



Arboricultural Report

Title: BS5837 Tree Survey and Arboricultural Report for the Construction of a Detached Two Storey Garage with Workshop above at Westra Fach, Westra, Dinas Powys, CF64 4HA.

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References:

- A. *BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations.*
- B. *BS3998:2010 Tree Work – Recommendations.*

1 Instructions

1.1 I have been instructed verbally by Steve Price, the project architect from Oriel Design Ltd, with regard to a planning application in respect of Westra Fach, Westra, Dinas Powys, CF64 4HA, which involves the erection of a detached double garage with an upstairs workshop on the north western corner of the site.

1.2 As the area surrounding the proposed site of the garage contains mature trees (sycamore and cypress), the Local Planning Authority (LPA) - the Vale of Glamorgan Council - have requested the submission – as part of the planning application, a tree survey and report for the project in accordance with Supplementary Planning Guidance (SPG) and the current British Standard for trees in relation to construction, BS5837:2012. Following discussion of the project with Steve Price, I have been instructed as the project arboriculturist to produce the following documents in relation to the development:

- i) Tree Survey Schedule
- ii) Tree Categorization
- iii) Tree Constraints Plan (TCP)
- iv) Arboricultural Implications Assessment (AIA)

2 Introduction

2.1 Background

I am an experienced Certified Arboricultural Technician qualified to Level 6 in Arboriculture (ABC Awards). I have gained the Technicians Certificate of the Arboricultural Association at distinction level and I also hold the Royal Forestry Society Certificate in Arboriculture again at distinction level. Furthermore, I am qualified in Professional Tree Inspection (Lantra), trained in practical visual tree assessment (VTA) and I am a registered licence holder for Quantified Tree Risk Assessment (QTRA). Lastly, I hold current full professional memberships of the Arboricultural Association (including the Utility Arboriculture Group), the Royal Forestry Society and the Forestry Industry Safety Accord (FISA).

2.2 Limitations

- 2.2.1** All dimensions were measured using a Trupulse 360R laser rangefinder, diameter tape and tape measure.
- 2.2.2** No samples of soil / decay were taken. Soil data for the site has been received from the British Geological Survey (BGS).
- 2.2.3** No use was made of decay detection equipment.
- 2.2.4** No climbing inspection was made.
- 2.2.5** The presence of any protected wildlife in the trees remains the responsibility of the land owner.
- 2.2.6** Trees and shrubs are dynamic living organisms whose health and condition can change rapidly. The health, condition and safety of trees in particular should be checked on a regular basis, preferably annually, in order to exercise a duty of care. Accordingly, the validity period of my recommendations relating to tree condition is 12 months from the date of inspection.
- 2.2.7** No enquiries have been made with the LPA to ascertain whether or not the trees on and around the plot of land are the subject of a Tree Preservation Order (TPO) or lie within a designated Conservation Area.

2.3 Site Location

Westra Fach stands on a plot of land sized approximately 0.07ha situated in the hamlet of Westra which lies on the western edge of the village of Dinas Powys within the Vale of Glamorgan. To the west the site is bordered by the dwellings of Highmead and Cartref – which is currently being rebuilt – albeit that the north western corner of Westra Fach in question is retained by a stone wall some 2m higher than the floor level of Cartref. To the north, over a chain link boundary fence screened by a large cypress hedge is the rear garden of the neighbouring property, Timbertops. To the east is the neighbouring property Westra View whilst to the south is Westra Road. Site layout is shown in the Tree Constraints Plan (TCP) which is appended to this report.

2.4 The Trees

The plot is marked by the presence of existing mature trees and mixed shrubs. All of the relevant tree cover is on neighbouring third party owned land situated just over the western (T1) boundary and the northern (T2, 3 & 4) boundary. T1, growing within the property of Cartref is a mature sycamore which was pollarded at 4m agl around 5-10 years ago, whilst T2, 3 & 4 are Leyland cypress which are part of a hedge acting as a screen along the southern boundary of Timbertops. These trees were topped at a height of around 9m again around 5-10 years ago. Of note here is the fact that all four trees which are relevant to this design show a marked phototropic growth and overhang into and over the plot by as much as 5m. These trees which are relevant to the proposed development were surveyed in accordance with Ref A and are plotted by GPS on the Tree constraints Plan (TCP) which is appended to this report.

