither temporary fencing nor CEZs. These will be added once the report is updated in line with finalised development proposals.

The following actions are prevented within the CEZ:

- Physical damage to the trees' trunks, branches and roots.
- Dumping or storage of spoil, rubbish or any materials whatsoever.
- Contamination of the root protection area by diesel, oil, cement, admixtures or other harmful chemicals.
- The use of systemic translocated herbicides unless specifically described by the manufacturer as being suitable for use under trees.
- Driving of any machinery except when such movements are along existing, surfaced paths and drives.
- Installation or re-installation of paths, foundations, drains or other services.
- Stripping, ripping, rotavation, excavation, compaction or disturbance of the topsoil.
- Changing of the existing level of the ground.
- Flooding.
- Fires within the CEZ or within 20m of it.

The above schedule should be prominently displayed in the site office and in the main welfare facility and on tree protection fencing at prominent points.

A single member of the senior, permanent, on-site construction staff should be assigned responsibility for tree protection. Each member of staff working on site should be made aware of the above schedule, the tree protection plan and the importance of the protective fencing. Any damage to trees or hedges should be reported to the member of staff responsible for tree protection.

Clearance and machinery within Construction Exclusion Zone

Any necessary clearance or demolition of features within the CEZ shall take place **after** general site clearance and demolition has been completed and **after** the temporary tree protection fencing has been erected. Such works shall take place only under the supervision of a Landscape Architect, Landscape Manager or Arboriculturalist. A single panel of the temporary fencing shall be removed only when the works are taking place and shall be replaced at the end of each working day.

Great care should be exercised to prevent damage to roots, trunks and branches. Where possible, any necessary clearance should be carried out entirely by hand.

No machinery shall be used within the CEZ except where specific permission has been granted by the local authority. Self-propelled machinery should only be used with appropriate ground protection as described in the BS and as described below (Ground protection within Construction Exclusion Zone).

Fuel and other liquids that are required for machinery, that may cause damage to trees, should not be brought into the CEZ. Machines should be re-fuelled beyond the CEZ.

Ground protection within Construction Exclusion Zone

Should machinery need to cross the CEZ of any tree then appropriate ground protection as described in the BS should be installed. This should be a certified proprietary cellular confinement system laid and filled with material as recommended by the manufacturer across the affected area of the CEZ + a 1m buffer all round. Suitable products include *TRP system* by *Core LP, Geoweb* by *Green-tech*, *Geocell* by *Terram* and other similar products subject to approval by the Landscape Architect, Landscape Manager or Arboriculturalist.

Protection should be installed before any machines are driven across the CEZ.

Excavations and level changes near to retained trees

Any construction within the RPA including services and footpaths and any excavations or any reductions in ground level are likely to cause damage and should be avoided. Any significant increases in ground level (ie >150mm) are also likely to cause damage and should not be proposed without the application of special measures to avoid harm.

Deep excavations (≥ 450mm) left open during dry weather will cause excessive drying of the soil profile for some distance either side. Similarly, any excavations allowed to fill with water, will alter the water content of the soil profile and may have damaging effects on tree roots. Any excavations within 2m of CEZs should therefore be backfilled as soon as possible, preferably the same day. Temporary backfilling with topsoil/subsoil should be carried out when circumstances prevent final backfilling within 48 hours.

Placing of piping and backfill should preferably be carried out in one operation. Otherwise such works should be carried out immediately after the previous operation.

Changes in levels and other activities which might cause flooding within or flow across CEZs either during construction or after completion should also be avoided. Where this is unavoidable, bunds or trenches, as appropriate, should be constructed >2m from the CEZ to divert floodwater.

Also, significant changes to levels *near to* the RPA that would be likely to cause changes to ground water content should also be avoided.

Proposed overhead services and lighting should be positioned so that they do not interfere with the canopies of retained trees and should take into account their likely growth.

Where services or footpaths and other surfacing are proposed within RPAs then special engineering solutions should be applied to avoid significant damage to roots.

Above ground constraints

Cranes, high loads and other tall machinery present during construction may potentially come into conflict with the canopy of trees and shrubs. Banksmen should be employed to ensure that branches are not damaged by the working and passage of such machinery. In addition, before entering site, delivery drivers should be directed along pre-arranged routes to avoid damage.

Where damage to trees or shrubs is likely and an alternative route or procedure is not practical, limited tree surgery may be carried out to avoid more serious damage (statutory constraints notwithstanding). Such work, and the making good of any damage caused during the contract, should only be carried out by a tree surgeon in accordance with BS3998: 2010. See also Mitigatory Planting above.

Removal of trees

Trees scheduled for removal should be clearly marked to avoid incorrect removal. Removal should avoid damage to trees to be retained. Where the removal of stumps and roots might cause damage to the roots or other parts of trees to be retained, such removal should be avoided and chemical stump and root killer used instead. Note that stump killer should not be used on trees such as Aspen that may have interconnected root systems where adjacent trees of the same species are to be retained. Tree protection fencing should be erected immediately after trees scheduled for felling have been removed.

Any trunks and larger branches of any trees that are felled on site should be retained as wildlife habitat at the base of retained hedges or in quieter corners of any proposed POS on the site.

Temporary Tree Protection Fencing

After the removal of trees as described above and before any other works (including site clearance, demolition and soil stripping) commence on site, temporary fencing shall be installed as per the Tree Protection Plan.

Any temporary fencing subsequently damaged, moved or removed should be replaced in the position shown on the Tree Protection Plan, to the original specification, as soon as practical, but in all cases, within one working day.

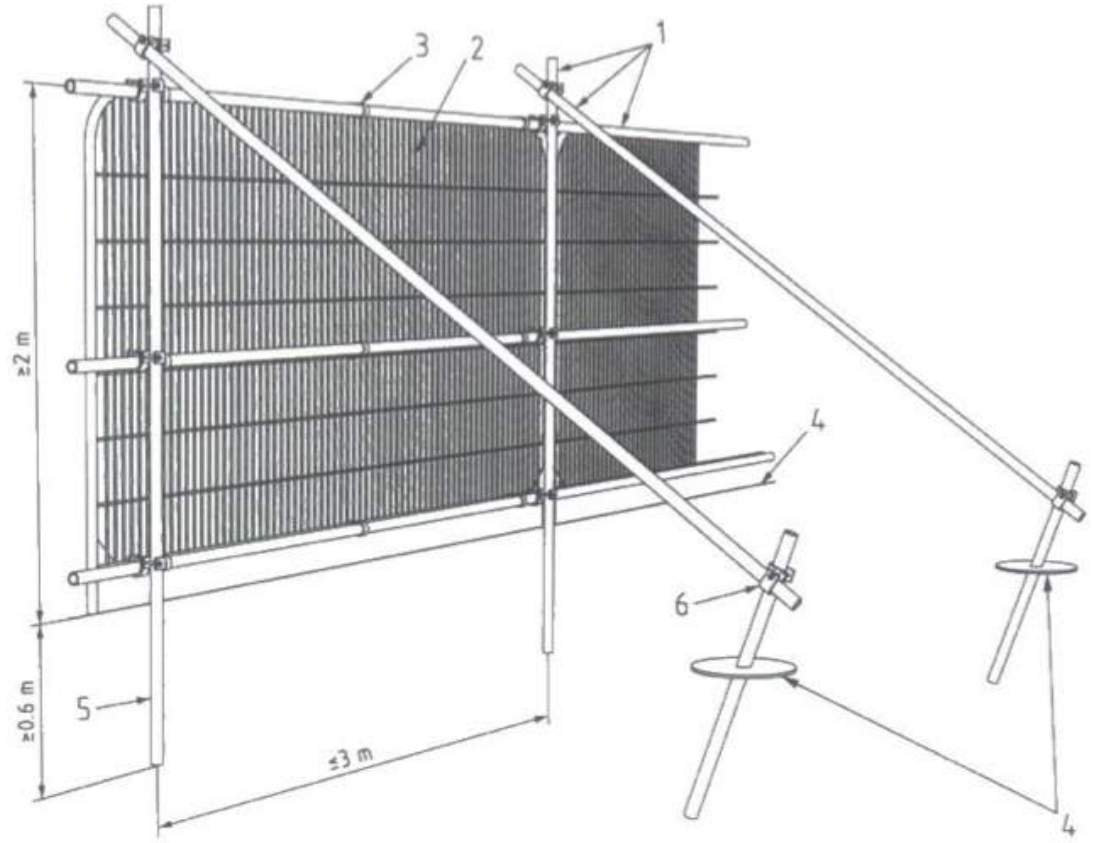
Fencing shall be minimum 2m high heavy-duty steel weldmesh fencing on a steel frame (Heras type) fixed to vertical scaffolding poles driven minimum 600mm into the ground at maximum 3m centres and braced with scaffolding poles angled at c.45° as per the recommendations laid out in BS 5837:2012.

