Scottish tree officers group

BS5837: 2012

11th May 2012

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Introduction

• BSI – British standards institute; a commercial company that by “royal charter” produces standards for various processes, systems and products.

• BS standards are recognised (officially) by the UK government.
Introduction

- BS 5837: 2012 “Trees in relation to design, demolition and construction – Recommendations”.
- Replaces:
  - BS5837: 1980;
  - BS5837: 1991;
**Introduction**

- BS 5837: 2012 should be used in conjunction with:

- BS3998:2010 “Tree Work – Recommendations”.

Introduction

• NJUG

  • PROHIBITED ZONE – 1m from trunk. Excavations of any kind must not be undertaken within this zone unless full consultation with Local Authority Tree Officer is undertaken. Materials, plant and spoil must not be stored within this zone.

  • PRECAUTIONARY ZONE – 4 x tree circumference. Where excavations must be undertaken within this zone the use of mechanical excavation plant should be prohibited. Precautions should be undertaken to protect any exposed roots. Materials, plant and spoil should not be stored within this zone. Consult with Local Authority Tree Officer if in any doubt.

  • PERMITTED ZONE – outside of precautionary zone. Excavation works may be undertaken within this zone however caution must be applied and the use of mechanical plant limited. Any exposed roots should be protected.
Intended process

Figure 1: The design and construction process and tree care

Planning and design (based on architects' work stages)

A. Feasibility

- Topographical survey and soil assessment (4.2 and 4.3)
- Tree survey (4.4)
- Tree categorization (4.5)

B. Design brief

- Identify tree constraints and RPAs (4.5, 4.6 and Clause 5)
- Identify and review potential trees for retention and removal (Clause 5)

C. Conceptual design

- Produce new planting and landscape proposals (5.6)

D. Design development*

- Produce tree protection plan (5.5)

Feasibility and planning

SCHEME DESIGN APPROVALS (from client and regulatory bodies)

E. Technical design**

- Resolve tree protection proposals (6.2)
- Agree new utility apparatus locations, routes and arboricultural methodologies (6.4 and Clause 7)

F. Production information

- Schedule trees for removal and pre-construction tree works (including access facilitation) (5.4 and 5.8)

G. Tender documentation

- Identify tree protection measures and include them on all relevant documents (6.2)

Detailed-technical design

H. Tender action

- Physical barriers erected (6.2)

J. Mobilization

- Site clearance and demolition (Clause 7)

K. Construction to practical completion

- Access, storage and working areas installed (Clause 6)
- Construction (Clause 7)
- New planting (Clause 8)

L. Post-practical completion

- Inspection of trees and surrounding environment (including relationships to new structures) (8.8)
- Recommendation for post-completion management (8.8)

Implementation and aftercare

Situation operations (subject to expert monitoring)

- Vegetation clearance if required for survey

* The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.

** See Commentary on Clause 6.
Intended Process (Summarised)

1. Topographical survey & soil assessment (Plasticity Index? Soil structure? Soil texture?)

Topo to include:

1.1 All trees above 75mm diameter
1.2 Trees above 150mm if part of groups or woodland
1.3 Trees of 75mm (or more) located out-with the site but overhanging it, or are within 12 times their estimated stem diameter.
Intended Process (Summarised)

Topo to include:

1.4 Four cardinal points for crown spread of individual trees
1.5 Extent of canopy for groups and woodlands
1.6 Location of, and height of, shrub groups
Intended Process (Summarised)

2. Pre-construction tree survey

2.1 Tree/tag number
2.2 Species (common with key to botanical name provided)
2.3 Height to nearest ½ metre
2.4 Diameter at 1.5 metres (in mm - to nearest 10mm)
Diameters:

- Single stemmed trees taken at 1.5 metres.
- Up to five stems – combined stem diameters.
- Over five stems, calculate mean diameter and multiple by number of stems.
a) Stem diameter measured at 1.5 m above ground level

b) Measurement on sloping ground

c) Trees with low branching measured at narrowest point below the fork

d) Measurement of stem with irregular swelling made at the narrowest point below the swelling

e) Measurement of a multi-stemmed tree

f) Measurement of a tree with more than one stem at 1.5 m above ground level

Key
X Height varies
Intended Process (Summarised)