2.5 Tree Categorization

- 2.5.1** Trees are a material consideration in the UK planning system and the purpose of BS5837:2012 is to provide a tree survey and categorization in the context of the current land use independent of any specific proposals for development i.e. from the perspective of the trees themselves as they stand.
- 2.5.2** Tree categorization identifies the quality and value (in a non-fiscal sense) of the individual trees and groups of trees concerned on the site, which is then reflected in their retention category. Tree categorization and retention categories are explained in the BS5837:2012 Tree Quality Assessment Cascade Chart which is appended to this report.
- 2.5.3** The starting point is Category U which involves only those trees which have serious structural or physiological defects or the presence of major disease or decay such that they cannot realistically be retained in a safe manner in the short term. During my survey I identified no trees which fall into Category U by virtue of their current condition and merit immediate removal on these grounds alone.

- 2.5.4** After identifying Category U trees the retention process then cascades down the chart to Category A (high quality). If the tree(s) do not fall into Category A, then Category B (moderate quality) is considered. Finally, after Category B (moderate quality) has been considered, then Category C (low quality) is the final resting place – which is where I have placed the four relevant trees (Tree Numbers T1, T2, T3 & T4) by virtue of their current structural and physiological condition and their remaining life expectancy.
- 2.5.5** The accepted convention with tree categorization is that retention becomes more likely the higher the individual / group categorization. Therefore, Category A trees are almost always retained, Category B generally retained and Category C trees will usually not be retained where they impose a constraint to development. Even if Category C trees do remain then it is only until such time as new planting can be established – 10 years is the suggested figure. Young trees with a stem diameter below 150mm are not included as they can be moved to more suitable locations if required.
- 2.5.6** Tree Numbers T1, T2, T3 & T4 are assessed as Category C – being unremarkable and of low quality with an estimated life expectancy of at least 10 years. Thus, the selective thinning / removal of these trees may be considered in order to facilitate / compliment the proposed development at the site. Such management options may be problematic, however, considering the fact that all of the trees are in third party ownership on neighbouring land. Therefore, prior consent to the remedial tree work recommended by this report to make the trees safe and abate nuisance or tree removal to facilitate the development of this site will need to be acquired from the owners of this land.

2.6 New Building

The current project consists of a detached two storey double garage with a workshop on the upper floor reached from an integral staircase sited in the north western corner of the plot. Access will be gained from Westra Road up the existing driveway sited along the western edge of the plot.

2.7 Tree Survey

The surrounding the position of the proposed garage which are relevant to the design for the purposes of Ref A were surveyed and their positions fixed by GPS. The trees were not tagged due to the fact that all of them are on adjacent third party owned land. The Tree Survey Schedule and Tree Categorization in accordance with Ref A is appended to this report in TreeMinder format.

2.8 Tree Constraints Plan (TCP)

The above and below ground influences that the relevant trees on the site have to the proposed development were plotted following the tree survey on the Tree Constraints Plan (TCP) which is appended to this report.

2.8.1 Above Ground Constraints

2.8.1.1 The current and ultimate height of the trees has been taken into account where their position may cause obstruction of sunlight or shading to the development. This would mainly apply to any trees on the south side of the development with their influence pertinent by a segment from due north west to due east. Shade cast by the existing tree cover to the north (T2, 3 & 4) is not an issue for this development as the proposed building footprint lies to the south of the bulk of the tree cover. However, T1 the sycamore to the west does cast a considerable shade pattern over the site. The shade pattern cast by the trees is shown on the TCP by hatching.

2.8.1.2 The spread of a tree is also a constraint due to its size, dominance and movement in strong winds. For this reason, as well as in relation to shading, the spread and future branch growth of trees on the site have been taken into consideration as a constraint for the design. Spread is annotated on the TCP in ink to scale at the four cardinal points and is a major issue for this development particularly along the western boundary from T1 and the northern boundary from T2, 3 & 4.

2.8.2 Below Ground Constraints

In order to avoid damage to the roots or rooting environment of trees, the Root Protection Area (RPA) has been plotted in ink in the form of a dodecagon on the TCP for each tree and marked by retention category. This represents a minimum area in m² which should be left undisturbed around each retained tree to ensure its survival and future contribution to the site.

2.9 Soil Assessment

2.9.1 Soil type and plasticity (potential for shrinkage through drying).

I note from the British Geological Survey report that the soil profile for the site is a slightly acidic moderately deep loamy and clayey soil with impeded drainage with low amounts of organic matter formed by parent material (sedimentary bedrock) of limestone and mudstone interbedded which were formed in shoreline environments approximately 200 to 251 million years ago in the Triassic Period. Such soil has a low plasticity index and a pH of 6.

