Arboricultural Report

Title: BS5837:2012 Development Site Survey & Report for Blaengwawr Comprehensive School, Club Street, Aberdare, Rhondda Cynon Taff, CF44 6TN.

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Date: 31st August 2015
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Arboricultural Report

BS5837:2012 Development Site Survey and Report re Blaengwawr Comprehensive School, Club Street, Aberdare, Rhondda Cynon Taff, CF44 6TN.

References:
A. E mail reply dated 30/07/15 to GCA quotation dated 28/07/15.
B. BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations
C. BS3998:2010 Tree Work - Recommendations

1 Instructions

1.1 I have been instructed in writing (Ref A) by Mr Simon Lloyd, the Corporate Estates Acquisitions and Disposals Manager for Rhondda Cynon Taff County Borough Council - with regard to the proposed disposal, demolition and re-development of the existing Blaengwawr Comprehensive School and report on the site in accordance with British Standard 5837:2012 Trees in relation to design, demolition and construction - Recommendations (Ref B) in the following way:

1.1.1 Survey and tag all relevant individual trees on site to include plotting of relevant trees by GPS on an OS base map.

1.1.2 Categorise trees for quality, retention and removal.

1.1.3 Produce a Tree Constraints Plan (TCP).

1.1.4 Produce an Arboricultural Impact Assessment (AIA).

1.2 Following an initial site visit on 28/07/15, all individual trees which are relevant to the proposed demolition were tagged, plotted and surveyed on 24/08/15. Tree tag numbers are 1219 – 1249 inclusive.

1.3 Groups of trees surrounding the site are referred to as G1 – 6 in the survey and TCP which is appended to this report.
2 Introduction

2.1 Background

2.1.1 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) and the Royal Forestry Society.

2.1.2 Limitations

2.1.2.1 All dimensions are measured.

2.1.2.2 No samples of soil / decay were taken.

2.1.2.3 No use was made of decay detection equipment.

2.1.2.4 No climbing inspection was made.

2.1.2.5 The presence of any protected wildlife in the trees remains the responsibility of the site owner.

2.1.2.6 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 Site Location

2.2.1 Blaengwawr was a mixed County controlled Comprehensive School with over 800 girls and boys. It was built originally as a secondary school in 1974. The school is situated in Aberaman, just south of Aberdare. The school which was finally closed in summer 2015 at the end of the school year.
2.2.2 Blaengwawr Comprehensive School occupies a hillside location on the north eastern slopes of Rhos – Gwawr on a site of over 6 ha. The Nant Gwawr stream, which rises from a source on the hill to the west, runs downhill to meet the River Cynon to the east and forms the southern boundary of the site. To the north and south is the residential housing of the communities of Blaengwawr and Aberaman, whilst to the east is an all-weather sports pitch and the site of Blaengwawr Primary School which is unaffected by the disposal of the Comprehensive School site. The site is spilt roughly into two halves, with the majority of school buildings in the uphill western portion and grass playing fields occupying the downhill eastern portion. Site layout is shown in the TCP which is appended to this report.

2.3 Tree Cover

2.3.1 Tree cover at the Blaengwawr Comprehensive School site consists mostly of deciduous species with ash, lime, alder, maple, willow, oak, sycamore, cherry, birch, hawthorn and hazel dominant. The site is surrounded by trees in varying life stages which have arisen from natural re-generation. Also a number of trees have been planted across the site, mainly along the access road and around the buildings. The age range of the tree stock is young to over mature.

2.3.2 A total of 31 individual trees (Tag No’s 1219 – 1249 inclusive) have been identified as relevant to the proposals and are included in the Tree Survey Schedule which is appended to this report.

2.3.3 Six groups of trees (Groups G1 – 6) which have arisen from natural regeneration and are situated along the borders of the site are not of immediate relevance to the proposed demolition and are categorized collectively as tree groups for future management. Tree groups are shown in the TCP which is appended to this report and are identified as follows:

2.3.3.1 Group 1

Approximately 20 boundary trees (birch, ash, goat willow and hawthorn – age range young to mature) behind the dropping off zone / car parking spaces from the access road off Club Street.

2.3.3.2 Group 2

Approximately 20 boundary trees (whitebeam, ash, goat willow and hawthorn – age range young to mature) to the east of the access road south of the roundabout.
2.3.3.3 **Group 3**

Approximately 20 boundary / verge trees (ash, goat willow, sycamore, holly and hazel – age range young to mature) in a 5m wide strip between neighbouring houses and north of the access road.

