

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

- Arboricultural Method Statement
- Arboricultural Impact Assessment
 - Tree Protection Plan



Land to the North of Hanmer Arms, Hanmer, Whitchurch, SY13 3DE

Prepared for:

Carlton Holdings

Drawing ref no:

DW/HA/RL/004/BSTS

Planning Application number:

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Control Sheet:

Architect:	Enzygo
Local Authority:	Wrexham Borough Council
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Arboricultural Impact Summary:

UFG visited the site on several occasions during Oct 2018 and surveyed the trees using the BS 5837 2012 guidelines.

There were 26 mature trees surveyed including 4 sections of hedge. The quality and retention category of the trees surveyed is described in the attached tree survey data sheet.

None of the trees surveyed at present are reported to be removed.

The condition of the trees through the site was generally good, although the mature OAK **Tree 3** is host to a fungal infection and at present its retention is questionable.

The south eastern boundary of the site abuts the northern boundary of Hanmer Conservation Area.

A summary of the surveyed tree condition/s following the 'BS 5837 Retention categorization system' as set out in following table:

Arboricultural Impact Summary:

Based upon the site layout; the impact of the proposed development is using the following 'Impact Guide' considered by UFG as **Very Low** / **Low** - as all the trees surveyed are being retained and the tree protective measures as described below assist in minimizing the impact of development.

Very Low = No intrusion within any the 'tree root protection area/s'.

Low = Some minor intrusion in to some of 'tree root protection area/s', with no considered significant damage to tree roots and tree canopies.

Moderate = Intrusion into 'tree root protection area/s' that is estimated to possibly cause tree root cutting to tree roots greater than 15mm in diameter and with proposed structures conflicting with tree canopies.

High = Tree/s require felling and tree stumps will be dug, with the proposed development intruding into 'tree root protection area/s' by more than approx. 30% and involving tree root cutting to tree roots greater than 25mm in diameter and with proposed structures conflicting with tree canopies.

BS 5837 Retention Category:	Number of Trees:
U - Category	0
A - Category	17
B - Category	12
C - Category	0

Very High = A substantial amount of tree felling, and tree stump removal is required and / or the proposed developed in intruding within any the 'tree root protection area/s' by more than approx. 50% involving tree root cutting to tree roots greater than 50mm in diameter and with proposed structures conflicting with tree canopies.

The following points are summarized:

The arboricultural assessment and consequential tree protection plan are partly limited by the level of detailed site construction information supplied to UFG.

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1. The Brief:



1.1 Urban Forestry Group [UFG] has been asked to undertake a 'BS 5837 Tree Survey / Tree Protection Plan' in relation to the above site address, at the request of the local planning authority.

To achieve this UFG will provide BS: 5837 – 2012 services for trees within and affecting the application site, that could influence, or be affected by the development; this includes:

- BS: 5837 - 2012 Tree Survey.
- Tree Constraints Plan.
- Arboricultural Impact Assessment.
- Arboricultural Method Statement.
- Tree Protection Plan.

2. Site description:

2.1 The site was visited on several occasions during Oct 2018.

2.2 The site represents an open field that is currently used by sheep for grazing. The land is undulating with the higher areas having prominent views over the surrounding rural countryside. They are mature trees at various points around and on the boundary with multiple sections of boundary hedge line.

Image 1 – Standing under the canopy of Tree 1 looking north east down the access track to the Hanmer Arms.

2.3 There is a substantial pond area at the site entrance that is struggling to maintain a water level. Due to the slope and vegetation it is not clear if there is a blocked-up field drain feeding this pond? It is recommended to clarify this and assess this water feature, with the view to it being managed as a water feature with new aquatic planting and soft landscaping to develop it as an important wildlife feature.

3. Project Development Questionnaire:

3.1 This document is cross referenced to the attached **BS 5837 Tree Survey** site plan and using the information set out in **BS 5837 – 2012**; the following questions 4 – 29 have by UFG been requested to be answered in detail, by the Client and / or there agent, by use of a 'project development questionnaire', that can be viewed online at:

<https://urbanforestry.co.uk/terms-of-engagement-form.html>

3.2 The answers provide site specific information, they will be directly copied in to the relevant section as below and will be used in the impact assessment of the proposed development on the trees to determine which trees are proposed to be removed, retained, pruned and including the level of tree protection / fencing required.