2. Pre-construction tree survey

2.5 Branch spread (N,S,E,W) to nearest \( \frac{1}{2} \) metre for up to 10 metres, to nearest whole metre thereafter.

2.6 Height to first branch

2.7 Height of canopy

2.8 Life stage (young; semi-mature; early-mature; mature; over-mature)
Intended Process (Summarised)

2. Pre-construction tree survey

2.9 Observations and/or preliminary management recommendations

2.10 Estimated remaining contribution in years (<10; 10+; 20+; 40+)

2.11 Retention category (U; A; B; C)

2.12 Retention sub-category (1; 2; 3)
### Table 1 Cascade chart for tree quality assessment

<table>
<thead>
<tr>
<th>Category and definition</th>
<th>Criteria (including subcategories where appropriate)</th>
<th>Identification on plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trees unsuitable for retention (see Note)</strong></td>
<td></td>
<td>See Table 2</td>
</tr>
<tr>
<td>Category U</td>
<td>Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trees that have a serious, irreparable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality</td>
<td></td>
</tr>
<tr>
<td><strong>NOTE</strong> Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1 Mainly arboricultural qualities</th>
<th>2 Mainly landscape qualities</th>
<th>3 Mainly cultural values, including conservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees to be considered for retention</td>
<td>Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features</td>
<td>Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)</td>
</tr>
<tr>
<td><strong>Category A</strong></td>
<td></td>
<td>See Table 2</td>
</tr>
<tr>
<td>Trees of high quality with an estimated remaining life expectancy of at least 40 years</td>
<td>Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)</td>
<td></td>
</tr>
<tr>
<td><strong>Category B</strong></td>
<td></td>
<td>See Table 2</td>
</tr>
<tr>
<td>Trees of moderate quality with an estimated remaining life expectancy of at least 20 years</td>
<td>Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation</td>
<td></td>
</tr>
<tr>
<td><strong>Category C</strong></td>
<td></td>
<td>See Table 2</td>
</tr>
<tr>
<td>Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm</td>
<td>Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trees with no material conservation or other cultural value</td>
<td></td>
</tr>
</tbody>
</table>
Tree categorisation

“Individual trees ... should be assessed for their quality and benefits within the context of the proposed development...” (4.4.2)
➢ Tree categorisation

➢ The statement “Whilst C category trees will usually not be retained where they would impose a significant constraint on development, …” is dropped.
Tree categorisation

- The arborist should firstly decide if the tree/group/woodland falls within category “U”.
- If not, the presumption is that it is a category “A” tree (4.5.5)
- Trees then down-graded if they don’t meet the criteria for “A”.

Intended Process (Summarised)

3. RPAs and Tree Constraints Plan (TCP)

3.1 RPA is still a fluid area (though no mention of 20% off-setting for open grown trees) capped at 707m² (tree with 1250mm diameter – 15 metre radius to RPA) (4.6.1)

3.2 Initially plot as a circle. (4.6.2)
3. RPAs and TCP

3.3 The RPA appears not to be set-in-stone. Section 4.6.3 discusses factors such as species tolerance to root disturbance, drainage, existing site conditions etc as factors to be considered when finalising the RPAs.
Intended Process (Summarised)

3. RPAs and TCP

3.4 Tree constraints may include:

3.4.1 Ultimate tree height and crown spread

3.4.2 Shade modelling (on buildings and open spaces)

3.4.3 Direct damage

3.4.4 Indirect damage

3.4.5 Privacy etc
Intended Process (Summarised)

4. Arboricultural Impact Assessment (AIA)

4.1 The AIA should look at the impact of the proposed design (which should really be based on the results of the pre-development tree survey) on the existing tree stock. Consider:

4.1.1 Trees for removal
4.1.2 Trees for retention
4.1.3 Areas for new planting that require protection also (etc)
**Intended Process (Summarised)**

5. Tree Protection Plan (TPP)

5.1 Layout of proposed site with the following clarified:

5.1.1 Final location of protective fencing

5.1.2 Temporary access routes

5.1.3 Location and use of existing hard surfaces

5.1.4 Location of no-dig and trenchless utility installations, hand-digging etc
Intended Process (Summarised)

6. New Planting Design

6.1 Arborist/Architect to consider possible conflicts with roads, paths, buildings, shade, security, street-lighting, tree nuisance issues etc.
**Intended Process (Summarised)**

7. Arboricultural Method Statement (AMS)

7.1 Will likely include the final TPP

7.2 Should mention any access facilitation pruning required

7.3 Must clarify the supervision and specification of any work occurring within the designated RPAs.

7.4 Quote any special engineering measures required.

7.5 Quote fencing specification.
**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
a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray
Comments

- Not hugely different from previous edition.
- RPAs work out the same as before (and often similar to old half height or crown spread rule)
- Gives trenchless technique advice (for utilities)
- Specifies minimum distances between new plantings and buildings, paths etc (doesn’t refer to NHBC Chapter 4.2!)
Opinion

Perhaps somewhat difficult to execute the ideal chain of events during the planning/development process but nevertheless BS5837 advocates a management process that (in my experience) is hardly ever seen through.

Very much requires the LPA to insist on the arboricultural work/supervision to be seen through, up to (and after) completion of project.