2.3.3.4 **Group 4**

Approximately 100 boundary / verge trees (oak, ash, goat willow, sycamore and birch – age range young to over mature) on a 10m wide steep bank above the access road up to the western boundary fence.

2.3.3.5 **Group 5**

Approximately 200 boundary trees (oak, ash, goat willow, sycamore, hazel and birch – age range young to over mature) situated between the northern bank of Nant Gwawr and the metal boundary fence.

2.3.3.6 **Group 6**

Group of semi mature conifers growing out of unfenced rear garden of number 34 Club Street.

2.4 **Tree Categorization**

2.4.1 Planted tree cover at Blaengwawr Comprehensive School is of low overall quality and is characterised by poor historic management and crude pruning practices. The stock is assessed, therefore as Category C – being unremarkable and of low quality with an estimated life expectancy of at least 10 years. The selective thinning / removal of these trees may be considered in order to facilitate / compliment the proposed demolition of the school buildings and re-development of the site. Fourteen of the trees have been assessed as Category U – being unsuitable for retention due to moribund condition, disease, decay, serious structural and/or physiological defects – and should be removed in the short term anyway.

2.4.2 Tree Groups around the school buildings are also assessed as Category C with the exception of Group 6 which is assessed as Category U. If Groups 1 to 5 are to be retained for the future then some trees may require access facilitation pruning prior to the demolition of the school buildings. Relevant details are included in the Arboricultural Impact Assessment (AIA) later in this report at para 4.5.3.
2.5 **New Development**

The site owners seek consent to demolish the existing buildings prior to disposal of the site for re-development as housing.

3 **Tree Constraints Plan (TCP)**

3.2 The above and below ground influences that the trees on the site have to the proposed demolition of the school buildings were plotted following the tree survey on the TCP which is appended to this report.

3.1.2 **Above Ground Constraints**

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 on the south side of the buildings is an issue for this development as the shade pattern falls across the existing building footprint to the north of the stream.

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 demolition and re-development. Spread is annotated on the TCP in ink to scale at the four cardinal points.

3.1.3 **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 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.
4 Arboricultural Impact Assessment (AIA)

4.1 Presence of Tree Preservation Orders or Conservation Area Designation

4.1.1 Preliminary telephone enquiries with the Rhondda Cynon Taff County Borough Council planning department does not reveal the presence of any Tree Preservation Orders on or immediately surrounding the site and the school does not appear to lie within a designated Conservation Area.

4.2 Effect of Demolition and New Building on the Amenity Value of Trees on or Near the Site

4.2.1 Whilst the proposed demolition will require the definite removal of fourteen unsuitable trees, it is considered that remedial tree work to any retained trees and replanting in mitigation will more than offset the loss of amenity resulting from the removal of other low quality trees / shrubs from a site which is already over stocked. Moreover, some trees of better quality may be retained and limited replanting as part of soft landscaping measures for the new development together with sound arboricultural management will redress the balance of tree cover.

4.3 Above and Below Ground Constraints

4.3.1 No demolition, 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.

4.3.2 The proposed demolition of the school buildings should not require incursion into the RPA’s of retained trees. Damage can be minimised by the use of suitable ground protection methods where required (Ref B) and by the imposition of protective fencing (Appendix 4) to prevent major compaction and damage to structural roots. In this way, the future health and stability of these retained trees will not be jeopardised.

4.3.3 Furthermore, to avoid damage to tree roots, existing ground levels should be retained within the RPA.

4.3.4 Where demolition of buildings is to take place around trees which are to be retained, access facilitation pruning should be undertaken as necessary to prevent injurious contact between demolition plant and the tree(s). In some cases working space may be provided by temporarily tying back tree branches. Pruning should be undertaken in accordance with a specification prepared by an arboriculturist.
4.4 Demolition Process and Proposed Re-Development

4.4.1 Demolition and construction 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 demolition of the existing buildings and the construction of the new housing. Protective fencing (Appendix 4) will be required for any retained trees throughout all phases of the demolition and re-development.

4.4.2 No access to the RPAs of any retained tree – except as outlined in paragraph 4.3.2. above - will be permitted before or during construction activity. This will also negate the risk of machinery causing damage to trunks and low branches.

4.4.3 When demolishing a structure within what would otherwise be the RPA, barriers (Appendix 4) should be erected and ground protection installed to protect the underlying soil to the edge of the existing structure.