3.3 It is important that the information provided is sufficiently detailed, as UFG relies on this information to form its arboricultural assessment and consequential tree protection plan as here set out.

3.4 Where for whatever reason, no information has been provided, the relevant section/s will be left blank and marked as:
no answer provided.



Image 2 – Standing under the canopy of Tree 1 looking north east down the access track to the Hanmer Arms at the two groups of trees surrounded by wooden post and rail fencing, with the boundary in the distance rolling over the hillside.



3.5 Any relevant notes and / or comments input by UFG will be put in brackets.

Start:

Q4. Tree Preservation Order [TPO] Details:

No.

Q5. Conservation Area Details:

The south eastern boundary of the site abuts the northern boundary of Hanmer Conservation Area.

Image 3 – Standing under the canopy of Tree 2 along the boundary Line of Group 1.

Q6. Description of the proposed development:

19 no. Holiday Lodges, Reception Building and Ancillary Works.

Q7. Trees / Hedges to be removed:

7.1 Refer to revised layout plan.

7.2 [Following the electronic tracing of the proposed site plan layout as seen on the attached 'BS 5837 Tree Survey' site plan, a revised PDF site plan has been provided, after speaking with Mr. Richard Lee [Project Planning & Property Consultant] the there are some minor changes to the access track and footpaths within the proposed development area.

7.3 No trees or hedges are to be removed, although the mature OAK **Tree 3** is host to a fungal infection and at present its retention is questionable.

Q8. Site construction access:

Via proposed site access.

Q9. Contractor's car parking:

Off-site.

Q10. Phasing of construction works in relation to tree protection:

Ground works followed by laying out access road and siting of lodges.



Image 4 – Standing at the south of the site, looking at Tree 13 in off centre foreground.

[Construction sequence with any special requirements other than tree protective fencing as a total exclusion zone that are secured in place prior to, during and post construction until all building works are completed and signed off].



Q11. Use of any heavy plant:

Heavy Plant [Please circle]: **YES** / NO

If **YES** please give details:

Earth moving to provide level plots - refer to plan, showing extent of earthworks. HGV for delivery of materials and lodges.

Q12. The availability of special construction techniques in relation to trees:

Not required.

Image 4 – looking Tree 3, that is infected with fungi at the base and on the trunk.

Q13. Any construction proposals for bridging tree roots, or inserting tree root barriers:

Not required.

Q14. The location and space including any proposed trenching for all:

A. Service runs	G. Water
B. Foul and surface water drains	H. Electricity
C. Land drains	I. Telephone
D. Soakaways	J. Television
E. Gas	K. Communications cables
F. Oil	L. Other

- A. Service runs.
- B. Foul and surface water drains.
- C. Land drains.
- D. Soakaways.
- E. Water.
- F. Electricity.
- G. Telephone.
- H. Television.

Outline planning application. To be dealt with by condition. Services likely to be in access road. Surface water drainage towards pond.

Q15. Depth and foundation type / profile for driveways:

TBC.

Q16. All changes in ground level, including the location of retaining walls, steps, and making adequate allowance for foundations of such walls and back fillings:

Refer to Enzygo plan.

Q17. Space for cranes, plant, scaffolding and access during works:

TBC.

[Contractors operating cranes, plant or scaffolding are here recommended in advance of any works to follow the BS section '7.3 Tree protection during demolition' and to also ensure crane jibs are not going over or under the tree protective fencing areas that could in any way damage trees].

Q18. Space for site huts, temporary latrines [including their drainage] and other temporary structures:

TBC.

Q19. The type and extent of post landscaping works, which will be within 'tree root protection protected' areas:

TBC.