2.9.2 Subsidence Risk (Indirect Damage)

Tree related subsidence can only occur on highly shrinkable clay soils. The soil data from the British Geological Survey shows that local conditions are predominantly of low plasticity and as such there is only very minor potential for shrink swell (significant changes in the volume of clay rich deposits that accompany changes in moisture content). The subsidence risk for trees on this site is, therefore, assessed as insignificant.

2.9.3 Heave

The removal of any trees on the site is unlikely to have any 'heave' effects (upward movement of soil levels due to excess moisture content and swelling of clay soils) for the following reasons:

2.9.3.1 The soil conditions, according to the British Geological Survey are predominantly low plasticity with very minor shrink/swell potential.

2.9.3.2 The site slopes downwards to the south and west which would inhibit the build-up of excessive levels of surface moisture.

3 Arboricultural Impact Assessment (AIA)

3.1 Presence of Tree Preservation Orders or Conservation Area Designation

3.1.1 It is not known if the relevant trees surrounding the property are designated within a Tree Preservation Order (TPO) or if the site lies within a designated Conservation Area.

3.2 Effect of New Building on the Amenity Value of Trees on or Near the Site

3.2.1 The proposed design will require the pruning of the relevant surrounding trees back to the boundary line in order to fit the above ground footprint into the space. In the medium to long term, it may well be appropriate to undertake the removal of the relevant trees – particularly T1 which is growing out of the retaining boundary wall and is also very close to the eastern end wall of the current refurbishment of Cartref. However, the recommended tree work for the trees in the short term will increase their amenity value in the space available whilst maintaining the screening, conservation and landscape benefits they also provide.

3.3 Above and Below Ground Constraints

3.3.1 No construction of foundations or installation of services should take place within the Root Protection Area (RPA) of any retained tree. 90% of tree roots are found in the top 600mm of soil and an undisturbed rooting environment is vital to the long term health & stability of the tree.

3.3.2 The proposed construction of the garage will not require an incursion into the RPA of T1 as the tree is located down over the boundary 2m below the site of the garage.

- 3.3.3** The RPA's of T2, 3 & 4 do theoretically spread south over the boundary into the building footprint, but in my professional opinion the rooting morphology of these trees is more likely to favour the open garden soil conditions to the west, north and east rather than the harsh compacted soil conditions under the sealed paved and concreted surfaces over the boundary in Westra Fach. As a result, any rooting from T2, 3 or 4 which does stray over the boundary into Westra Fach will be driven deeper by surface compaction and will be unlikely to be affected by the garage construction. In this way, the future health and stability of these trees – if retained - will not be jeopardised.
- 3.3.4** Above ground, all four relevant trees exhibit an oppressive overhang of the site. The side pruning of all four trees back to the boundary line will be required in order to accommodate the above ground footprint of the new garage.

3.4 Construction Processes of the Proposed Development

- 3.4.1** Development processes that lead to soil compaction in tree rooting zones and physical damage to trees can adversely affect long-term tree health. This can lead to unnecessary tree loss if not controlled properly on site during the construction of the new dwelling. Protective fencing (Appendix 5) sited along the property boundaries will be required for any retained trees throughout all phases of the development.
- 3.4.2** No access to the RPAs of any retained tree – except as outlined in paragraph 3.3.3 above - will be permitted before or during construction activity. This will also negate the risk of machinery causing damage to trunks and low branches.
- 3.4.3** The processes of construction are highly unlikely to have a detrimental effect upon the health of the retained trees assuming recommendations made in this report are adhered to at all times by the contractors e.g. the positioning of a fit for purpose fence, (Appendix 5), between the retained trees and construction activities, is placed prior to commencement of works and remains intact and in position throughout the duration of the development.

3.5 Modifications Proposed to Accommodate Trees

- 3.5.1** Modifications to the design or location of the garage have not been considered in this report due to this being a non-moveable aspect of my brief.
- 3.5.2** BS5837:2012 does allow an arboriculturist to offset a tree RPA by up to 20% in any one direction, where this can be justified by the root morphology of any open grown retained tree – such as the case with T2, T3 & T4 as outlined in para 3.3.3 above.