4.4.4 All plant and vehicles engaged in demolition works should either operate on existing roads and hard surfaces outside the RPA, or run on the ground protection within the RPA. Where such ground protection is required, it should be installed prior to commencement of all works.

4.4.5 Where trees to be retained stand adjacent to buildings to be removed, the demolition should be undertaken inwards within the footprint of the existing building – often referred to as “top down, pull back.”

4.4.6 Where an existing hard surface is scheduled for removal, care should be taken not to disturb tree roots from any retained tree that might be present beneath it. Hand-held tools or appropriate machinery should be used – under arboricultural supervision – to remove the existing surface, working backwards over the area, so that the machine is not moving over the exposed ground.

4.4.7 The processes of construction are highly unlikely to have a detrimental effect upon the health of any 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 4), between the retained trees and demolition activities, is placed prior to commencement of works and remains intact and in position throughout the duration of the development.
4.5 **Modifications Proposed to Accommodate Trees**

4.5.1 Modifications to the demolition or non-demolition of the school buildings have not been considered in this report due to this being a non-moveable aspect of my brief.

4.5.2 Although BS5837:2012 does allow an arboriculturist to offset tree RPA’s by up to 20% in any one direction, this model only applies to open grown trees. As all the trees on site are situated proximal to each other where tree roots and canopies are in close competition for anchorage, light, moisture & nutrients, RPA offset has not been considered.

4.5.3 Access facilitation may also be required to the boundary groups of trees which are included in the TCP which is appended to this report. In particular, some of the groups (mainly Groups 3 & 4) overhang the boundary and / or the existing access road by distances which may prove to be an obstacle to the unhindered movement of large plant and machinery. If the groups are to be retained then damage to the branch structure of trees closest to the access road way will be achieved by side pruning back to the boundary or road edge in addition to the temporary tying back of branches as outlined in para 4.3.4.

4.6 **Infrastructure Requirements**

4.6.1 The installation or removal of services within the rooting zones of trees can have a large 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 or removed within the RPA of any retained tree.

4.6.2 The entrance and access to the site will be from the existing roadway off Club Street.

4.6.3 The 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 demolition or re-development. I am advised that there are no such developments planned to take place adjacent or within the RPA of any retained tree.
4.7 Mitigating Tree Loss/New Plantings

4.7.1 My initial tree survey and categorization involves the loss of fourteen unsuitable trees.

4.7.2 The remaining tree stock on the plot of land is assessed as Category C – being unremarkable and of low quality with an estimated life expectancy of at least 10 years. The selective thinning / removal of these trees may be considered in order to facilitate / compliment the proposed demolition and / or re-development and should be mitigated by re planting in more suitable locations surrounding the new housing development with appropriate native species e.g. common oak (Quercus robur), silver birch (Betula pendula), mountain ash (Sorbus aucuparia), wild cherry (Prunus avium ‘Plena’) and holly (Ilex aquifolium) which will be able to achieve independence in the landscape.

4.7.3 In this way, current stocking levels, replacement planting for tree loss and remedial pruning work to retained trees will leave a balance of better tree cover and increase the amenity value of the development. Furthermore, future sound arboricultural management will result in an increase in the long-term sustainability of tree cover on the site.

4.8 Proximity of Trees to Structure

4.8.1 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 my recommendations should be followed in the selection of tree(s) for retention. However, sound woodland 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 to trees which are closest to the new development.

4.8.2 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 mature woodland feel to it in keeping with its environs.

4.8.4 Due to the current poor and hazardous condition of the trees assessed as Category U, the re-development of the site will, in my opinion, decrease the existing tree safety risk significantly. Similarly, tree work required for any retained trees around the property which is highlighted in my survey and schedule, will also contribute to tree risk management for the future.
4.9 **Final Design**

Once the final design for the re-development of the site is 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 retained trees through the construction phases of new housing.

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

31/08/2015

**Appendices:**

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

BS 5837:2012 Key to the Tree Survey Schedule & Glossary of Terms

Tree No.

The metal tag number affixed to each tree is indicated in the schedule

**Height (m)**

Tree height measured in metres (m)

**Stem diameter (mm)**

Stem diameter in millimeters (mm) measured at 1.5m above ground level. Where the stem is divided below 1.5m, measurement is taken immediately above the root flare and indicated by the notation ‘RF’

**Branch spread (m)**

Radial crown spread measured in metres for each of the four cardinal compass points from the centre of the stem.