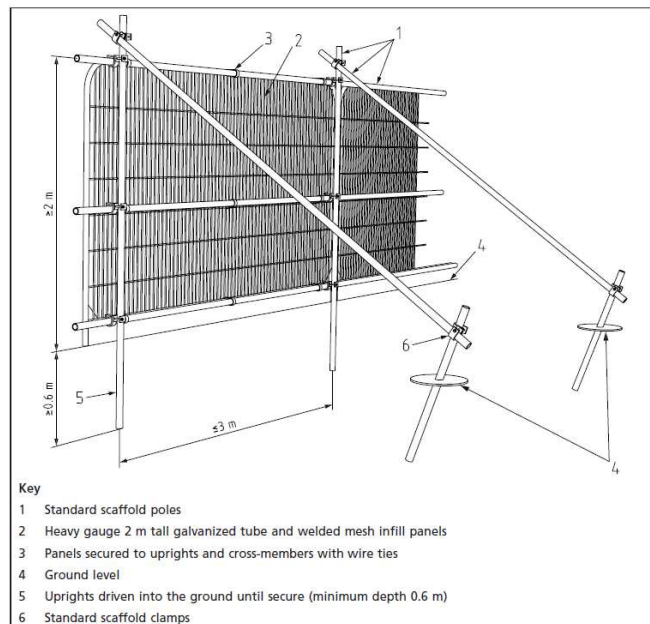
[it is recommended that the inclusion of trees within the proposed soft landscaping design enables some screening of the lodges which includes providing some privacy between the lodges and makes for a landscape that smoothly blends in with the existing landscape].



Q20. Safe storage of materials:

TBC.

Image 5 – looking at the two fungal brackets on Tree 3, the upper bracket is more visually active.



[The appointed Contractor is to provide a plan for the location of material storage, ensuring that they are in positions that do not conflict with the location of existing trees to be protected during the works. This information is to be issued to both the architect and the local authority for approval prior to any works commencing].

Q21. If there is a slope/s on site; how are any materials or harmful liquids to be stored so that they don't seep into the ground and damage trees and tree root systems? This includes washing out cement mixers and construction equipment:

TBC.

[Where applicable any harmful liquids will be stored in the lockup. Cement mixers to be washed out into containers and cleaned out outside the tree root protection areas].

Image 6 - BS 5837 - 2012 Figure 2 - Default specification for tree protective barrier.

Q22. Details of any new tree planting to provide mitigation for removal of any tree/s:

TBC.

Q23. Above and below ground constraints:

TBC.

Q24. Road safety and visibility splays:

Refer to Enzygo Layout Plan.

Q25. Boundary Fencing Detail:

TBC

Q26. Arboricultural implications of retaining trees with a satisfactory juxtaposition to the new development:

None that I'm presently aware of.

[Whilst the development itself is outside the tree root protection areas [RPA's], the impact of development is likely to have an impact of the use of hedgelines including the ground cover used by nesting birds and at night time / early morning by mammals such as hedgehogs and where possible; it is recommended to leave the boundary landscape as intact as possible and build on to it, with suitable new planting to make a more impressive landscape feature with wildlife features.



Image 7 – Close up underside image of the active fungal bracket positioned on the trunk.

Q27. Any identifiable damaging activities, such as excavations, changes in grounds level, positions of structures, modifications and roads etc, in relation to being in and around the 'tree root protection areas' of retained trees:

None that I'm presently aware of.

Q.28 Is there other relevant information, that you think might influence the trees, either above, or below ground level:

No.

[It is unknown at present as to extent and volumes of the cut and fill areas of ground / soil and the possible impact this might have on trees].

End of the 'Project Development Questionnaire'.



Image 8 – Standing in the vicinity of Tree 3 looking north east along the substantial boundary screen – Group 3. [There is an access gate approx. central in this tree group].

29. Above and below constraints posed by existing trees:

29.1 Based on the information provided in the 'Project Development Questionnaire' and from the positions of the calculated tree root protection areas as seen on the attached 'BS 5837 Tree Survey – site plan' as red circles the following above and below constraints posed by existing trees are identified along with a proposed plan for tree protection:

29.2 The existing gate access between T-01 & T-02 adjoining the car park may want to be used for access in to the site?

29.3 There is limited space around **T-04 & T-07** so the protective fencing is recommended to be fixed on to the existing wooden fencing.

29.4 It is understood that the construction of the lodges, is to be undertaken from the new proposed access road and that storage of materials and access for the lodges will not involve any detrimental conditions of the boundary hedges and trees. This can be confirmed by the appointed construction company.

