

ARBORICULTURAL IMPACT ASSESSMENT

Middle Hill House

Ditteridge, near Box, Wiltshire SN13 8QS

Proposed swimming pool and pool house on the existing tennis court

Prepared in accordance with

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

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1 Introduction

1.1 Instruction and scope

This Arboricultural Impact Assessment (AIA) has been prepared to accompany a planning application for the erection of a swimming pool and associated pool house within the grounds of Middle Hill House, Ditteridge, near Box, Wiltshire (SN13 8QS). The assessment considers the relationship between the proposed development and the trees on and adjacent to the site, and sets out the tree protection measures required during demolition and construction.

The assessment has been undertaken in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (hereafter 'BS 5837:2012' or 'the Standard'), which is the recognised industry standard for evaluating the arboricultural implications of development proposals and for informing the design, layout and construction of new development in the vicinity of trees.

1.2 Site description

The site comprises an existing hard (sealed surface) tennis court located within the wider garden of Middle Hill House. The approximate Ordnance Survey grid reference for the site is ST 8155 6911. The property lies in a semi-rural, village setting, with detached dwellings to the east and west and open countryside to the north and south.

There are no trees within the location of development; the tennis court is an existing area of developed, sealed surface. The court is bounded by the wider managed garden, which contains areas of close-mown lawn, ornamental planting, shrubberies and scattered trees. It is these scattered garden trees surrounding the tennis court that form the subject of this assessment. The trees are identified and located on the accompanying tree plan. A number of trees have recently been removed through the notification process.

1.3 Proposed development

The proposal is to construct a swimming pool and a pool house on the footprint of the existing tennis court. As the development is contained within the existing sealed court area, the works reuse previously developed, hard-surfaced land and do not require the removal of any trees.

1.4 Sources and limitations

This assessment is based on the surrounding trees as identified on the accompanying tree plan, a walkover appraisal of the site and its boundaries, and the proposed layout. The tree positions, species and canopy extents are shown on the tree plan. Given that the trees are of a uniform, low arboricultural quality and share the same characteristics relevant to this assessment, they have been considered collectively rather than by way of an individually numbered schedule.

2 Standard and methodology

BS 5837:2012 provides the framework for assessing trees in relation to development. It requires that trees be surveyed and categorised according to their quality and value, that a Root Protection Area (RPA) be calculated for each retained tree, and that appropriate protection measures be specified and implemented for the duration of demolition and construction.

2.1 Tree quality categorisation

Under BS 5837:2012 each tree is assigned to one of four categories (U, A, B or C) reflecting its quality and estimated remaining life expectancy. The categories are summarised below.

Category	BS5837:2012 definition	Plan colour
Category U	Trees in such condition that they cannot realistically be retained as living trees for longer than 10 years	Dark red / removal
Category A	Trees of high quality with an estimated remaining life expectancy of at least 40 years	Light green
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Mid blue
Category C	Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Grey

Table 1 – BS 5837:2012 tree quality categories (summary).

2.2 Root Protection Areas (RPAs)

The RPA is defined by BS 5837:2012 as the minimum area around a tree, expressed in square metres, deemed to contain sufficient roots and rooting volume to maintain the tree's viability. For a single-stemmed tree the RPA is calculated as a circle whose radius is **12 times the stem diameter** measured at 1.5 m above ground level, with the resulting area capped at 707 m². Indicative RPA dimensions for a range of stem diameters are given below.

Stem diameter at 1.5 m (mm)	RPA radius (m)	RPA area (m ²)
150	1.8	10
200	2.4	18
300	3.6	41
400	4.8	72

Table 2 – Indicative RPA radii and areas for single-stemmed trees (BS 5837:2012).

3 Arboricultural baseline – the surrounding trees

3.1 Character and quality of the trees

The trees surrounding the tennis court are identified on the accompanying tree plan. They comprise a group of garden trees which, having regard to their age, condition, form and setting, are all assessed

as Category C in accordance with BS 5837:2012. They fall within Category C for the same, shared reasons, and are therefore considered collectively in this assessment.

The trees are of relatively young age and lower quality. They are unremarkable specimens of limited individual merit, are subject to ongoing garden pruning and maintenance, and offer low or only localised landscape benefit in the context of a well-treed garden setting. They hold no material conservation or other cultural value. On this basis they meet the BS 5837:2012 definition of Category C trees. The relevant extracts from the Standard are reproduced below.

Category C – trees of low quality with an estimated remaining life expectancy of at least 10 years.

Unremarkable trees of very limited merit, or such impaired condition that they do not qualify in higher categories.

Trees offering low or only temporary / transient landscape benefits.

Trees with no material conservation or other cultural value.

Category C trees are, by definition, of low quality and value. BS 5837:2012 is clear that such trees should not be a constraint on an otherwise acceptable and well-designed development; their retention is desirable where practicable, but they do not carry the weight of Category A or B trees in influencing site layout.