3.6 Infrastructure Requirements

- 3.6.1** The installation of services within the rooting zones of trees can have a major detrimental impact on the long-term survival of retained trees leading to their unnecessary loss or root failure in high winds. No services are to be installed within the RPA of any retained tree.
- 3.6.2** The only entrance to the garage will be from the existing driveway for Westra Fach off Westra Road.
- 3.6.3** Undisclosed siting of above ground services, CCTV cameras, electrical sub-stations, refuse stores, lighting and other infrastructure requirements can lead to unnecessary pruning of tree crowns or root loss during or post development. I am advised that there are no such developments planned to take place adjacent to, or within the RPA of any retained tree.

3.7 Mitigating Tree Loss/New Plantings

- 3.7.1** My initial tree survey and categorization does not involve the loss of any trees in the short term, only their pruning in order to accommodate the build in available space.
- 3.7.2** If my recommendations are followed on the imposition of the new garage footprint on the site, then the four relevant Category C trees situated over the western and eastern boundaries may also be removed. It should however be noted that this option may only be followed with the prior consent of the tree owner(s), whereas the common law right of the occupants of Westra Fach to side prune the trees back to the boundary line does not.
- 3.7.3** Should the selective removal of these trees be considered at this time by the landowners in order to facilitate / compliment the proposed development it will not be realistic to replant in the area due to limited space and the fact that the immediate site is already over-stocked. Therefore, any tree removals should be mitigated by re-planting in more suitable locations surrounding the new build with more appropriate fastigate native species e.g. silver birch (*Betula pendula* 'Fastigiata'), mountain ash (*Sorbus aucuparia* 'Fastigiata'), cherry (*Prunus avium* 'Plena') and holly (*Ilex aquifolium* 'Green Pillar') which will be able to achieve independence in the new landscape.

3.8 Proximity of Trees to Structure

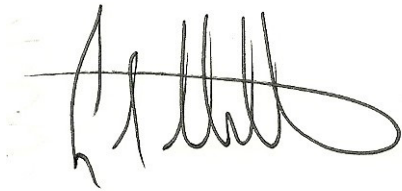
- 3.8.1** The impacts of trees on buildings and vice versa and allowances for future growth have all been considered in this report. Tree size, future growth, light/shading, leaf and fruit nuisance etc., have received due attention in the TCP and are considered to be an issue for this development in relation to the four relevant trees alongside the western and northern boundaries if my recommendations are followed but permission to fell the trees cannot be obtained. In this case, it will be necessary to prune the spread of the trees into Westra Fach back to the western and northern boundary lines in accordance with common law. This right, however, does not absolve the site owner from also seeking prior permission from the LPA to fell or prune the trees if they are designated by a TPO or lie within a Conservation Area.
- 3.8.2** Furthermore, sound arboricultural management is all about the manipulation of light and shade and as retained trees respond differently in the future due to stimulation from increased light levels, a cyclical pruning regime may be required particularly for any trees which may be retained closest to the new garage.
- 3.8.3** Where feasible, the minimum distances required by BS5837:2012 in relation to proximity of buildings should be exceeded to ensure tree survival and that the site has a green and leafy feel to it in keeping with its environs.
- 3.8.4** Due to the current condition of the tree stock, tree removal along the western and northern boundaries – if permission from the landowners can be obtained - followed by the development of the site will, in my opinion, decrease the existing tree safety risk significantly. Similarly, tree replacement and replanting elsewhere in mitigation for any tree loss as recommended in this report will also contribute to tree risk management for the future.

3.9 Final Design

Once the final design and associated tree work and / or removals are agreed it will be necessary to re-visit the AIA in order to mitigate any residual arboricultural implications of the development. Thereafter, it is recommended that an Arboricultural Method Statement (AMS) is produced by an arboriculturist together with a Tree Protection Plan (TPP) and an arboricultural site supervision model in order to protect any retained trees through the construction phases of planned development.

4.0 Trees Subject to Statutory Controls

If any of the four trees concerned are the subject of a Tree Preservation Order (TPO), or lie within a designated Conservation Area, it will be necessary to consult the Local Planning Authority, (Vale of Glamorgan Council), before any tree works other than certain exemptions can be carried out. The works specified in this report are, in my professional opinion, necessary for the safe and reasonable management of the trees and should be acceptable to the Council



Graham Chesterton *Tech Cert (ARBOR A) Cert Arb (RFS)*

23/08/2017

Appendices:

1. Glossary of BS5837:2012 terms
2. Tree Survey Schedule (TreeMinder Report pdf)
3. BS5837:2012 Tree Quality Cascade Chart
4. Tree Constraints Plan (pdf)
5. BS5837:2012 Protective fencing specification for retained trees

BS 5837 Glossary of Terms

A definition of arboricultural terms used in this report which are drawn from BS5837:2012 are as follows:

Root Protection Area (RPA). A layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form. The area is equivalent to a circle with a radius 12 times the diameter of the tree measured at 1.5m above ground level (a.g.l.). This is a minimum area which should be left undisturbed around each retained tree.

