Arboricultural Impact Assessment and Arboricultural Method Statement

Proposed Shed – At: Northfield, Station Rd, Overton-on-Dee, Wrexham.

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Contents

1 Brief 1

2 Discussion - General Tree Roots 1

3 Discussion specific 2

4 Protective Fencing 3

5 Additional Precautions Outside Fences Areas 4

6 Installation of surfaces 4

APPENDIX 1 6

1 Brief

1.1.1 The author of this report is Robert Mays. He holds an FdSc arboricultural Science degree (L5), also a Level 2 Certificate in Arboriculture; He is a certificated practitioner of CAVAT (Capital Asset Valuation for Amenity Trees) and holds the Lantra Basic Tree Inspection certificate. He has been employed within the arboricultural industry for 18 years, working as a senior/lead arborist for the last 14 years. He has a vast range of experience in the operational and practical management, and inspection of trees.

1.1.2 Following a request made by council officers in respect of a proposed planning application at Northfield, Station Road, Overton-on-Dee, Wrexham. Evolution Arbtech have been instructed to produce an arboricultural impact assessment and arboricultural method statement. The proposed work includes erecting a shed and the associated landscaping to make good.

1.1.3 This document will inform the case officer, other planning specialists and contractors on a suitable working methodology to reduce and mitigate the impact of the proposed works on the trees and hedges on site.

2 Discussion - General Tree Roots

2.1.1 The majority of the root system, of a tree, is in the surface 600mm of the soil, extending radially for distances frequently in excess of the trees height. Beyond the main structural roots (close to the base of the trunk), the root system rapidly sub-divides into smaller diameter roots: off this main system, a mass of fine roots develops.

2.1.2 The shape of the main structural roots develops in response to the need for the tree to have physical stability. Beyond these major roots, root growth and development is influenced by the availability of water and nutrients. Unless conditions are uniform around the tree, which would be unusual, the extent of the root system will be very irregular and difficult to predict. It will not generally show the symmetry seen in the branch system.

2.1.3 The parts of the root system, which are active in water and nutrient uptake, are very fine, typically less than 0.5mm diameter. They are short lived, developing in response to the needs of the tree, with the majority dying each winter. It is essential that conditions in the soil remain conducive to the healthy growth of these fine roots so that the water and nutrients necessary for healthy tree growth can be absorbed.

2.1.4 All parts of the root system, but especially the fine roots, are vulnerable to damage. Once they are damaged, water and nutrient uptake will be restricted until new roots have regenerated. Vigorous young trees will be capable of rapid regeneration, but over mature trees will respond slowly, if at all.

2.1.5 In order to live and grow, roots need oxygen from the soil. Respiration by the roots and other soil organisms depletes this oxygen and increases carbon dioxide levels in the soil; a correct balance of these gases is normally maintained by diffusion between the soil and the atmosphere. Anything, which disturbs this balance, will affect the condition of the root system.

2.1.6 The factors that most commonly affect this diffusion adversely, and therefore damage roots, are the following: - a) Compaction of the ground, which reduces the space between soil particles. This is particularly important on clay soils. A single passage by heavy equipment on clay soils or storage of heavy materials can cause significant damage. b) Changing soil levels, even for a few weeks. c) Covering the root area with impervious surfaces. d) A rise in the level of the water table. Roots can tolerate submersion for short periods. But a permanent rise will deplete the soil of oxygen.

2.1.7 Serious damage is often caused during preliminary site works by stripping the topsoil. For this reason, such works should be avoided until protective fencing has been erected.

2.1.8 Excavations in the rooting area can sever roots. As the majority of roots are in the surface 600mm, even shallow excavations can cause damage.

2.1.9 Excavations for foundations, landscaping or service trenches are usually sufficiently deep to sever most of the roots, and it should therefore be assumed that all parts of the root system beyond the excavation would no longer serve the tree. Excavation or soil stripping which sever or damage the roots may impair the stability of the tree and make it dangerous.

3 Discussion specific

3.1.1 Method Statement: Before any form of development commences on the site the following works should be undertaken: -

3.1.2 Tree Works, to be undertaken in line with BS3998:2010 Tree Works - Recommendations.

3.1.3 A site survey has been undertaken. The site survey identified the following elements that are creating constraint:

- The current site access consists of a standard agricultural field gate, a mature crack willow is located to the right-hand side of the access along the southern boundary, the tree is growing up against a neighbouring shed in the adjacent property. The tree is the largest and most prominent on site, the field to the north of the tree will have an abundance of tree roots within the area immediately adjacent to the tree.

- To the east of the proposed shed is a mixed native hedgerow running north to south. Again, there will be an abundance of roots in the immediate vicinity of the hedge.

- The tree is classed under BS5837:2012 as retention category B1.

- The hedge is classed under BS5837:2012 as retention category A2.

- The remaining boundaries of the proposed site are made up of rail type fencing.

3.1.4 During my site assessment I noted the proposed access route as detailed within the site layout plan will utilise the existing access. This access is well away from the RPAs (Root Protection Areas (12 x stem

diameter at 1.5m)) of the willow tree and the mixed native hedge. Even though the proposed access is well away from the calculated RPAs, the site's repeated agricultural access adjacent to the willow tree will likely have impacted on the health of the roots in this location due to compaction of soils.

An inspection of the base of the tree indicates basal decay which will likely result in the failure of this tree within the next 10 years irrespective of any development occurring as such the removal of this tree would be reasonable as part of any general management of the site. This tree should therefore not form a material consideration in the development of the site. It is the intention that following development a quality landscaping scheme will be instigated to include new hedges and trees in keeping with those found within the local landscape, this scheme will be designed to enhance the native flora and fauna providing visual amenity and environmental enhancement.

3.1.5 The proposed layout for the wider development is located outside of the areas where the roots of existing boundary trees and hedges are likely to be located and are therefore not likely to require any mitigation or alternative working methods.

3.1.6 The construction of the shed is located a minimum 2.5m offset from the existing hedge line. This will ensure that any potential root damage is minimised while also protecting existing habitat features which will be bolstered with new hedge plants.

Species	Height (m)	DBH (m)	Crown Spread (m)	Notes	Retention Cat
Salix fragilis (crack willow)	12.5	1.0	10	Basal decay cavity from ground level to 1.0m high. Wood blocks attached with nails to 2.0m. Poor pruning throughout crown and some broken limbs.	B1
Mixed native hedge	1.8	N/A	N/A	None	A2

Table 1.

4 Protective Fencing

4.1.1 Fencing used on the site should fully comply with figure 7.3 contained within BS 5837:2012 (Trees in Relation to Construction - Recommendations) see Figure 1 of the attached appendix, however this may not always be possible and alternatives can be considered where reasonable.

4.1.2 The fencing should be strong and suitable for local conditions. It should also take into account the degree of construction activity on the site.

4.1.3 The fencing should be at least 2.3m in height and should be erected with both a vertical and horizontal scaffolding framework capable of withstanding impact, with vertical tubes spaced at a maximum of 3 m. This should support either weldmesh panels which should be securely fixed with wire or scaffold clamps.

4.1.4 Notices should also be erected on the fencing stating 'Protected Area - No operations within fenced area'.

4.1.5 The positioning of the protective fencing is also very important and should be erected in the in a manner so as to protect the normal rooting area for retained trees and hedge as calculated within BS5837:2012 and detailed within this report. In this particular development it is noted that the proposed works are essentially outside the rooting area of any retained trees and hedges and as such the pragmatic approach is to use alternative fencing methods, this can be achieved with orange plastic mesh fencing and road pins to demarcate the construction exclusion zone

4.1.6 Once the fence has been erected it should be clearly signed as per 2.2.4 above never be crossed and particular care should be taken not to store any materials or soil within the protected area.

5 Additional Precautions Outside Fences Areas

5.1.1 Oil, bitumen, cement or other material likely to cause damage to the tree will not be stacked or discharged within 10m of the trees stem or within the protective area. Also materials in general will not be stacked or discharged within the exclusion zone.

5.1.2 Concrete mixing and washing will not be carried out within 10m of any retained trees.

5.1.3 Fires will not be lit beneath the foliage or in a position where the flames could extend to within 5m of the foliage, branches, or trunk. If the fire is large, then this may necessitate a distance of at least 20m.

5.1.4 Trees that are to be retained will not be used as anchorage for equipment.

5.1.5 Notice boards, telephone cables, or other services will not be attached to any part of the retained tree.

5.1.6 Care should be taken when using cranes or other equipment near the canopy of the retained trees, low branches should be appropriately pruned by a suitably qualified person using the correct equipment for the task to achieve the minimum clearance required. Also any trees to be felled in proximity to the retained trees should be done so with particular care by appropriately qualified persons.

6 Installation of surfaces

6.1.1 Surfacing is required as part of the proposed existing access and parking area.

6.1.2 The following methodology describes the process for construction of surfacing within the site compound and any works to the main formal access track adjacent to the retained hedges and proposed planting areas.

6.1.3 The methodology is prepared on the basis of the sequence of operations necessary to complete the construction of the surfaces with the minimum damage to the trees / hedges proposed for retention.

6.1.4 Surface layer (turf layer max 50-60mm) to be scraped off. This will be undertaken using a 3 ton tracked machine fitted with a smooth bladed (non tined) ditching bucket, a banksman will guide the operator to ensure no significant tree roots are pulled or broken, once tree roots are located this will form the base layer and further scraping will cease.

- Where tree roots over 25mm diameter are identified and are required to be removed a suitable qualified arborist will undertake the necessary root pruning using appropriate hand tools to cleanly cut and remove the root before allowing any further surface works.
- Spread a suitable sub grade material (this should be inert e.g. sharp sand - to avoid soil contamination; this could be informed by the construction engineer over the length of the site access track to fill any small ruts.
- Construct edging using treated timber if required.
- Lay geotextile mat over smoothed area

- Spread the self-binding surfacing materials (Type 1) to the required depth to construct the required surface.

- Any tree works required will be undertaken as per BS3998:2010.

- Erect protective fencing to the edges of the working area to create a clearly defined construction area. It is understood the use of orange plastic mesh fencing is not in accordance with BS5837:2012 and that the use of such fencing does come with an inherent risk of being moved or ignored however given the construction methodology and layout of the site it is believed that heras fencing would be unnecessary for the majority of the site and a significant cost.

6.1.5 All excavations within the initial site access area should as a minimum comply with the detail shown in Figure 1 of the published NJUG guidance Volume 4 see figure 2 of the attached appendix. While this document is specific to the installation of utility apparatus by the utility industry it provides a useful reference to minimising damage to retained trees when working within the rooting area of retained trees.

APPENDIX 1

Figure 1. Tree Protection Fencing in accordance with BS5837:2012.

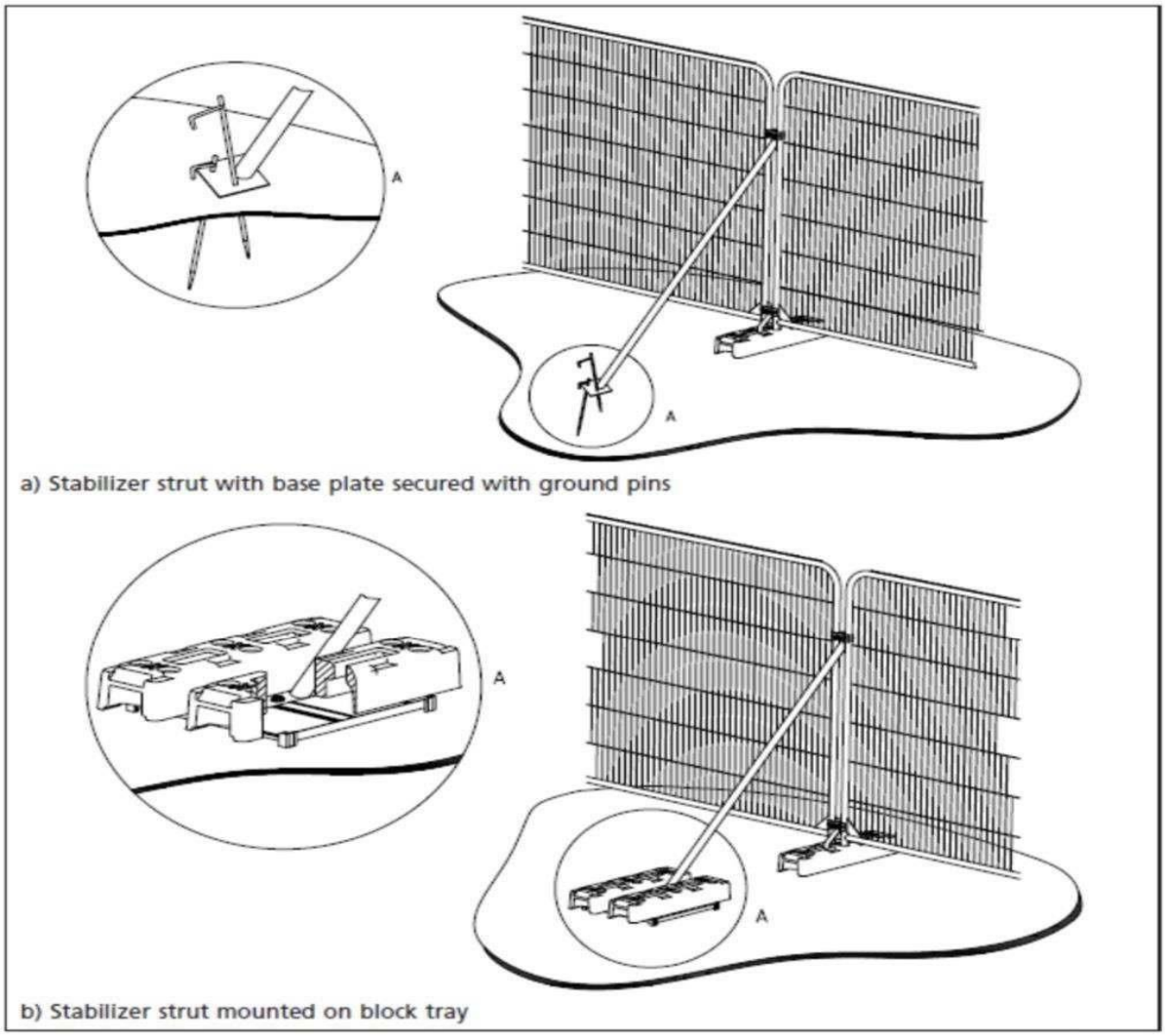




Figure 1. Satellite image of proposed site (Google). Tree and hedgerow highlighted in retention category colours; see below chart.

BS5837:2012 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 Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• 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 *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see [BS5837:2012]* ***4.5.7****.*			
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	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)	
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	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	
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	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	

FLAC Note

The original contents of the column *Identification on plan* have been replaced by FLAC in the version above; spot colours to RGB codes given in BS5837:2012 Table 2

Figure 2. Quality assessment retention chart BS5837:2012



Figure 3. Crack willow tree adjacent to neighbouring building along southern boundary.



Figure 4. Base of crack willow tree showing basal decay cavity and wooden blocks nailed to stem.

