ARBORICULTURAL IMPACT ASSESSMENT

BS 5837:2012 Trees in Relation to Design, Demolition and Construction-Recommendations

Arboricultural Survey and Impact Assessment Report (AIA)

At:

J.C.Edwards Pocket Park

Llangollen Road, Trevor, Wrexham

For:

Geraint Roberts Associates



November 2023 Ref 3188 rev A

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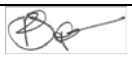
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TREE CONDITION AND ARBORICULTURAL IMPACT ASSESSMENT

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1.0 INTRODUCTION

1.01 Lingard Farrow Styles were commissioned in September 2023 by Geraint Roberts Associates to carry out a tree survey and assessment of the existing trees and prepare an Arboricultural Impact Assessment (AIA) and a Tree Protection Plan (TPP) to support an outline planning application for a proposed single residence. The trees were assessed on the 31 October 2023 with the inspection proceeding in line with the recommendations outlined in the British Standard **'Guide for Trees in Relation to Design, Demolition and Construction' (BS 5837:2012) section 'Tree Surgery, Tree Categorisation and Tree Constraints Plan'.**

1.02 The issues to be addressed in this report include:

- The condition and amenity value of the tree within the site.
- The relevant Planning Policy.
- The impact of the proposed development on the tree resource.

1.03 The survey involved a visual inspection of 45no specimen trees and tree groups, all in accordance with BS 5837:2012. The visual inspection was carried out from ground level and aided by the use of binoculars to assist in the high-level condition assessment of the trees. Trees were not climbed.

1.04 Tree dimensions were measured using a combination of a Richter Diameter Tape, Leica Disto Laser Rangefinder and a Nikon 550 Forestry Pro Laser Rangefinder. Trees were recorded with a stem diameter of 75mm plus (measured at a height of 1.5m above ground level unless otherwise stated in the tree schedules). Trees less than this stem diameter were recorded as shrubs or hedges. Any multistem tree diameters were measured and recorded as an aggregate diameter in accordance with BS 5837:2012. The visual inspection was carried out from Trees were not tagged.

1.05 This report is to be read in conjunction with Lingard Farrow Styles Tree Survey and Tree Protection Plans (TPP) dwgs no 3188-001 and 3188-002A.

1.06 Weather conditions at the time of the assessment were clear and cool.

2.0 SITE DESCRIPTION

2.1 The site is a brownfield site of approximately 275m2. Previously the main offices of J.C.Edwards it is now cleared of buildings, apart from the brick boundary feature wall fronting the Llangollen Road. The site forms part of a larger area of emergent damp woodland trees and understorey comprising

mainly Poplar, Willow, Birch, Ash, and Sycamore. Recent scrub clearance in 2023 has opened up the site for potential public amenity proposals.

2.3 The eastern boundary fronts onto residential land along Llangollen Road. Within this area are small emergent specimen Oaks at 4m high. If retained these will form good regenerative specimens.

2.4 The southern boundary merges into damp woodland TG21 sloping down to the watercourse to the south.

2.5 The northern boundary is defined with the feature brick wall and Llangollen Road.

2.5 To the west the site merges into light damp woodland and dense scrub.

3.0 EXISTING TREES

3.01 The quality and value of each tree or group of trees is recorded in the attached tree schedules. Each tree is allocated to one of four categories each of which is explained under the headings 'Tree Categorisation' in Section 4.0, and the Cascade Chart for Tree Quality Assessment shown in table 1 (appendix 11.2)

A	Good	Retain at all costs.
B	Medium	Retain
C	Fair	Retain
U	Dead	Remove from site

The position of the trees is indicated on the attached Lingard Farrow Styles identification plan dwg.no 3188-001.

3.02 Although this is not a safety inspection, the general condition of the trees is recorded and management recommendation may be made particularly where safety issues may be of concern from this brief ground level inspection. Trees should be subject to regular tree condition inspections and appropriate management and a full tree condition inspection is recommended and particularly on completion of any development.

3.03 The survey involved recording each tree or group within the site boundary with a stem diameter of above 75mm when measured at a height of 1.5m above ground level. In addition, trees over this size growing on land adjacent to the site, which are at or within a distance equal to 12 times their stem diameter from the boundary (or 10 times the stem diameter in the case of multistemmed trees). This is to ensure that adequate consideration is given during site development planning to root zones and canopies from adjacent trees which may impact on the site.

3.04 Additional information recorded in the tree schedules includes the following:-

Number (No) The tree number provides reference to an individual tree whether by way of T1, T2 (tree 1 or tree 2) and relates to an attached plan showing their proximate positions or through a series of numbers.
Species The species is the given name of the tree which is usually provided both in common and scientific names.

Height (H) The height of the tree is measured in metres and is usually approximate. If the abbreviation 'Clinom' appears after the given measurement, it indicates the tree has been measured with an optical measuring instrument, a Clinometer and is accurate to within 5 metres

Diameter (D) The diameter for each tree is in millimetres based on the diameter or circumference of a height of approximately 1.5 metres above ground level unless otherwise stated. All measurements are approximate.

Crown Spread (CS) The crown spread of the tree is measured as the radius (from the centre of the stem) in metres and in most cases covering the four points of the compass.

Crown Clearance (CC) The height of the first significant branch above ground.

Age The age of the tree is given based on its life expectancy. For example, an oak tree at the age of 100 years is perceived as early mature when a hawthorn at 100 years would be considered old. Age classes are given as follows

Young (age less than 1/3 life expectancy)

Semi mature (age between 1/3 – 2/3 life expectancy). Still growing vigorously but not as fast as a younger tree)

Early mature (age between 2/3 – 3/3 life expectancy).

Mature trees (above 3/3 life expectancy). Growth rates beginning to slow down at this stage)
Over mature tree (growth rates slow and possibly beginning to display signs of decline)

Veteran (decline is well set in but the tree may be of specific ecological value. The tree is likely to contain sufficient deadwood and decay that is a specific habitat for many rare invertebrates that are considered to be at risk from extinction)

Condition Column notes any defects, signs or symptoms of ill health, structural weakness or other problems that are easily and visibly recognised that may affect the physiology or structural integrity of the tree.

Recommendations The recommendations include the mitigating action appropriate action required for the specimen tree or group which includes considerations for future elements which may possibly risk or improve the physiology of the tree.

Estimated The estimated remaining life of each tree is recorded in four categories as follows:-

- less than 10 years
- between 10 - 20 years
- between 20 - 40 years
- more than 40 years

4.0 TREE CATEGORISATION

4.01 The primary purpose of this report is to provide an assessment of the trees and to determine their suitability for retention on the proposed development. To assist in this assessment the trees are categorised and given an appropriate grading. This grading is recorded in the attached tree schedules (appendix 11.1), by colour code the tree survey LFS dwg. no 3188-001 and the Cascade Chart for Tree Quality Assessment shown in table 1 (appendix 11.2)

4.02 Where young trees occur as individual specimens i.e. trees with stems less than 150mm diameter at 1.5m above ground level they are graded as C trees. Although these trees may have the potential to develop into mature specimens, they should not be allowed to dominate site layout considerations. In such cases there would be an opportunity to lift and transplant smaller trees to other locations.

4.03 The number of specimen trees/tree groups in each category are:

Grade A High		**0**		
Grade B Medium	**T16, T21, T24, T41**	**4**		
Grade C Low	**T01-T02, T04-T06, T08-T15, T18-T20, T22-T22, T28-T40, T42-T43, T45**	**34**		
Grade U unsuitable	**T03, T07, T17, T25, T26, T27, T44**	**7**		

5.0 ARBORICULTURAL IMPACT ASSESSMENT

5.01 Arboricultural impacts are a predicated change in condition as a result of a proposed development activity. This assessment provides an evaluation of the probable direct and indirect effects on the existing trees and the effect of the

trees on the development. The assessment considers the condition and character of the trees and includes, where required, impact mitigation. recommendations.

5.02 Impact of the Proposed Development on Trees

All 45no existing trees will be retained apart from 6no specimen trees which occur within the development area and will be removed as follows:

Fig 1. Tree losses & management required to implement the proposals.