Stem. Principal above ground structural component of a tree that supports the branches (trunk).

Crown. That part of a tree which is composed of the branches and foliage.

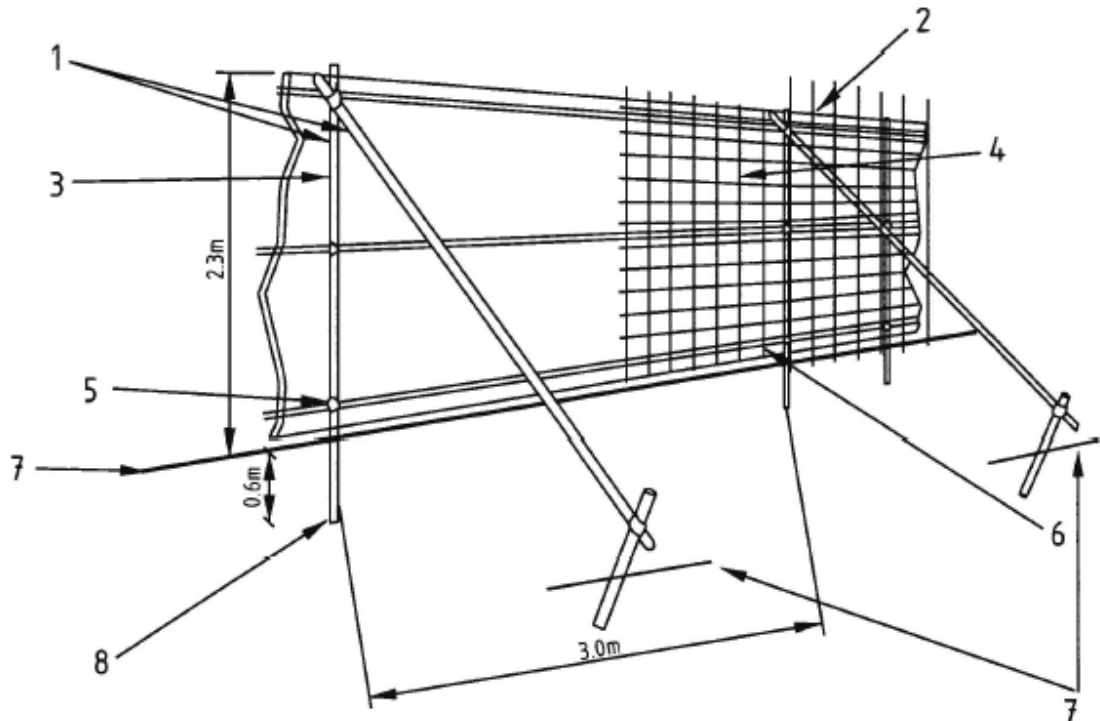
Crown lifting. An arboricultural operation that involves the removal of lower branches to a given height above ground level to achieve the safe passage of vehicles / pedestrians or clear lines of sight / daylight. It is achieved by the removal of whole branches, or by the removal of only those parts which extend below the desired clear height.

Crown reduction. Operation that results in an overall reduction in the height and/or spread of the crown by means of a general shortening of twigs and/or branches to strong growth points, (natural targets), whilst retaining the main framework of the crown.

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan		
Trees unsuitable for retention (see Note)				
Category U	<ul style="list-style-type: none"> Trees that have a serious, irremediable, 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) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline 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 <p><i>NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>	See Table 2		
Trees to be considered for retention				
<p>1 Mainly arboricultural qualities 2 Mainly landscape qualities 3 Mainly cultural values, including conservation</p>				
Category A	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)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B	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	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	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	Trees with no material conservation or other cultural value	See Table 2
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				

Default Protective Barrier (BS5837:2012)



1. Standard scaffold poles
2. Uprights to be driven into ground
3. Panels secured to uprights with wire ties and where necessary standard scaffold clamps
4. Heras panels wired to uprights and horizontals
5. Standard clamps
6. Wire twisted and secured on inside face of fencing to avoid easy dismantling
7. Ground level
8. Approximately 0.6m driven into the ground