[A draft tree protective fencing plan is included on BS: 5837 Tree Survey site plan as attached using the BS 5837 - 2012 Default specification for tree protective barriers].

29.5 [These tree protection details should be incorporated into relevant subsequent plans, method statements, [tree protection plans] used for design purposes and construction drawings issued for use on site, to ensure that all interested parties are fully aware of the areas in which access and works may and may not take place].

29.6 [Where underground services require trenching works, they should be situated outside the Tree Root Protection Zone. If for whatever reason this is not possible, then any associated trenching works that are required should follow section '**7.7 Underground and above ground utility apparatus**' of the BS 5837].

30. Post construction Landscape near trees:

TBC.



Image 9 – the site access within Group 3.

31. General considerations for demolition and construction activities in proximity to existing trees:



Image 10 – An example of an exposed mature tree root system.

31.1 It is important to consider the underground respiration requirements of trees ideally the ground around trees needs to be porous and allow gaseous exchange from the soil environment to maintain a soil environment where tree roots can undertake their functions.

31.2 No fires are to be lit on site as the heat produced can seriously damage soil / tree roots and the canopies of trees that will become scorched

31.3 To avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ.

31.4 Prior to any backfilling, retained roots should be surrounded with topsoil or uncompacted sharp sand (builders' sand should not be used because of its high salt content, which is toxic to tree roots), or other loose inert granular fill, before soil or other suitable material is replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots.

31.5 Where an existing hard surface is scheduled for removal, care should be taken not to disturb tree roots 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.

31.6 Where permanent hard surfacing within the RPA is considered unavoidable, site-specific and specialist arboricultural and construction design advice should be sought to determine whether it is achievable without significant adverse impact on trees to be retained. This may involve the digging of test pits or trenches to determine any tree root activity as part of the assessment.



Image 11 – Standing on the highest point of the site looking north east at the boundary hedge and surrounding rural landscape.

31.7 Raising levels should be achieved by use of a granular material which remains gas- and water-permeable throughout its design life.

31.8 The use of traditional strip footings can result in extensive root loss and should be avoided. The insertion of specially engineered structures within RPAs may be justified if this enables the retention of a good quality tree that would otherwise be lost (usually categories A or B). Designs for foundations that would minimize adverse impact on trees should include attention to existing levels, proposed finished levels and cross-sectional details. To arrive at a suitable solution, site-specific and specialist advice regarding foundation design should be sought from the project arboriculturist and an engineer.

31.9 Wherever possible, service / utility apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA.

31.10 Consideration could be given to the reuse or sale of timber from felled trees, including using the composted chippings as mulch.

31.10 Once a layout for the development area has been finalized and approved by the local planning authority, an arboriculturist should review the relationship of the development to the trees, and should prepare a schedule of tree works listing all the trees that require work (by number), accompanied by a cost of the tree work to assist project budgeting including the requirement of any road permits to undertake tree surgery work over carriageways.

32. Wildlife considerations:

Whilst the development itself is outside the tree root protection areas [RPA's], the impact of development is likely to have an impact of the use of hedgelines including the ground cover used by nesting birds and at night time / early morning by mammals such as hedgehogs and where possible; it is recommended to leave the boundary landscape as intact as possible and build on to it, with suitable new planting to make a more impressive landscape feature with wildlife features.

33. Specifications for tree root pruning:

Where tree roots less than 15mm in diameter are located then they should be cut cleanly using loppers; so that no tree roots are not pulled or dragged out of the ground using mechanical devices. Where tree roots are greater than 15mm in diameter are encountered then they should be assessed under the arboricultural site monitoring with any plans quickly drawn up and sent to the local planning authority for approval.

34. An indication of potential direct obstruction of sunlight:

The trees do not cast excessive shade. The boundary hedge Group 3 will cast some shade and the western corner of the site is seen to be the area most likely to be shady.

35. Tree Protective Fencing Specification:

35.1 All trees that are being retained on site should be protected by barriers before any materials or machinery is brought onto the site and before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers should be erected to create a construction exclusion zone.

35.2 The protected area should be regarded as sacrosanct, and, once installed, barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the local planning authority.

35.3 Where required, pre-development tree work may be undertaken before the installation of tree protection measures, with the agreement of the local planning authority if appropriate.