**Height of Crown Clearance (m)**

Height above ground of the first significant branch and a direction of growth e.g. 2.4 – N together with the canopy height.

**Age Class**

**NP** Newly Planted – a tree within 3 years after planting. Normally still attached to the stake

**YM** Young Mature – a tree within its first third of life expectancy

**MA** Middle Aged – a tree within its second third of life expectancy

**M** Mature - a tree within its final third of life expectancy

**OM** Over Mature – a tree which has reached its maximum average life span and is declining in health and size.

**V** Veteran – a tree which is of interest aesthetically, biologically or culturally due to its age, size or condition.
**Physiological Condition**

An assessment of the health and vitality of the tree categorized into:

- **GOOD** A tree in healthy condition with no significant problems
- **FAIR** A tree generally in good health with some problems that can be remedied
- **POOR** A tree in poor health with significant problems that can’t be remedied
- **DEAD** A tree without sufficient live material to sustain its life

**Structural Condition**

An assessment of the structural / safe condition of the tree categorized into:

- **GOOD** A tree in safe condition with no significant defects
- **FAIR** A tree with significant defects that can be remedied
- **POOR** A tree with significant defects that can’t be remedied

Notes related to both physiological and structural condition follow the categorization in order to support the statement and give greater detail on the quality and value of the tree.

**Preliminary Management Recommendations**

These may include further investigations for the presence or extent of decay, climbed inspections, potential for wildlife habitat, ivy removal or pruning works where access is a non-moveable aspect. Trees assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as practicable.

**Estimated Remaining Life Contribution**

An estimate of the remaining life contribution in years that the tree or group of trees is expected to have based on species and condition on the site in its current context. The following bands are used:

- **<10** Tree is dead or dying and unlikely to contribute beyond 10 years.
- **>10 / <20** Tree is assessed as being able to contribute to the site for 10 – 20 years.
- **>20 / <40** Tree is assessed as being able to contribute to the site for 20 – 40 years.
- **>40** Tree is assessed as being able to contribute to the site for more than 40 years.
Quality & Value Category

Quality and value grade classification according to BS5837:2012 Table 1 – Cascade Chart for Tree Quality Assessment.

Glossary of Terms

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

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

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

Tree Constraints Plan (TCP) A TCP is a layout design tool which is prepared by an arboriculturist showing the below ground constraints represented by the RPA’s and above ground constraints the retained trees on and adjacent to the site pose by virtue of their size and position in relation to shading and influence.

Arboricultural Impact Assessment (AIA). A study undertaken by an arboriculturist to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of any site layout proposal.

Arboricultural Method Statement (AMS). A methodology for the implementation of any aspect of development that has the potential to result in loss of or damage to any tree. The AMS is also likely to include details of an onsite tree protection monitoring regime.

Tree Protection Plan (TPP). A scale drawing prepared by an arboriculturist showing the finalized layout proposals, tree retention and tree and landscape protection measures detailed within the AMS which can be shown graphically.

Construction Exclusion Zone (CEZ). An area based on the RPA (in m2), of retained trees identified by an arboriculturist, to be protected during development including demolition and construction work, by the use of barriers and/or ground protection fit for purpose to ensure the successful long term retention of the tree.
### Table 1: Casework Chart for Tree Quality Assessment

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<th>Casework</th>
<th>Description</th>
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| Category A | Trees with minimal characteristics of higher quality, but not necessarily of the highest quality.
| Category B | Trees with significant characteristics of lower quality, but not necessarily of the lowest quality.
| Category C | Trees that are particularly good for the purpose of the assessment.

**Appendix**

- Trees that are dead or dying, or trees that are dead or dying due to disease.
- Trees that are dead or dying due to natural causes.
- Trees that are dead or dying due to environmental factors.
- Trees that are dead or dying due to human activity.
- Trees that are dead or dying due to other causes.

**NOTE:**
- Trees that are dead or dying due to natural causes are not included in the assessment.
- Trees that are dead or dying due to human activity are not included in the assessment.
- Trees that are dead or dying due to other causes are not included in the assessment.
- Trees that are dead or dying due to environmental factors are not included in the assessment.

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**Rule:**
- Trees that are dead or dying due to natural causes are not included in the assessment.
- Trees that are dead or dying due to human activity are not included in the assessment.
- Trees that are dead or dying due to other causes are not included in the assessment.
- Trees that are dead or dying due to environmental factors are not included in the assessment.

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**Criteria:** (including suggestions where applicable)
Appendix 4

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