T Spec. TG/SG Group H Hedge				
BS 5837 Grade	**A High quality**	**B Moderate**	**C Low quality**	**U Unsuitable**
Trees Removed	**nil**	**T16**	**T10, T18, T22, T23**	**T17**
Trees Managed	**nil**	**nil**	**T5,T6, T20**	**nil**

5.03 The medium /long term impact of the proposed development on amenity, landscape character and screening are therefore considered to be low.

5.04 Potentially damaging construction activities adjacent to trees.

Fig 2. Trees that require to be protected by special precautions.

T Spec. TG/SG Group H Hedge				
BS 5837 Grade	**A High**	**B Moderate**	**C Low**	**U Unsuitable**
Trees protected by special precautions other than fencing and/or ground protection	**nil**	**nil**	**nil**	**nil**

The proposed development impact on retained trees is considered to be low. All potentially damaging construction activities can be controlled by arboricultural supervision and appropriate construction method statements.

6.0 BUILD PRACTICABILITY

6.01 The potentially damaging effects of construction activities have been. considered as follows:

Fig 3. Potential effects of construction activity

Activity	Scope of Activity	Impact
1.Site access	The proposal utilizes access from the adjoining highway for main site access and most of the intensive construction activities	Nil
2.Contractor parking	Provided off site adjacent to the proposed development.	Nil
3.Workspace	Provided within the site.	Nil
4.Storage	Limited storage areas can be provided on site and outside the Root Protection Areas of all retained trees	Low

6.02 Future pressure for tree removal

Trees retained in close proximity to structures and hard surfacing have the potential to cause damage. Where these impacts are perceived as high there is likely to be pressure to remove retained trees. The assessment of how proposed development will be affected by retained trees is as follows:

Fig 4. Potential effects of future growth

Activity	Outcome	Impact
1.Shading	The proposal development will have no major shading effects during the day therefore no future pressure to remove retained trees.	Nil
2.Structural damage	The proposed development is sufficiently distanced from the majority of retained trees to prevent damage from root activity apart from trees nos, T5, T6, T10, T20 and T24, which will require precautionary considerations. There will be incursions into the RPA's of these 5no trees but this is acceptable within the 20% parameters of BS.	Low

6.03 Protection and Construction

All excavation, soil-stripping or site grading within the protected area must be monitored by an ACW (Arboricultural Clerk of Works). Passage of vehicles across the unprotected soil surface must also be avoided, especially when the soil is wet, as this will cause breakage of the surface roots, soil compaction and consequently reduced soil aeration. Surviving roots may not be able to

grow through the compacted soil. It is essential therefore that the immediate area of the development is protected from construction operations by ground protection as detailed in Appendix 11.4. As all the trees are on adjoining land the existing site fencing will provide protection to the immediate RPA's.

6.04 Conclusions on Impacts

Given that the specified protection is implemented to protect the retained trees, the development proposal will have no significant impact on the value of the existing trees to the local public amenity or landscape character.

7.0 ARBORICULTURAL METHOD STATEMENT

7.01 Once layout proposals have been finalized the British Standard recommends a Tree Protection Plan (TPP) is prepared. (LFS dwg.no 3188-001) see Appendices.

All retained trees will be protected with existing fencing and warning signs in accordance with BS 5837:2012 prior to commencement of site construction works (see appendices 11.4) and in agreement with the Local Planning Authority Arboricultural Officer.

Site supervision during any proposed tree work operations is to be undertaken by a suitably qualified person in conjunction with the Local Authority Arboriculture Officer. All tree work is to be carried out in accordance with BS 3998:2010 Tree Work Recommendations.

7.02 The Root Protection Area (RPA)

This is established using Table 2 from the standard BS 5837:2012 which is a 12 x multiplier of the stem diameter when measured at a height of 1.5m above ground level or 10 x in the case of multi stemmed trees. The precise distance required by each tree as a Root Protection Area expressed as a radius is indicated on the attached tree schedules and will be shown on the survey drawing which supports the layout proposals. These distances provide an Exclusion Zone for site construction works. The erection of a substantial temporary barrier is required at these distances and the type of suitable fencing is indicated in Figure 1. These measurements or distances are provided in metres as a radial measurement, unless otherwise stated, which is taken from the centre of the stem.

7.03 Rationale for Tree Protection

The part of the tree most susceptible to damage is the root system, which because it is not immediately visible, is most frequently ignored, although the stem and branches are also vulnerable. Damage or death of the root system will affect the health, growth, vigour, life expectancy and safety of the rest of the tree. This is because the majority of the tree's root system is found within

the top 600mm of the soil profile, extending radially for a distance frequently in excess of the tree's height.

The parts of the root system which are active in water and nutrient uptake are very fine, typically less than 0.5mm diameter. It is essential that the conditions in the soil remain conducive to healthy growth of these fine roots so that water and nutrients necessary for healthy tree growth can be absorbed, in addition to water and nutrients, roots, in order to function, require oxygen from the soil for the purpose of respiration. Diffusion between the soil and the atmosphere is essential. Anything which disturbs this balance will affect the condition of the root system and in turn the health of the tree. Compaction of the soil within the rooting zone of a tree will create long term damage through preventing respiration and the percolation of water. Vehicles tracking over the soil are responsible for such damage and such action must be reduced or avoided during construction works.

7.04 Construction Exclusion Notices

On completion of the exclusion zone protection by barriers and/or ground protection construction works can commence. All weather notices should be erected on the barrier with words such as 'Construction Exclusion Zone – Keep Out' (see appendix 11.3). A qualified and experienced person will visit the site to check the tree protection and signs until the protection is removed.

7.05 Additional Considerations

In addition, the following should be addressed or avoided:

a) Care should be taken when planning site operation to ensure that wide or tail loads, or plant with booms such as jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance of trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus necessitating access facilitation pruning.

b) Material which will contaminate the soil e.g., concrete mixings, diesel oil and vehicle washings should not be discharged within 10m of the tree stem.

c) Fires should not be lit in a position where their flames can extend to within 5m of foliage, branches or stem. This will depend on the size on the size of the fire and the wind direction.

d) Notice boards, telephone cables or other services should not be attached to any part of the tree.

e) Trees to be felled that are adjacent to, or that lie within a continuous canopy of trees to be retained will be removed with particular care. In some cases, a tree may have to be removed in section to avoid damage.

7.06 Maintaining the Protective Barrier

Special attention should be given to maintain the 'Protective Barrier' during the construction phase ensuring that it remains rigid and complete. In order to avoid disturbances to the Protective Barrier once it is installed it should be inspected on a daily basis. Repairs shall be made immediately should it be damages or not fit for the purpose intended.

7.07 Site Construction Area

Position to be outside the Root Protection Areas (RPA's) with access to be agreed with the contractor prior to commencement.

7.08 Contractors Car Parking

Position to be offsite away from the Root Protection Areas (RPA's) .

7.09 Intensity and nature of Construction Activity

It is anticipated that construction activity will be low. All Construction Exclusion Zones must be fenced off prior to commencement.

7.10 Phasing of Construction Works

Any phasing plan must include reference to the maintenance of tree protection zones particularly with material storage and service runs.

7.11 Space required for all Foundation Excavation and Construction Works

All proposed excavated materials are to be stored well outside the RPAs of the retained trees. Position to be agreed prior to site works commencement.

7.12 Construction of Suds paving adjoining existing trees

The installation of the proposed Suds paving will require limited excavation within the Root Protection Zones. The methodology for protecting the tree roots during erection work is as follows:

- Carefully scrape away the topsoil and ground vegetation with hand tools to a depth of 50mm or until primary tree roots are located.
- If tree roots are encountered during excavation protect with damp hessian during screen erection works. Remove hessian before backfilling.
- Any tree roots above 10mm diameter that are damaged are to be cleanly cut with sharp secateurs,
- A watching brief will be required during construction works to monitor protection works.

7.13 Underground Service Routes

There will be no service runs such as foul water and surface water drains, land drains, soakaways, gas, oil, electricity, telephone, television, or other communication cables will be kept outside all established RPAs of any retained trees.

7.14 Changes in Ground Level

There are no significant level changes proposed within any of the established RPA's of retained trees at the time of writing this report.

7.15 Space for Cranes, Plant and Scaffolding

The limited factors in terms of these considerations are the trees and the size and weight of the equipment. Often tall vehicles collide and cause collision injury to trees environment and the tree's physiology. For this reason, care must be taken when operating cranes to avoid collision injury occurring. All plant must be tracked on, off and around the site avoiding the established RPA's. Where there is no alternative and with acceptance of a Method Statement by the LAP tracking over root plates may be possible if load bearing ground plates are used and are sufficient to support the spread and load of the plant equipment.

7.16 Space for site Huts, Temporary Latrines and other Structures.

Site huts and latrines are to be located within an area of the site that is outside the RPA's.

7.17 The Type and Extent of Landscaping Works required within Tree Protection Areas.

The proposed landscape design takes account of the existing trees and any proposed planting within their RPA's should be notched planted to avoid conflict. There is new tree and shrub planting proposed as part of the scheme. (see LFS dwg no 3188-3).

7.18 Space for Storing Materials, Spoil and Fuel and for the Mixing of Cement and Concrete.

Such activities can have implications on tree health if they occur within the established RPA or if they have the ability to run into an RPA. All such activities will be kept clear of such special areas. A 'Cement Washing Zone' should be created at least 15m away from any retained tree.

7.19 The Effects of Slope on the Movement of Potentially Harmful Liquid Spillage on or into Protected Areas.

It is essential that allowances will be made for the slope of the ground so that damaging material such as concrete washings, mortar or diesel oil cannot run towards tree root zones. In such areas a ground level barrier of timbers covered with heavy duty PVC dug into the ground outside of the tree root

zones will be required. This barrier will require daily inspection to monitor its integrity. In all cases site operations are to take account of this requirement in site planning, set up and operation.

7.20 Summary of Arboricultural Considerations During Construction Stage.

a) Construction Exclusion Zone Fencing

- Timing for setting out, construction and completion of fencing or ground protection in accordance with phasing plan.
- Specification for fencing and/or ground protection to be in accordance with BS5837:2012

b) Storage of Materials/Offices/Fuels

- Identification and reservation of land for storage of materials
- Parking of vehicles, location of offices, welfare facilities and fuels.

c) Removal of any Hard Surfacing

- Any existing hard surface to be removed by hand working from the closest point to the tree working outwards.
- Material is to be broken with hand tools.

d) Services(none)

- Location of services including sewerage, gas, water, electricity and their impact on any RPA's.
- Timing of excavation where they pass within or close to retained trees in accordance with phasing plan.

e) Review/Site Inspection of Existing Trees

- Review of trees and Method Statement to be undertaken prior to the commencement of development to address phasing and land use.
- Arrangements for review/monitoring of method Statement.
- Review to allow for amendment /variation by agreement.

7.14 Precautionary Area (PA)

Precautionary areas protect RPAs outside of CEZs, where limited construction activities are proposed. These activities must be carried out with care to minimise any impact on the tree roots.

Precautions required for works within the RPA's of retained trees T5, T6, T20 and T24, which are shown in Fig 7 below.

Fig 7. Precautions required for work within the RPAs.

Activities	Precautions
1.Construction works adjacent to trees no T5, T6, T20 and T24	• Prior to commencement, the protective barrier will be installed at 0.5m outside of the proposed fence to the South boundary as indicated on LFS dwg no 3188-002A. The installation of the proposed stone gabion wall will require limited excavation within the Root Protection Zone of these 4 no trees. Excavation works adjacent to the trees will be carried out by hand or small mechanized digger. Any roots encountered above 10mm will be cleanly cut with secateurs and covered during works with damp hessian.

8.0 IMPACT OF PROPOSALS ON EXISTING TREES

IMPACT 1. Construction Phase Tree Protection

8.4 The root protection area (RPA) and canopy of the key trees can be protected during construction phase by establishing a Construction Exclusion Zone (CEZ). A specification of the tree protection is given in appendix 11.4. **Impact negligible.**

8.5 The proposals indicate that new stone gabions will be installed around trees nos T5, T6 and T20 and will have an incursion into the RPAs of these trees. To minimise any damage to the root systems it is proposed to install the gabions on permeable membrane at existing ground level with no dig. **Impact low.**

8.6 All site operations during construction phase will be monitored by a qualified arboriculturist as a watching brief.

8.7 To provide landscape mitigation a new scheme of landscape and habitat enhancement work is proposed. This includes the planting of new native tree and shrub areas.

8.8 Given the protection methods as described and the proposed mitigation the impact on existing trees will be **low.**

9.0 LEGAL AND PLANNING CONSTRAINTS REGARDING TREES ON SITE

9.01 The legal considerations referred to are general constraints that relate to arboriculture and do not cover any other legal matters that may be relevant on this site.

9.02 **National Planning Policy Framework (NPPF)**:

This sets out national planning policy.

Paragraph 170 requires that planning policies and decisions should. contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

Paragraph 175 requires that:

c) Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused unless there are wholly exceptional reasons and a suitable compensation strategy.

9.03 **The Wildlife and Countryside Act 1981** protects nesting birds and to disturb nesting birds can be a criminal off offence. Therefore, if tree works are programmed during the nesting season, between March and August. Should nesting birds be present then all but essential works will be postponed. If in undertaking essential works a nest or nests are found to be present, then further advice will be sought from the relevant authority.

9.04 **Tree Preservation Orders and Conservation Area Status.**

The law on TPOs is in **Part Viii of the Town and Country Planning Act Town and Country Planning (Trees) Regulations 1999.** When any tree is protected by a TPO or are situated within a Conservation Area it is an offence (1) cut down (2) uproot (3) top (4) lop (5) wilfully damage or (6) wilfully destruct a tree without the express written permission from local Planning Authority (LPA), there are exceptions;

- Cutting down trees in accordance with one of Natural Resources Wales grant schemes, or where the Natural Resources Wales has granted a felling licence.
- Cutting down or cutting back a tree which is dying, dead, or dangerous.
- In line with an obligation under an Act of Parliament.
- At the request of certain organisations specified in the order.
- A tree which is directly in the way of development that is about to start for which detailed planning permission has been granted.
- In a commercial orchard or pruning fruit trees in accordance with good horticultural practice.
- To prevent or control a legal nuisance.

9.05 Wildlife and Countryside Act (as amended) Conservation (Natural Habitat) Regulations (1994) 5.1 In Britain, all bats and their roost sites are currently protected by law. The part that protects them is found within the Wildlife and Countryside Act 1981 and as amended by schedule 12 of the Countryside and Rights of Way Act 2000 and by the conservation Regulations 1994 under Section 39 (1).

The legislation makes it an offence to intentionally or recklessly damage, destroy or obstruct access to a site used by bats whether bats are present at the time or not. This can include work on trees whether it is surgery, felling, the covering or filling of cavities or the installation of rod braces and flexible cable braces where a bat roost is present.

There are some 16 species of bat native to the British Isles, all are insectivorous and depend to some extent on habitat in which trees are a significant element. Bats are a protected species and are in decline both globally and nationally. Therefore, they are to be fully considered before any tree work commences and particularly if the trees are mature. If a bat roost is known to be in any tree that is to be removed or worked on, a licence must be obtained from Natural England/Natural Resources Wales..

Where there is a risk that bat roosts may be present, it is incumbent upon the owner to commission a specialist bat survey to identify bat roosts before instruction for tree surgery to commence. Failure to do so and in the event of disturbing a roost site and upon conviction is an offence. Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/1991 (i.e. £5,000 in April 2001) per roost or bat disturbed or killed or both.

9.06 Forestry Act 1987

A felling licence is required wherever an excess of 5 cubic meters of timber is felled per calendar quarter. Exceptions to the Act include felling trees which when measured at 1.3m above ground level have a stem diameter of 8cm or below.

Other exceptional felling includes:

- Thinning of trees with a stem diameter of 10cm or below
- Coppicing of trees with a diameter of 15cm or below

Exceptions are also afforded to work carried out by statuary undertakers i.e. removal of dangerous/dead trees, prevention of abatement of a nuisance and to prevent the spread of quarantined pests or diseases in accordance with a notice served by a Forestry Commission Plant Health Officer.

When full planning permission is authorised, both statutory obligations described above are no longer applicable and are transcended by the Town and Countryside Planning Act of 1990, which permits tree removal for the purpose of development.