35.4 If required the project arboriculturist can confirm that the have been correctly set out on site, prior to the commencement of any other operations

35.5 Care should be exercised when locating the vertical poles to avoid underground services.

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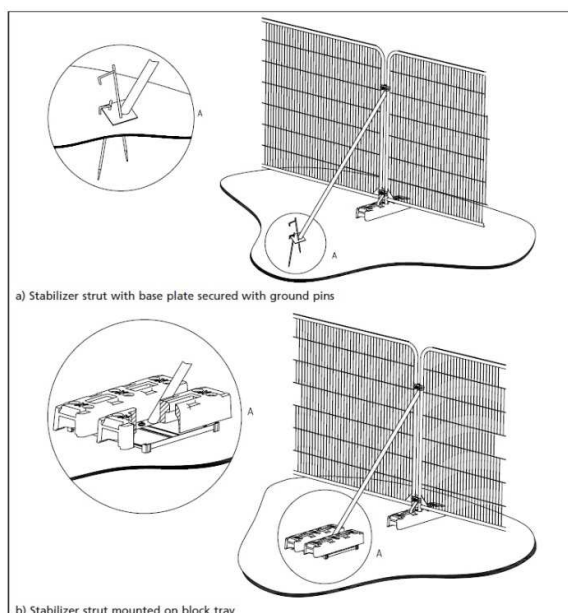
35.6 The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

35.7 Due to human construction traffic moving around the development site; the use of 20mm exterior plywood boards are recommended to be used as secured ground protection between the tree root protection fencing and extremities of the tree root protection areas, to minimise any possible compaction to the soil / tree root environment. This marked on the tree survey site plan as 'Ground Protection'.

36. Arboricultural site monitoring:

36.1 None in place.

36.2 Section 6.3 of BS 5837: 2012 [Trees in relation to design, demolition and construction – Recommendations] states:



'Wherever trees on or adjacent to a site have been identified within the tree protection plan for protective measures, there should be an auditable system of arboricultural site monitoring. This should extend to arboricultural supervision whenever construction and development activity is to take place within or adjacent to any RPA.

36.3 A calendared programme of 'arboricultural site monitoring' should check that the approved tree protection measurements including any recommended ground cover are correctly implemented and signed off as completed satisfactory at the appropriate stages of development.

36.4 A PDF copy of this programme of 'arboricultural site monitoring' can be supplied to all parties during the inspection process; so that any special arboricultural protection considerations are identified and observed by building contractor's, including any other relevant parties during the approved works, so that the trees are adequately protected.

Image 12 - BS 5837 - 2012 Figure 3 Examples of above-ground stabilizing systems.

36.5 Existing planning regulations include the provision for local authorities to enforce planning requirements. The project arboriculturist appointed by the developer can help monitor site activity, but enforcement is the responsibility of the local authority.

36.6 If instructed to do; UFG can provide a spreadsheet based auditable system of 'arboricultural site monitoring', as a working part of the tree protection plan. Please contact the office for further details.

36.7 Site clearance including the pruning of trees should be undertaken outside the bird nesting season: Jan – Aug and should where applicable consider the recommendations of any ecological surveys.

37. Contingency Plans:

If prior to and / or during the works any questions arise concerning trees and tree protection; please either contact the local planning authority tree officer, quoting the planning reference number or Urban Forestry Group.

38. Post construction Landscape near trees:

TBC.

39. Our Environment:

39.1 Based on both existing and current scientific surveys reports in relation to climate change resilience and good building design; UFG adopts the view that rather than being just a tick on the 'development checklist', the retention of trees, the surrounding plants, investment in soft landscapes, tree planting and the management of trees is a '**must do now**' objective.

39.2 This requires a social commitment and in the case of development projects, a written narrative, [Account of connected events] as to how 'site specific tree care' is to be achieved and implemented over both the short and the long term of this and all development projects.

39.3 This will require an investment in the necessary and 'radical gear shift in thinking' because; as climate change and variation from previous patterns of weather becomes more prevalent and more destructive, it is increasing important to understand the climatic benefits of how trees and plants positively influence our environment.

40. References:

1. Image * - <http://gibneyce.com/index.html>

Customer / Contractor Notes: