

ARBORICULTURAL ASSOCIATION

BS 5837 REVISION

WORKSHOP

SEPTEMBER 2024

At the 2024 Arboricultural Association conference, **Howard Booth**, Chair of the BS 5837 revision panel, hosted a workshop to provide background on standards, a potted history of BS 5837, and a summary of some of the proposed changes to it, including the rationale behind them. This article sets out the content of that workshop to aid understanding of the draft standard.

A draft for public consultation has been published and is open for comment until **16th October 2024**. It can be accessed at <https://standardsdevelopment.bsigroup.com/projects/2023-00722#/section>.

What is a standard?

In summary, a standard provides a consistent and repeatable way of undertaking activities.

There are several types of British Standard:

- **specification** – sets absolute requirements that are objectively verifiable;
- **code of practice** – contains recommendations and guidance, where the recommendations relevant to a given user have to be met in order to support a claim of compliance; *and*
- **guide** – primarily contains information and guidance.

While the title of BS 5837:2012 includes the word 'Recommendations', it is actually a code of practice. The proposed change in name reinforces its importance and also aligns with current BSI drafting rules.

British standards are not the law. Standards are always subordinate to the law. It is relevant here to mention Biodiversity Net Gain (BNG) as it is enabled by legislation. To avoid confusion between provisions of the standard and requirements imposed by law, BNG is not directly included in the standard. Further challenges with regard to including BNG include:

- **the national variations** – currently it is active in England and the developing Scottish BNG is likely to be different;
- **the BNG metric for England** will be reviewed after 2 or 3 years so inclusion of specifics could become out of date within the lifespan of the standard; and
- **the standard** is for all types of demolition and construction. BNG, however, is not required for permitted developments so is not relevant for all projects.

Standards are not a training guide but are entrusted to appropriately qualified

and experienced people. Users claiming compliance are expected to be able to justify any course of action that deviates from the recommendations.

A potted history of BS 5837

BS 5837 was first published in 1980 as Code of practice for trees in relation to construction, in 1991 it was a Guide and since 2005 has been Recommendations.

- **1980** – All trees over 75mm measured at 1.4m above ground were included. Categorisation of trees was A–D (from retain through to remove). A preferred minimum distance between trees and excavation was based on whether a tree was conifer or broadleaf, tree height bands and depth of excavation.
- **1991** – Introduced a process flowchart linking to the planning process. Stem diameter was measured at 1.5m above ground level, which aligns with Town and Country Planning Act 1990 for conservation areas. The tree protection minimum distance was based on tree age, tree vigour and trunk diameter with a minimum of 2m and a maximum of 12m. A scaffold fence framework was required to protect trees with chestnut pale or chain link attached.
- **2005** – Introduced a root protection area with a 12 times multiplier and tree constraints plans. Categorisation used a cascade chart with categories RABC. Construction exclusion zones were introduced as well as arboricultural implications assessments and arboricultural method statements.
- **2012** – Titled changed to cover design, demolition and construction. Categories changed from RABC to UABC. Arboricultural impact assessments were introduced.

BS 5837 is being revised and therefore all aspects of it are being considered for potential change. The revision of BS 5837 is also an opportunity to ensure it is aligned with BS 8545 (Trees from nursery to establishment in the landscape) which was not published in 2012. Tree planting references have generally been removed from the new draft of BS 5837 which means some amendments to BS 8545 are required and these should be published soon.

Timescales

BSI has a quinquennial review cycle; it was decided in a Trees Committee meeting in May 2022 to revise BS 5837. The business case and building the drafting panel started from May 2022 and in November 2022 BSI published the Draft Title, the Scope and Purpose of BS 5837 on the Standards Development Portal. One month of public consultation followed during which many comments received, some quite technical but overwhelmingly supportive of a revision for various reasons.

The drafting panel kick-off meeting was in March 2023. A draft for public consultation was published on 16th August 2024 with consultation ending on 16th October 2024. All comments will be reviewed and, subject to the volume and complexity of the comments, a revised BS 5837 will be published in April 2025.

Revised structure

While often considered in relation to Town and Country Planning applications, BS 5837 is also relevant to Development Consent Orders and Permitted Developments and so it is used from quite small sites right through to the largest national infrastructure projects. While the scale may change specific details in the process, the same principles should

broadly be followed for all projects.

The process is broken down to 6 steps:

- **Establishing a baseline** (Clause 5).
- Setting out the **Arboricultural constraints and opportunities** (Clause 6): that is, interpreting and processing the baseline information.
- **Design** (Clause 7) stage where various competing demands and requirements are traded off to produce a design.
- **Assessing arboricultural impacts** (Clause 8): an impact assessment is the process of assessing something which is why the term 'arboricultural impact report' is used for the output reporting.
- **Arboricultural method statement** (Clause 9) stage is where tree protection measures are detailed.
- The last stage is **Delivery** (Clause 10) with site monitoring, and it, like impact assessments and method statements, may result in the need for redesign in an iterative process.

Taking inspiration from BS 8545, flowcharts are used at the start of sections to help users get a snapshot of the main steps or elements of the process. The inclusion of sub-clause numbers should also help users navigate the document. The flowcharts include a list of the professions that might be expected to be involved at each stage; arboriculturists should not forget that they are part of a team, whether they are working for a developer or a local authority.

Annexes are used to provide further information to users. Some are normative and others informative. Normative annexes should be considered essential to the application of the standard in the manner intended, against which conformity with the standard can be claimed. Informative annexes provide supporting advice, information and guidance.

As a code of practice the recommendations are expressed in sentences typically using the auxiliary verb 'should'. Commentary and notes are in smaller italic text and these do not constitute a normative element of the standard.

Spelling with Z in 'standardization' and 'categorization' is used instead of with S; this is consistent with the preferred variant listed in the Shorter Oxford English Dictionary.

Establishing a baseline (Clause 5)

Understanding the statutory constraints and

planning policies is at the start of the process as this can influence the level of detail recorded.

Early versions of BS 5837 focussed quite heavily on subsidence and the clay content of soils. While these aspects should not be ignored, the implications of soil on the development and distribution of roots are important. Annex C provides guidance on soil testing; testing should be relevant or proportionate to the level of detail required. Mechanical testing of soil, for example, may be required to inform design and impact assessments for a no-dig hard surface.

In part to aid the flow of text and for ease of access, the term 'arboricultural feature' is used frequently where recommendations are relevant to individual trees, groups of trees, hedges, hedgerows or woodlands. The term is used to make using the standard easier and is not necessarily proposed as a term for arboriculturists to adopt in their reporting unless they find it appropriate.

Detailed tree survey (Clause 5.5)

Detailed tree assessment should be undertaken by an arboriculturist – that is, someone *'who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction'*. Some will think this should be more quantified, for example with a minimum level of qualification. Qualifications alone are not proof of competence; there are some very good arboriculturists who do not have a degree-level qualification, so it would not be right to limit users by setting a minimum qualification.

The topographic survey is useful but alone does not always provide all the information. While on site the arboriculturist should be assessing for factors that could affect arboricultural features, especially ground conditions that could affect root development and distribution.

The information to be recorded for each arboricultural feature is listed. A proposed change is to measure trees at 1.3m above ground level, referenced as diameter at breast height or DBH. The 1991 standard changed measurement height from 1.4m to 1.5m above ground level, which aligned with the then new Town and Country Planning Act conservation area exemptions. 1.5m has limited use elsewhere but 1.3m is used for felling licences, the specialist survey method for veteran trees and duty to consult for highway trees, as well

as BNG. It therefore makes sense to change to measuring at 1.3m as it is more readily used in other disciplines and for different assessment purposes. Practically, measuring at 1.5m can be quite challenging for shorter people and changing to 1.3m also makes surveying more accessible.

There is a note that it may be necessary to record additional information for trees in conservation areas; this reinforces the need to understand statutory constraints before surveying. Although not the intention behind the proposed revision, measuring lower on the stem could provide marginally more protection for trees.

There are many definitions for the term 'veteran tree' already published and more will come over time. Planning policy across the UK nations is not consistent and given that this policy informs decision making, it would be confusing to have alternative definitions in BS 5837. Instead, users are guided to refer to the respective national planning policy. The term 'ancient tree' is not used, not to ignore their importance, but since all ancient trees are commonly regarded as veteran, using only the term veteran makes it simpler for users.

It is recommended that the ground conditions around arboricultural features are recorded. This can aid the understating of likely root distribution but it is also one of the factors required to inform BNG tree condition in England.

Quality categorization (Clause 5.6)

Quality categorization is intended to prioritize arboricultural features for retention, to guide designers and decision makers.

The highest priority are veteran trees and ancient woodland so these are established first and are Category V. They were previously within Category A but are now clearly differentiated to recognize their particular importance.

Having a Category V introduces potential misreading as Category U so there is a need to move away from Category U. Category X is proposed, with these arboricultural features generally excluded from the canopy cover assessment given their short remaining contribution.

The 2012 version includes Table 1, a cascade chart for categorization. In practice many users do not follow the principle of starting at the top. There can be conscious or sub-conscious incentive to look at the next

category down, which risks undervaluing trees.

The vast majority of arboricultural features are neither Category V nor X. Differentiation as high, moderate and low quality is proposed, with Category B moderate quality the default starting position. Arboriculturists assessing the arboricultural feature will then decide on balance whether to elevate to Category A high quality, keep at B or reduce to Category C low quality. A list of factors indicating high-quality attributes and low-quality indicators is provided.

This is intentionally designed not to be prescriptive but is to make arboriculturists think about the relative merits of the arboricultural feature. The lists of indicators are not exhaustive but allow for innovation. While many want a locked-down definition, the reality is that trees are highly variable and there should be room for industry innovation.

Consultants might come under pressure to down-rate arboricultural features. For that reason, the tree survey schedule should record sufficient information to justify the category allocated.

Arboricultural constraints and opportunities (Clause 6)

A key output of the arboricultural constraints and opportunities stage is a plan to inform designers.

The term 'opportunities' has been introduced as 'constraints' alone gives a negative context; trees should not simply be seen as a problem.

The term 'Arboricultural' is also used instead of 'Tree' to reinforce it is the arboricultural profession which is involved. Arboriculturists should be proud of their profession and not downplay it as 'trees', which ecologists and landscape architects will also provide advice about.

Root protection areas (Clause 6.3)

Root protection areas (RPAs) are often misunderstood:

- mycorrhizae are referenced in the definition of the RPA as we know these are essential for trees;
- roots spread beyond the RPA. This might be a shock to some but it was not the prior intention to suggest a circular RPA around a tree contained all the roots. To help illustrate this, Annex E includes an image which shows how little of a tree's root system might actually be within the RPA.

This image can be used with designers to show the potential implications of layout options.

The spatial representation of the RPA has two elements to assess – shape and size.

The starting position for the RPA shape is a circle, assuming even distribution around the tree. However, roots grow where it is good for them and can be affected by site features like structures, historical ground work, soil, topography and drainage. Particularly in urban settings, the shape of the RPA should be modified to reflect the likely root distribution and it should not be assumed to be a circle.

The size of RPAs has evolved.

- A minimum RPA radius of 2m is proposed. Hedgerows are often under-protected and the 2m measurement aligns with the buffer strip of The Management of Hedgerows (England) regulations 2024.
- While the formula for calculating the RPA for multi-stemmed trees does not change, there have been occasions where a multi-stem tree has one particularly large stem which alone would generate a larger RPA than the mean-average method. To address this anomaly, the largest of either the multi-stem calculation or individual stem should be used.
- As recommended by *Veteran Trees: A guide to good management*, veteran trees should have a buffer based on a 15 times multiplier of the stem diameter or 5m beyond the crown spread, whichever is the greater – this buffer is the basis for the veteran tree RPA.
- The other Category V feature is ancient woodland which has a proposed 15m RPA aligning with widely accepted practice. Individual trees within the woodland could nonetheless require greater than 15m.
- Mature Category A trees also have an enhanced RPA with a 15 times multiplier, but unlike Category V this is capped at 1,590m² or a 22.5m radius. These may be potential future veteran trees and the larger RPA accounts for what is typically a reduced tolerance to change.
- All other live arboricultural features have a 12 times multiplier capped at 707m² or a 15m radius. This is applied to Category X features as they could be retained – offsite trees, especially if they are out of the control of the developer, would be retained so need to be protected.

- Dead trees may be retained for habitat or be on adjoining land. As they are dead, the volume of roots is not required sustain the tree's vitality but structural roots should be protected.

Canopy cover (Clause 6.4)

As trees grow, greater levels of canopy cover tend to provide greater amounts of ecosystem services. The standard proposes moving away from a tree-number-count approach to assessing impacts and towards understanding the scale of impacts both immediately and in the future.

Trees are not static but grow over time until they reach a mature size. The future growth of trees needs to be better represented on constraints and opportunities plans so it is proposed that they include future crown projections. Some local planning authorities already have requirements with regard to canopy cover and a variety of approaches have been taken by consultants. There are some common approaches and an annex provides guidance on this – note: this is an informative annex, in part to avoid constraining innovation in an area that is still evolving.

Canopy cover feeds into one of the aspects of the impact assessment process. With future projections plotted, it is possible to assess the impacts of different design options and over a set period of time, such as 30 years, to establish whether there is a net gain.

Design (Clause 7)

The detail to inform design generally sits in the annexes and these cover recommendations and guidance for working near trees. A list of factors for designers to consider is included.

The principles of mitigation hierarchy are within the standard, with control measures including avoidance, reduction, physical protection and adjusting the methods of work to protect trees.

The term 'sacrosanct' has been removed from the standard but it is acknowledged that the RPAs for Category V features should not be curtailed.

It is common for various reasons to have some form of activity within the initially recorded RPA. All too often reports simply acknowledge this and result in a reduced area actually being protected, thus failing to meet the minimum area of an RPA.

When work is necessary in the RPA, as

part of the iterative assessment process the impacts should be established and mitigation developed. As noted earlier, there are roots beyond the RPA so these areas should be used for mitigation, with the RPA shape modified to ensure that the total area protected without damage is at least equivalent to the original RPA size. There are principles, but the variability of work types and situations was considered too restrictive to set specific extents or thresholds.

Arboricultural impact assessment (Clause 8)

The assessment of impacts should be iterative; following an initial assessment, there should be feedback to the design team with modifications to the design, which is then reassessed.

Impacts can be negative or positive. They should be assessed for individual arboricultural features as well as for the total impact of the project, which is referred to as the macro impact.

Principles for assessing impact include establishing the baseline, identifying potential impacts by taking into consideration the tolerance of the arboricultural feature, the scale of change, assessing cumulative impacts and then identifying mitigation, compensation and enhancement measures which would be provided in a report.

For individual arboricultural features, a list of factors to consider above and below ground is provided. Annex M includes a suggested approach to classifying the significance of impacts.

The macro impact assessment considers both canopy cover and the resulting arboricultural population.

Diverse populations are generally more resilient and sustainable. It is proposed

that the reporting of impacts includes a summary of the population of trees that is affected with regard to diversity of species, life stages and quality categories. Typically, a good outcome is a population that is better structured and more diverse than that which was present before development.

Once a design is fixed, the output from the assessment stage will be an arboricultural impact report with an arboricultural impact plan. For a formal planning application this would be expected; local planning authorities could develop policies or standards for canopy cover or population dynamics, setting local targets. For permitted developments the level of detail in such reports should be proportionate to the project and inform the next stage for tree protection.

Arboricultural method statement (Clause 9)

An arboricultural method statement (AMS) is the methodology for the monitoring, implementation, supervision and reporting of any aspect of development that is within the RPA, or has the potential to result in loss of or damage to a retained arboricultural feature.

The level of detail available is often a limiting factor when developing an AMS, so while a preliminary AMS may be prepared for planning, it is often post-planning when detailed design occurs. Unforeseen issues may arise and therefore, following the iterative approach, further design may be required.

Tree protection barriers should be suitable for the purpose based on type, intensity and proximity of work. The 2012 fence designs are retained although no longer referenced as default and two new diagrams are included.

One shows how a site hoarding or equivalent can be used relatively close to a tree where the ground is protected. This could be used

in an urban setting where a hard surface like a road has sufficient measures in place to protect the ground.

Another image shows stem and branch protection where the tree is wrapped to protect it from work that is undertaken very close by. A good example of when this might be appropriate is in a highway setting where the paving around a tree is being renewed.

The draft introduces a precautionary buffer beyond the RPA. This is not an extension of the RPA but is an acknowledgement that work around the edge of the RPA could affect the roots within; for example, excavations can pull and tear roots with damage caused beyond the cut line. This 1m is not intended to be a no works zone but one where caution should be used, with construction activity designed to avoid causing harm to the RPA.

When the tree protection measures are designed and working methods agreed, this should be documented in an AMS and shown on a tree protection plan.

Delivery (Clause 10)

An auditable system of arboricultural site monitoring is proposed. Arboricultural supervision should be for works within or directly adjacent to the RPA of retained arboricultural features. The term 'Arboricultural Clerk of Works' is not used as that role should be fulfilled by an arboriculturist, which is already defined.

While the arboriculturist will observe, record and could approve work, they often have an important role in dealing with changes. Following the iterative process, if changes to the design are required, the arboriculturist should provide advice on impacts and potential changes to the AMS.

Delivery is the last stage of the standard and should enable the end product of a sustainable tree population.