

Ethical Arboriculture Ltd

REF KW24222

ARBORICULTURAL ASSESSMENT TO BS5837:2012

Land East of the A141 Warboys

Contents

1 Introduction

2 Site Description

3 Arboricultural Impact Assessment

4 Tree Barriers

5 Soil Assessment

6 Site Monitoring

7 Tree Constraints/position Plan

8 Tree Survey Schedule

9 Terms and Definitions

10 Report Limitations

11 General Information
11.1 Root Protection Area/Construction Exclusion Zone
11.2 Tree Survey
11.3 Tree Categorization Method
11.4 Soil Assessment
11.5 Tree Protection Plan
11.6 Arboricultural Impact Assessment

References

1 Introduction

This report was commissioned by Mrs K Washington to survey trees in connection with a planning proposal on a parcel of land positioned south of the B1040 at Warboys in accordance with BS5837: 2012; Trees in Relation to Construction.

Trees can offer many benefits, including:

- Providing visual amenity, softening or complementing the effect of the built environment, and adding maturity to new developments
- Displaying seasonal change and providing opportunities for wildlife in built up areas;
- Making places more comfortable in tangible ways by contributing screening and shade, reducing wind speed and turbulence, intercepting snow and rainfall, as well as reducing glare.

Trees are also important elements of green infrastructure, contributing to urban cooling through evapotranspiration and providing micro-climatic effects that can reduce energy demands in buildings. They, therefore, represent a key resource that can significantly contribute to climate change adaptation.

Existing trees are an important factor on construction sites, whether on or near the working areas, and trees are a material consideration in the UK planning system. Root systems, stems and canopies, with allowance for future movement and growth, need to be taken into account in all projects, including those that do not require planning permission. The space required for any proposed new trees to become established is an important consideration.

During their lifetime, trees will be vulnerable to disturbance, injury, environmental changes, pests and diseases. Construction work often exerts pressure on existing trees, as do changes in their immediate environment following the construction. A tree that has taken many decades to reach maturity can be damaged irreparably in a few minutes by actions that might be unwitting, negligent or willful. The early provision of physical protection from damage is therefore critical.

Where tree retention or planting is proposed in conjunction with nearby construction, the objective should be to achieve a harmonious relationship between trees and structures that can be sustained in the long term.

As there are trees over 75mm in diameter at 1500mm above ground level on this site, which could contribute to the character and appearance of the site, it is necessary to ascertain the quality and value of the trees and the likely impact that the proposed development could have on them. In addition, it is necessary to consider the impact retained trees could have on the development in the future.

Trees differ in their tolerance of root loss or disturbance, according to their age, species, and condition. In addition, root growth, while typically situated in the top metre of soil, can be affected by existing site features, including natural and man-made topography and structures that can restrict tree root growth in any direction. Consideration is given to all relevant factors when ascertaining the viability of root retention.

2 Site Description

The site in question is positioned southeast of the A141 and is currently an unused parcel covered in soft vegetation, with a derelict building positioned in the centre of the site.

Access is obtained via an existing concrete roadway from the A141 and the site is bordered by drainage ditches on two of the three sides.

Mature hawthorn trees, forming a hedge, highlight the boundaries on two sides of the site, with mature and immature trees at random within this hedge line.

All trees on the site are recorded as C1 and while removal is never welcomed it should not be used as a reason to refuse planning permission if the proposed construction requires the removal of any of the illustrated trees.

The site is not within a conservation area and there are no recorded tree preservation orders on or near the site.

The initial site visit was carried out on 20/06/2022 with weather conditions being dry and bright. The site has since be re-inspected on the 17/06/2025 and no changes to the site have occurred since the initial visit.

3 Arboricultural Impact Assessment

Having visited the site we have identified the risks below and have included some proposed solutions to reduce the occurrence of these potential issues. To date, we have not seen any proposed site layout drawings and as such these impacts are generalised.
Additional details are included in the Tree survey Schedule.

Potential soil compaction issues caused by construction

As is the case on any construction site where there are trees present there is always the potential for soil compaction to cause issues with the long-term retention of any retained trees. As such it is recommended that before any construction or stripping of the site begins, root protection barriers are installed to protect the retained trees. The positions are illustrated in the accompanying draft tree protection plan.

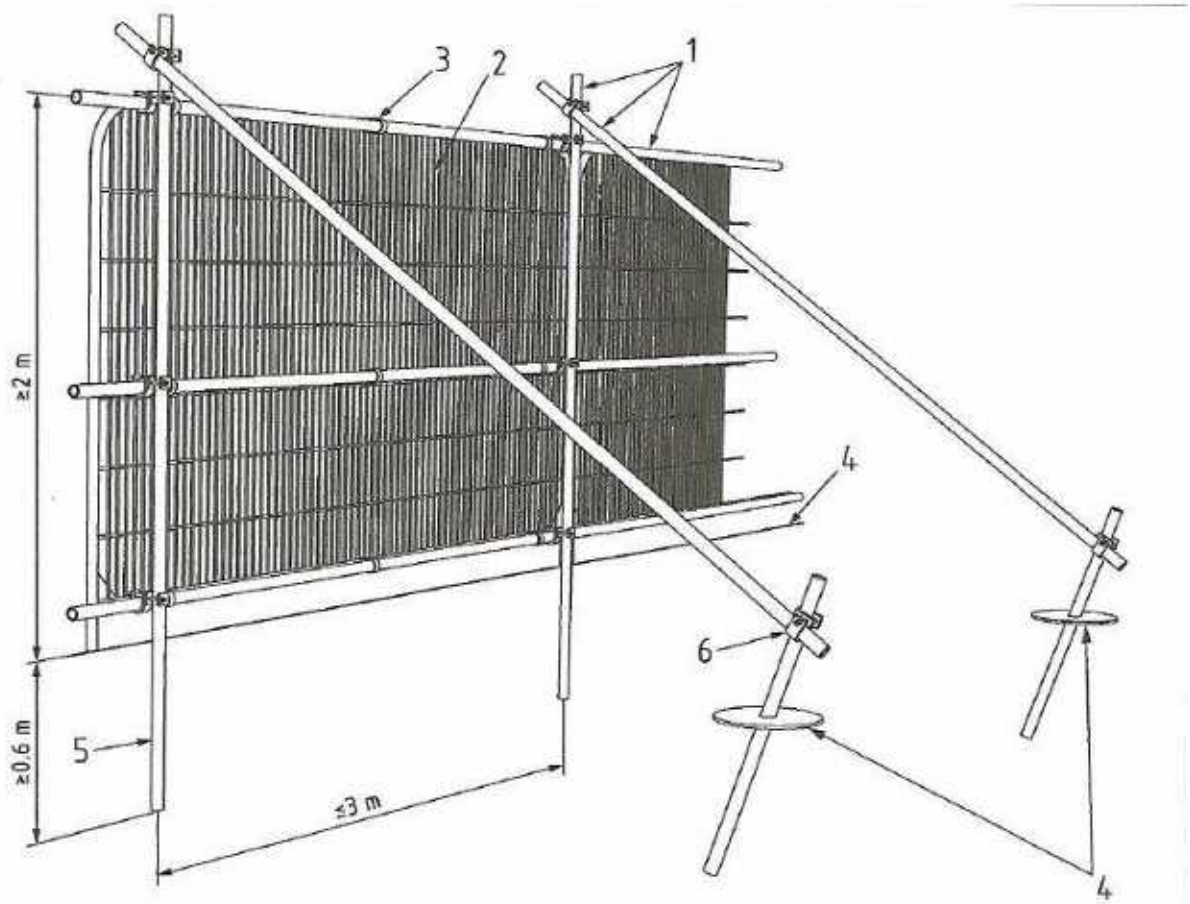
Root Damage from excavation

To avoid damage to the root plate of any retained trees, all excavation should be outside of any retained tree's root protection areas. In addition, any services should be installed outside of these illustrated areas.

4 Tree Barriers/Ground Protection mats

As per section nine of British Standard 5837:2012 these barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of thework taking place around the retained tree(s). On all sites, special attention should be paid toensuring that barriers remain rigid and complete.

The barriers should consist of a scaffold framework comprising a vertical and horizontal frame, with braced vertical tubes at three-metre spacing on which "weld mesh" panels should be securely fitted as illustrated below.



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

The position of the barriers should be pre-agreed with the LPA before construction with removal post-construction with the installation enforced by a suitably worded planning condition.

5 Soil Assessment

A desktop assessment of the soil conditions surrounding the proposed development has been carried out with results indicating that the surface geology is *Oadby member-Diamitican*, with the bedrock geology defined as *West Walton formation and Ampthill Clay Formation- Mudstone.*

No soil samples have been taken to confirm the desktop survey of the soil makeup but with both the Superficial and Bedrock being of a clay type soil or a high clay content soil in the case of the superficial, we would highly recommend that samples are obtained to confirm the soil type and determine the Volume Change Potential so the foundation can be designed accordingly.

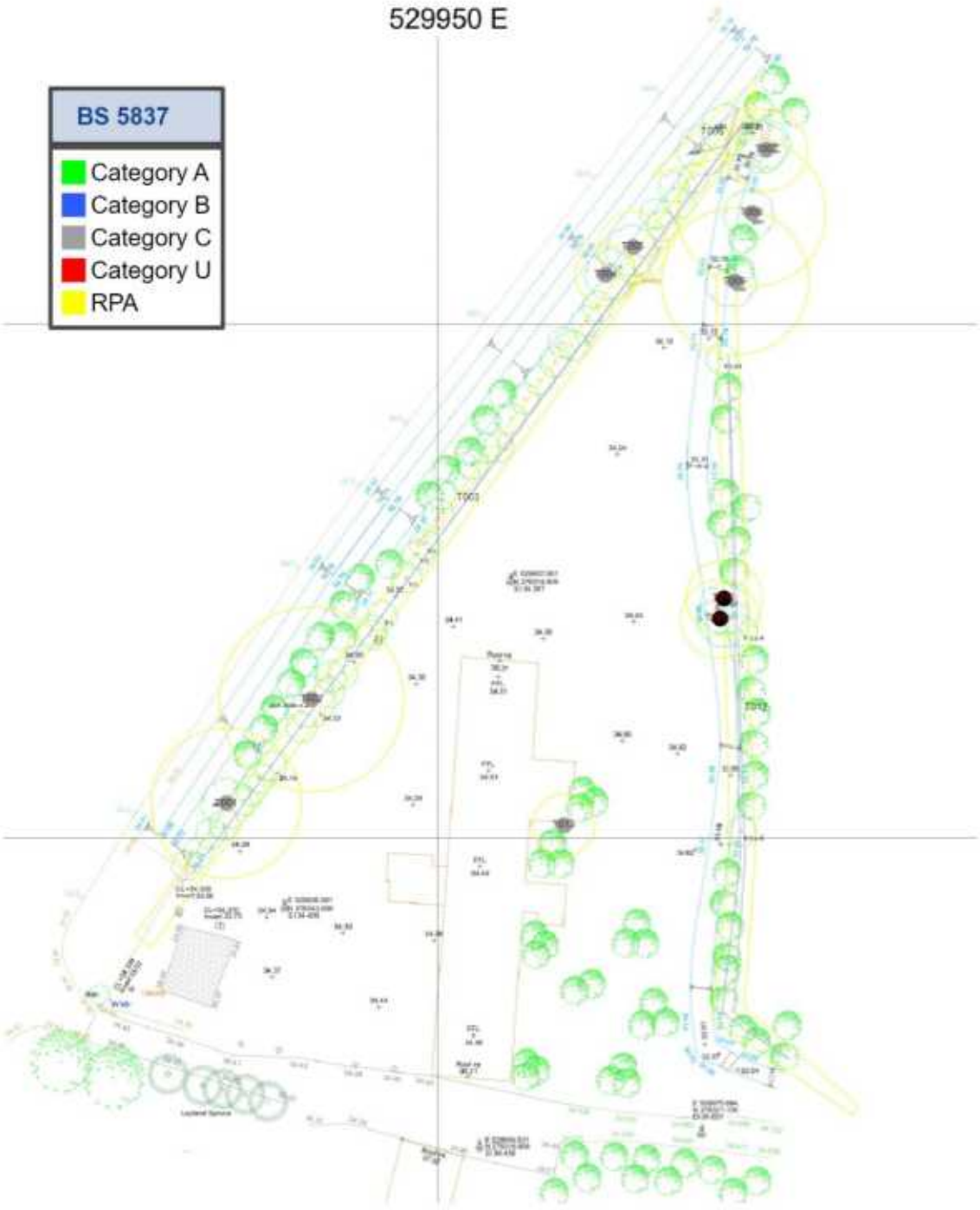
With the current dry weather conditions not being conducive to accurate soil testing for compaction or nutrient levels from an arboricultural perspective the tests to determine this have not been carried out.

6 Site Monitoring

As no excavation is to occur within the root protection area of the retained trees, then I can see no legitimate reason for the requirement of Arboricultural supervision once the Tree protection barriers are installed.

7 Tree Constraints/position Plan

Karen Washington mkw - warboys - a141 - topographic survey - 01	Page size: A4 1 : 500 0 10 m 20 m	N	



8 Tree Survey Schedule

Where possible the trees have been tagged with an aluminium tree tag to give relevance to the survey numbers.

Ref.	Species	Measurements	General Observations	Category	Recommendations
T001	Common Ash (Fraxinus excelsior)	Height (m): 11 Stem Diam (mm): 610 Spread (m): 10N, 4E, 8S, 7W Life Stage: Mature Rem. Contrib.: 10+ Years	Early signs of Hymenocyphus fraxineus in the upper canopy. Low lateral has been cut back to facilitate access across the site Adjacent to a drainage ditch Height is stunted by exposed position, position and ground/soil conditions. Additional Comments: Removal of low lateral growth will create oversized wounds, contrary to BS3998:2010 spec, that may not occlude before further pathogens enter. Current health/and soil conditions would severely restrict the tree's ability to recover from the wounding, current pathogen and additional pathogens that will gain access via the wound.	C1 RPA Radius: 7.3m. Area: 167 sq m.	

Ref.	Species	Measurements	General Observations	Category	Recommendations
T002	Common Ash (Fraxinus excelsior)	Height (m): 14 2 stems, avg.(mm): 530 Spread (m): 9.5N, 8.5E, 6S, 8W Life Stage: Mature Rem. Contrib.: 10+ Years	Twin stemmed with early signs of Hymenocyphus fraxineus in the upper canopy and towards the carriageway. Minor deadwood that is not disease-related. Ivy covers 75% of the main stems. Additional Comments: Current health/and soil conditions would severely restrict the tree's ability to recover from any wounding by tree reduction. Given the current overall soil health, it is highly unlikely that the tree will have the ability to control the current pathogen and secondary infection by additional pathogens will occur.	C1 RPA Radius: 9.0m. Area: 254 sq m.	
T003	Blackthorn x30 (Prunus spinosa) Common Hawthorn x77 (Crataegus monogyna)	Height (m): 7 107 stems, avg.(mm): 120 Spread (m): 1N, 1E, 1S, 1W Life Stage: Over Mature Rem. Contrib.: 30+ Years	A mix of mature, over mature and immature Hawthorn and blackthorn. Has "gone over". Is forming both a noise and air pollution screen. Heights are mixed and the recorded height is the tallest of the group. Additional Comments: Will require pollarding/topping with beating up of gaps if the hedge is to have a long-term contribution to the site amenity.	C1 RPA Area: 2 sq m, plus a 1m buffer.	
T004	English Elm (Ulmus procera)	Height (m): 8 Stem Diam (mm): 250 Spread (m): 1.5N, 1.5E, 1.5S, 1.5W Life Stage: Young Rem. Contrib.: <10 years	Branch spreads are estimated as access for accurate measurement is not possible. Additional Comments: Given the presence of two dead Elm's, which have died from Ophiostuma novo-ulmi, on the site, and that the only known chemicals for controlling this fungal pathogen have been removed from usage, it is highly unlikely this tree will reach maturity and a such it is unsuitable for retention.	C1 RPA Radius: 3.0m. Area: 28 sq m.	Remove tree.

Ref.	Species	Measurements	General Observations	Category	Recommendations
T005	English Elm (Ulmus procera)	Height (m): 8 2 stems, avg.(mm): 200 Spread (m): 1.5N, 1.5E, 1.5S, 1.5W Life Stage: Young Rem. Contrib.: <10 years	Given the presence of two dead Elm's, which have died from Ophiostuma novo-ulmi, on the site, and that the only known chemicals for controlling this fungal pathogen have been removed from usage, it is highly unlikely this tree will reach maturity and a such it is unsuitable for retention.	C1 RPA Radius: 3.4m. Area: 36 sq m.	Remove tree.
T006	English Elm x5 (Ulmus procera)	Height (m): 8 5 stems, avg.(mm): 100 Spread (m): 1.5N, 1.5E, 1.5S, 1.5W Life Stage: Young Rem. Contrib.: <10 years	Diameter taken as average Additional Comments: Given the presence of two dead Elm's, which have died from Ophiostuma novo-ulmi, on the site, and that the only known chemicals for controlling this fungal pathogen have been removed from usage, it is highly unlikely this tree will reach maturity and a such it is unsuitable for retention.	C1 RPA Area: 7 sq m, plus a 1m buffer.	Remove tree.
T007	English Elm (Ulmus procera)	Height (m): 10 Stem Diam (mm): 330 Spread (m): 2.5N, 2.5E, 2.5S, 2.5W Life Stage: Semi Mature Rem. Contrib.: <10 years	Positioned on adjacent ground. A small surface water drain and fencing highlight the boundary and the tree is to the south of this. The tree is positioned on the site next door and may be outside of the control of the proposed development site owner. Additional Comments: Given the presence of two dead Elm's, which have died from Ophiostuma novo-ulmi, on the site, and that the only known chemicals for controlling this fungal pathogen have been removed from usage, it is highly unlikely this tree will reach maturity and a such it is unsuitable for retention.	C1 RPA Radius: 4.0m. Area: 50 sq m.	
T008	Apple (Malus sp.)	Height (m): 10 Stem Diam (mm): 600 Spread (m): 2.5N, 2.5E, 2.5S, 2.5W Life Stage: Over Mature Rem. Contrib.: 20+ Years	Multi-stemmed tree that has joined at ground level Positioned on adjacent land The tree is positioned on the site next door and may be outside of the control of the proposed development site owner.	C1 RPA Radius: 7.2m. Area: 163 sq m.	

Ref.	Species	Measurements	General Observations	Category	Recommendations
T009	English Elm (Ulmus procera)	Height (m): 12 Stem Diam (mm): 600 Spread (m): 4N, 4E, 4S, 4W Life Stage: Semi Mature Rem. Contrib.: <10 years	The tree is positioned on the site next door and may be outside of the control of the proposed development site owner. Additional Comments: Given the presence of two dead Elm's, which have died from Ophiostuma novo-ulmi, on the site, and that the only known chemicals for controlling this fungal pathogen have been removed from usage, it is highly unlikely this tree will reach maturity and as such it is unsuitable for retention.	C1 RPA Radius: 7.2m. Area: 163 sq m.	
T010	English Elm (Ulmus procera)	Stem Diam (mm): 310 Life Stage: Dead		NotRecorded RPA Radius: 3.7m. Area: 43 sq m.	
T011	English Elm (Ulmus procera)	Stem Diam (mm): 320 Life Stage: Dead		NotRecorded RPA Radius: 3.8m. Area: 45 sq m.	
T012	Common Hawthorn x37 (Crataegus monogyna)	Height (m): 4 37 stems, avg.(mm): 180 Spread (m): 2N, 2E, 2S, 2W Life Stage: Mature Rem. Contrib.: 30+ Years	The tree is positioned on the site next door (boundary) and may be outside of the control of the proposed development site owner.	C1 RPA Area: 26 sq m, plus a 1m buffer.	
T013	Common Hawthorn (Crataegus monogyna)	Height (m): 6 Stem Diam (mm): 250 Spread (m): 3N, 3E, 3S, 3W Life Stage: Mature Rem. Contrib.: 30+ Years	Growing from corner of the building Additional Comments: The tree is not suitable for retention in this position. Transplanting is not a viable option.	C1 RPA Radius: 3.0m. Area: 28 sq m.	Remove tree.

9 Terms and Definitions

For the purposes of this report, the following terms and definitions apply.

9.1 access facilitation pruning

One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.

9.2 arboricultural method statement

Methodology for the implementation of any aspect of development that is within the root protection area (**2.7**), or has the potential to result in loss of or damage to a tree to be retained.

9.3 arboriculturist

Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

9.4 competent person

Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

9.5 construction

Site-based operations with the potential to affect existing trees.

9.6 construction exclusion zone

Area based on the root protection area (**2.7**) from which access is prohibited for the duration of the project.

9.7 root protection area (RPA)

Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.

9.8 service

Any above or below-ground structure or apparatus required for utility provision.

NOTE examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.

9.9 stem

Principal above-ground structural component(s) of a tree that supports its branches.

9.10 structure

Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.

9.11 tree protection plan

Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures.

9.12 veteran tree

tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

NOTE these characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem. (BS3998:2010)

10 Report Limitations

All the trees have been inspected from ground level with the aid of binoculars using visual observation methods and a sounding mallet where required. Should a more detailed report be required then this will be outlined within the recommendations.

Tree and canopy heights have been defined with the use of a laser range finder and clinometers, with diameter being obtained via the use of girth tape. Crown diameters are measured using both a laser range finder and tape measure where practical.

Trees are living organisms whose health and condition can change rapidly. The health, condition and safety of the trees therefore should be checked on a regular basis, preferably once a year. The conclusions and recommendations in this report are only valid for a period of one year. The period of validity maybe reduced in the case of any change in site conditions or to arboricultural works being carried out on the tree or trees in question.

11 General Information

The enclosed report gives you information on the tree's at the property, which were assessed as needing to be covered and shows the type of tree, its height and the trunk diameter , so that a root protection area, RPA, can be worked out and plotted on the tree constraints plan, TCP.

11.2 Root Protection Areas/Construction Exclusion Zones

The root protection area is a layout design tool to indicate the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree and is calculated using a theoretical circle.

The RPA is calculated as an area equivalent to a circle with a radius 12 times the diameter of the trunk measured 1.50 metres above the ground. For trees with more than one stem, one of the two calculation methods below should be used

A : square root of (stem diameter1)2 + (stem diameter)2 + ...(stem diameter)2

B:square root of (mean stem diameter)2 x number of stems

This is illustrated on the tree survey schedule with the use of an S for single stemmed trees or a M for multi stemmed trees. However in many cases it is not expedient or practical to use a circular RPA and as such BS5837 recognises this and allows the shape of the RPA to be changed but not reduced in area, see British Standards 5837:2012 Tree's in relation to construction – recommendations, page 8, table 2, which shows the RPA in square metres.

The RPA of each tree in category A, B, and C is capped at 707 square metres which is equivalent to a circle with a radius of fifteen metres, however the shape may be changed depending on the following factors whilst still providing adequate protection for the root system:

11.2.1 The morphology and disposition of the roots when influenced by past or existing site conditions (e.g. the presence of roads, structures and existing underground apparatus);
11.2.2 Topography and drainage;
11.2.3 The soil type and structure;
11.2.4 The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

This area or areas are also known as the Constructor Exclusion Zone and need to be fenced off with as per figure two- Protective barrier, as shown on Page 13 of British Standards BS5837:2012, to ensure the long term retention of a tree.

11.3 Tree Survey

The tree survey should include all trees included in the topographical survey as well as any that might have been missed (e.g. on shrinkable soils, additional off-site trees that could have an effect on foundation design). The trees should be sequentially numbered and, where appropriate, tagged, with the tags being placed as high as is convenient on the stem of each tree.

Individual trees, groups or woodland should be indentified and assessed as such where the arboriculturist determines that this is appropriate. However, an assessment of individuals within any group should still be undertaken if there is a need to differentiate between them, e.g. in order to highlight significant variation in attributes (including physiological or structural condition).

The categorization of a group or woodland can reflect a future potential that is contingent on appropriate management being undertaken to promote the development of the better specimens, based upon established arboricultural and silvicultural principles. Such management requirements should be noted under "general observations" within the schedule and included in the post-development management plan.

A schedule to the survey should list all the trees or groups of trees. The following information should be recorded.

a) Sequential referencing number (to be recorded on the tree survey plan).
b) Species listed by common name, with a key provided to scientific names.

c) Height
d) Stem diameter
e) Branch spread, taken as a minimum at the four cardinal points, to derive an accurate representation of the crown (to be plotted on the tree survey plan)
f) Existing height above ground level of
    1. First significant branch and direction of growth
    2. Canopy
g) Life stage (e.g. young, semi-mature, early mature, mature, over mature)
h) General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations.
i) Estimated remaining contribution, in years (<10, 10+, 20+, 40+);
j) Category U or A to C grading (see 4.5) to be recorded on the survey plan.

Relevant details of shrub masses, hedges, hedgerows and stumps are expected to have been recorded during the topographical survey but should be checked by the arboriculturist for inclusion in the tree survey. In the case of regularly maintained domestic hedges and the majority of shrub masses, it will normally be sufficient to record the height and species on the tree survey plan or note these in the schedule.

11.4 Tree Categorization Method

The purpose of the tree categorization method, which should be applied an arboriculturist, is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

For a tree to qualify under any given category, it should fall within the scope of that categories definintion (U, A, B, C) and, for trees in categories A to C, it should qualify under one or more of the sub-categories (1, 2, 3). Sub-categories 1, 2 and 3 are intended to reflect the arboricultural and landscape qualities, and cultural values, respectively.

When categorizing a tree, the presence of any serious disease or tree-related hazards should be taken into account. If disease is likely to be fatal or irremediable, or likely to require sanitation for the protection of other trees, it might be appropriate for the trees concerned to be categorised U, even if the otherwise have considerable value. If structural defects are remediable, including the effect that this might have on the trees remaining value, will influence whether the tree be assigned to the category that it would otherwise merit.

Particular care is needed when evaluating young trees, especially where they occur as individual specimens. Where these are less than 150mm stem diameter at 1.5m above adjacent ground level, it might be acceptable and relatively straight forward to mitigate their loss, if necessary, with similar new tree planting. Alternatively, it might be practicable to relocate such trees within the site (e.g. using a tree spade). Whilst the presence of young trees of good form and vitality is generally desirable (i.e. those trees which have the potential to develop into quality mature specimens), they need not necessarily be a significant constraint on the site's potential.