3.2 Age, planting context and rooting

The trees closest to the tennis court are either broadly contemporary with the construction of the court or have been planted more recently. This planting context is directly relevant to the likely rooting environment beneath and around the court:

- **More recently planted trees.** Owing to their younger age and smaller size, the more recently planted trees are unlikely to have Root Protection Areas that extend as far as the tennis court. Their root systems remain limited in extent commensurate with their stem diameter and age.
- **Trees contemporary with the court.** Trees that are contemporary with the tennis court are likely to have established alongside the existing sealed court sub-base. Such a sealed, compacted construction is inhospitable to root growth, and these trees are therefore likely to have limited root growth within the court sub-base, if any. Their significant rooting will instead have developed into the more favourable, uncompacted soils of the surrounding garden, away from the court.

Taken together, these factors indicate that the useful, resource-bearing rooting of the surrounding trees lies within the open garden soils rather than beneath the existing sealed court. The proposed works, being confined to the footprint of that existing court, therefore affect ground that is already of very limited value to the trees' root systems.

3.3 Canopy spread

The canopy spread of each tree is indicated on the accompanying tree plan. Where branches of the surrounding trees overhang, or are close to, the working area, care will be taken to avoid damage to the crowns during construction. Any pruning necessary to provide safe working clearance or facilitate the works will be kept to the minimum required, will be limited to the removal of minor, low-value growth

on these Category C specimens, and will be carried out in accordance with BS 3998:2010 'Tree work – Recommendations' by a competent arborist. No significant crown reduction or felling is proposed or required.

Plant, materials and temporary structures will be positioned so as to avoid contact with retained canopies, and the delivery and manoeuvring of machinery will be planned to prevent bark damage to stems and branches.

4 Assessment of arboricultural impact

4.1 Trees to be removed

No trees are to be removed to enable the development. The proposal reuses the footprint of the existing hard tennis court, and all surrounding trees are to be retained.

4.2 Impact on Root Protection Areas

The development is contained within the existing sealed tennis court. For the reasons set out in Section 3.2, the surrounding Category C trees are not expected to have significant RPAs extending into the court footprint: the more recently planted trees are too young for their RPAs to reach the court, and the older, contemporary trees are unlikely to have rooted into the sealed court sub-base. Where any part of a calculated RPA is shown on the tree plan to overlap the working area, that overlap falls on ground already sealed and compacted, and of negligible rooting value.

On this basis, and given the low quality and value of the trees, the proposals are not considered to give rise to any significant arboricultural impact. Notwithstanding this, the protective measures set out in Section 5 will be implemented as good practice to ensure the retained trees are safeguarded throughout the works.

4.3 Summary of effects

- No tree removal is required to facilitate the development.
- All surrounding trees, assessed as Category C, are to be retained.
- The works are confined to the footprint of the existing sealed tennis court, which is of very limited value to the trees' root systems.
- Any overhang pruning is minor, discretionary and limited to safe working clearance in accordance with BS 3998:2010.
- With the protection measures in Section 5 in place, no significant or lasting adverse impact on the retained trees is anticipated.

5 Tree protection measures

The following measures are specified in accordance with Section 6 of BS 5837:2012 and will apply for the full duration of demolition and construction. The measures should be read together with the tree plan, which shows the location of the retained trees, their canopy spread and, where relevant, the extent of any protective barriers.

5.1 Construction Exclusion Zone and protective barriers

A Construction Exclusion Zone (CEZ) will be established to protect the retained trees and their rooting environment. The CEZ will be enclosed by protective barriers erected before any demolition, materials delivery, or machinery arrives on site, and will remain in place, undisturbed, until all construction is complete.

The default protective barrier under BS 5837:2012 (Figure 2) comprises a vertical and horizontal framework of scaffold tubing, braced to resist displacement, onto which welded mesh panels are securely fixed. Barriers will be fitted with clearly visible signage reading 'Construction Exclusion Zone – No Access'. The barrier alignment is to follow the RPA / canopy extent shown on the tree plan. Where site constraints prevent a barrier being positioned at the full RPA distance, the alignment will be agreed with the retained arboriculturalist and supplemented with ground protection (Section 5.2).

5.2 Ground protection

Where access across, or working within, any part of an RPA is unavoidable, ground protection will be installed to prevent soil compaction and damage to roots. In accordance with BS 5837:2012 this may comprise proprietary ground protection panels or an appropriate temporary surface (for example a geotextile membrane overlain by a granular material within a scaffold framework, or interlocking load-bearing panels) designed to spread loads and avoid direct trafficking of the rooting area.

5.3 Prohibited activities within protected areas

For the avoidance of doubt, and for the full duration of the works, the following will not be permitted within the CEZ / RPAs unless specifically agreed in writing with the retained arboriculturalist:

- Storage of materials, spoil, plant, fuel or equipment of any kind.
- Mixing or discharge of concrete, cement, mortar washings or any other liquid or contaminant.
- Excavation, changes in soil level, or stripping of topsoil.
- Siting of site huts, welfare facilities, wheel-washing or parking.
- Fires, or the temporary or permanent installation of services.