Bracing poles shall be located inside the CEZ. Panels to be fixed to poles by heavy-duty wire ties. Poles to be joined by standard scaffolding clamps. Fencing shall be fixed and secured so that casual relocation during the contract period is prevented and so that it is able to withstand accidental collisions by site vehicles.

Where only one side of a group of trees or hedge is protected by fencing, the fenceline shall be ended at a suitable sturdy barrier or extended into the continuation of the tree group itself at a minimum distance of 20m from the works as shown on the Tree Protection Plan.

Illustrations of the fencing described above are reproduced below courtesy of the BSI.

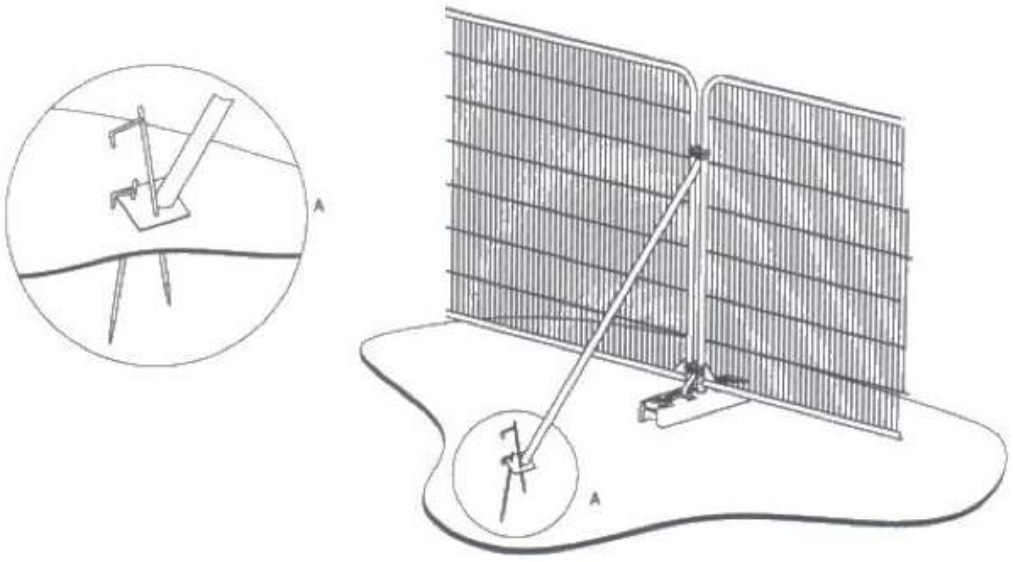
Figure 2 **Default specification for protective barrier**



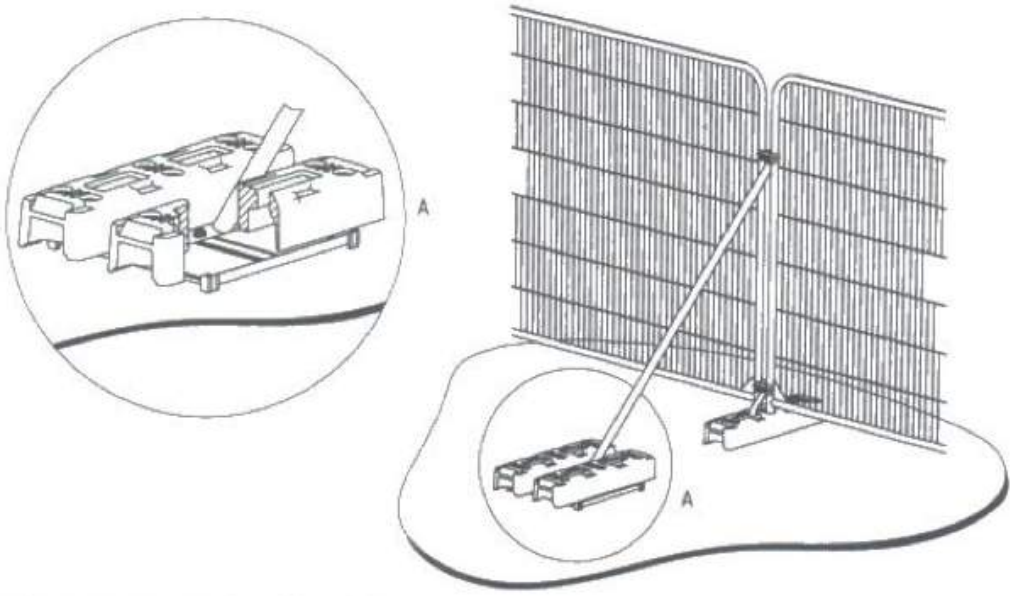
Key

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

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