NOTE It is sometimes possible to relocate mature trees. However as this is a costly and complex operation with a variable chance of success, it is a viable option only in exceptional cases.

The tree survey might identify the presence of veteran trees on the site. The implications of their presence on the use of the surrounding land should be taken in the design process. Where such trees are to be retained, particular care should be taken in the design to accommodate them in a setting that aids their long term retention.

NOTE Whilst veteran trees typically a range of niche habitats, they are especially valuable if ancient, due to their scarcity and high habitat values for associated species of fungi, lichens and saproxylic invertebrates, including some which are rare or endangered and occur only where such trees have been continuously present for centuries. These trees will therefore almost always be included in the A3 category.

11.5 Soil Assessment

A soil assessment should be undertaken by a competent person to inform any decisions relating to:

- The root protection area RPA;
- Tree protection;
- New planting design; and
- Foundation design to take account of retained, removed and new trees.

The assessment should determine whether the soil is shrinkable. If it is, trees and other vegetation have the potential to cause indirect damage to structures. In such cases, desiccation assessments should be carried out at a specialist laboratory to check the extent to which existing vegetation has dehydrated the soil.

Soil structure, composition and pH should be included in the assessment for the purpose of designing new planting and landscape proposals.

11.6 Tree Protection Plan

The tree protection plan should be superimposed on a layout plan, based on the topographical survey and showing all hard surfacing and other existing structure within the RPA.

The plan should clearly indicate the precise location of the protective barriers to be erected to form a construction exclusion zone around the retained trees. It should also show the extent and type of ground protection, and any additional physical measures such as tree protection boxes, that will need to be installed to safeguard vulnerable sections of the trees and their RPAs where construction activity cannot be fully or permanently excluded.

These details should be incorporated into relevant subsequent drawings issued for use on the site, to ensure that all interested parties are fully aware of the areas in which access and works may or may not take place.

This document would normally be produced at the reserved matter/planning conditions stage.

11.7 Arboricultural Impact Assessment

This assessment should take account of the effects of any tree loss required to implement the design, and any potentially damaging activities proposed in the vicinity of retained trees. Such activities might include the removal of existing structures and hard surfacing, the installation of new hard surfacing, the installation of services, and the location and dimensions of all proposed excavations or changes in ground level, including any that might arise from the implementation of the recommended mitigation measures. In addition to the impact of the permanent works, account should be taken of the buildability of the scheme in

terms of access, adequate working space and provision for the storage of materials, including topsoil.

As well as an evaluation of the extent of the impact on existing trees, the arboricultural impact assessment should include:

11.7.1 The tree survey;
11.7.2 Trees selected for retention, clearly identified (e.g. by number) and marked on a plan with a continuous outline;
11.7.3 Trees to be removed, also clearly identified (e.g. by number) and marked on a plan with a dashed outline or similar;
11.7.4 Trees to be pruned, including any access facilitation pruning, also clearly identified and labelled or listed as appropriate;
11.7.5 Areas designated for structural landscaping that need to be protected from construction operations in order to prevent the soil structure being damaged;
11.7.6 Evaluation of impact of proposed tree losses;
11.7.7 Evaluation of tree constraints and draft tree protection plan
11.7.8 Issues to be addressed by an arboricultural method statement where necessary in conjunction with input from other specialists.

References

References

BS5837:2012 Trees in relation to design, demolition and construction

Modern Arboriculture. A Shigo

Trees. Their use, management, cultivation and biology. B Watson

Diseases of trees and shrubs. W.A Sinclair, H.H Lyon and W.T Johnson.

Principles of Tree hazard assessment and management. D Lonsdale

Soil Science Methods and applications. D.L Rowell

Diagnosis of ill-health in trees. R.G Strouts and T.G. Winter

Trees in Towns 2. Mark Johnson & Chris Bratt

Trees in Britain. R Phillips

Tree Root Damage to buildings Vol1 & 2. PG Biddle

NHBC Standards Chapter 4.2 Building near trees.