5.4 Arboricultural supervision

Any operations that must take place close to, or within, an RPA – for example incidental excavation near a tree or the installation of ground protection – will be carried out under the supervision of a suitably qualified arboriculturalist. A pre-commencement site meeting is recommended to confirm the position of protective barriers before works begin.

6 Methods of construction

The construction methodology reflects the fact that the works are contained within the existing sealed tennis court and that no significant tree rooting is expected within that footprint. The following principles will be applied to safeguard the retained trees.

6.1 Sequencing and site setup

Protective barriers and any ground protection (Section 5) will be installed as the first operation on site, before demolition of the court surface, delivery of materials or arrival of plant. Access routes, the

material storage compound and welfare facilities will all be located outside the RPAs and CEZ, on the existing hard standing or other suitable ground away from the retained trees (see Section 7).

6.2 Demolition and excavation of the court

Break-out of the existing court surface and excavation for the pool and pool house will be confined to the court footprint. As this ground is already sealed and, for the reasons given in Section 3.2, is of negligible rooting value to the surrounding trees, conventional excavation within the footprint is not expected to affect significant tree roots. Should any unexpected roots of 25 mm diameter or greater be encountered during excavation, work in that location will pause and the retained arboriculturalist will be consulted; roots will be cleanly severed by hand rather than torn, and retained wherever practicable, in accordance with BS 5837:2012.

6.3 Working near retained trees and no-dig principles

Where any element of the works (for example edging, drainage or hard landscaping) is shown on the tree plan to fall within an RPA, a precautionary, root-sensitive approach will be adopted. This may include hand digging, the use of 'no-dig' construction techniques such as a cellular confinement system laid on a geotextile above existing grade, and the routing of any services above the RPA or using trenchless methods, all to avoid disturbance of the rooting environment. The specific technique will be confirmed in consultation with the retained arboriculturalist having regard to the positions shown on the tree plan.

6.4 Protection of stems and canopies

Machinery will be operated so as to avoid contact with tree stems and branches. Where low branches present an obstruction, minor pruning for clearance will be undertaken by a competent arborist in accordance with BS 3998:2010 (Section 3.3) rather than by pushing plant through the canopy. No fixings, cables or signage will be attached to any retained tree.

7 Storage of materials and site facilities

All storage of materials and siting of site facilities will take place outside the Root Protection Areas of the retained trees, in accordance with BS 5837:2012. This is a key control in preventing indirect damage to trees, which most commonly arises from soil compaction, contamination and changes in ground level within the rooting area rather than from the built development itself.

Specifically:

- Building materials, aggregates, spoil and plant will be stored on the existing hard standing / court footprint or on a designated compound clear of all RPAs and canopies.
- No excavated soil or construction materials will be stacked, even temporarily, against tree stems or within the CEZ.
- Cement, concrete, fuels, oils and other potential contaminants will be stored, mixed and washed out in a bunded area well away from the RPAs, so that no run-off can enter the rooting environment.
- Welfare units, parking and wheel-washing will be located outside the RPAs on suitable ground.

Confining storage and site facilities to the existing sealed court and clearly designated areas outside the RPAs ensures that the rooting environment of the surrounding trees remains undisturbed for the duration of the works.

8 Conclusion

The proposed swimming pool and pool house are contained within the footprint of an existing hard tennis court. No trees are present within the site and no trees require removal to enable the development. The surrounding garden trees are all assessed as Category C under BS 5837:2012 – trees of low quality and limited merit, subject to ongoing garden maintenance, offering only localised landscape benefit and holding no material conservation or cultural value.

Because the more recently planted trees are too young for their Root Protection Areas to reach the court, and the older, contemporary trees are unlikely to have rooted into the sealed court sub-base, the working area is of very limited value to the trees' root systems. Any incidental overlap of an RPA with the working area falls on ground that is already sealed and compacted.

With the tree protection measures set out in Section 5 in place, and the construction methods and material-storage controls described in Sections 6 and 7, the development can be implemented without significant or lasting harm to the retained trees. The proposals are therefore considered acceptable in arboricultural terms and consistent with the recommendations of BS 5837:2012.

Appendix A – Supporting information

This assessment should be read in conjunction with the accompanying tree plan, which shows the position, species, canopy spread and BS 5837:2012 category of the surrounding trees, together with the proposed development layout.

Relevant standards and guidance

- BS 5837:2012 – Trees in relation to design, demolition and construction – Recommendations.
- BS 3998:2010 – Tree work – Recommendations.

Note: Where the local planning authority requires an individually numbered tree survey schedule and Tree Protection Plan drawing, these can be provided as supplementary documents to accompany this assessment.