The site will not be subject to the provisions of the Forestry Act.

9.07 Statute and Common Law

A landowner should be aware that both statute and common law dictates regular inspections of trees on land in their control are necessary where such trees could cause injury or damage in the event they should fall or shed any parts. A person suitably qualified in arboriculture should undertake such routine inspections and any remedial tree works recommended within the time constraint specified, to prevent injury or damage occurring. A landowner should retain records of all inspections and any remedial tree works that have resulted from such inspections.

10.0 REPORT LIMITATIONS

10.01 This report is a pre-development survey and is not a risk assessment or a detailed report on the health and condition of the trees.

10.02 Every attempt has been made to provide a realistic and accurate assessment of trees and their condition at the time of this inspection. No responsibility can be accepted for a damage or injury as a result of the failure of any tree or its parts due to faults not apparent upon a visual inspection carried out at this session, or for faults developing subsequent to the survey. Similarly, no liability can be accepted for the condition of the trees that are obscured in part or whole e.g. neither by dense ivy or other foliage nor for any that

proved inaccessible. Certain features which might provide evidence of ongoing decay or decline e.g. seasonal fruiting bodies, damage to foliage, insect emergence holes may not be in evidence. Only those features present at the time of the inspection could be assessed.

10.03 Reference is made in this report for the possibility of additional assessment of specimen trees particularly with reference to long term safety and stability. This assessment could be assisted by the use of a Tomograph such as the PICUS sonic Tomography which assesses the internal condition of the tree by using sonic waves. The standard technology involves the attachment of sensors to measuring mails.

10.04 This report is based on the tree circumstances and condition at the time of the survey. It must be recognized that the circumstances may be altered radically over the course of any developmental process and that such changes cannot be accurately predicted, i.e. such a change could be the effect of localised wind turbulence created by the new development. As trees grow they respond and mechanically adapt to their surroundings and exposure limits.

Unless stated in writing the inspection shall not include any underground parts of the tree. It does not consider damage resulting from the extraction of moisture from shrinkable clay soils by tree root causing subsidence or by heave occurring through soil rewetting following removal trees on the site. Recommendations relating to foundation design or material specification are beyond the scope of this report.

11.0 APPENDICES

11.1 Tree Schedules

11.2 Category Cascade Chart

11.3 Tree Protection Signs

11.4 Tree Protection Fence and Ground Protection

11.5 Photographs 1-4

11.6 Glossary of Terms

11.7 Bibliography

11.8 Tree Survey and Tree Protection Plans 3188-001 and 3188-002A

11.1 TREE SCHEDULES

CLIENT: Geraint Roberts Associates **PROJECT:** Proposed Pocket Park, J.C Edwards Land, Llangollen Road, Trevor **REF: 3188**	**SURVEY DATE: 31 October 2023** **DWG NOs: LFS: 3188-001 and 3188-002A**	**COLUMN KEY:** **#** Estimated dimension **CS** Crown Spread **H** Height **SD** Stem diameter & type **CC** First significant branch **Age** Life stage **YR** Life expectancy **GR** Grade /category **RPA Rad/m²** Root Protection Area	**AGE:** **Y** Young **SM** Semi mature **EM** Early mature **M** Mature **OM** Over mature **V** Veteran	**GR – GRADE:** **A – Good quality.** **B – Moderate quality.** **C – Low quality** **U – Unsuitable. Remove.**

No.	Name (Common & Scientific)	H m	SD mm	Branch Spread (m)				CC m	AGE	YR	GR	COMMENTS/CONDITION	RECOMMEND	RPA Rad.	RPA M^2
				N	S	E	W								
T01	Common Ash *(Fraxinus excelsior)*	8.0	150	5.0	5.0	5.0	5.0	n/a	Y	20 +	**C2**	Good young specimen	No work.	1.80	10
T02	Poplar *(Populus sp.)*	18.0	450	6.0	6.0	6.0	6.0	n/a	M	20-	**C2**	Cavity @3m N. Dieback. 3 no stems @2m. Included limb junction	No work	5.40	92
T03	Elm *(Ulmus sp.)*	16.0	440	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**U**	Dead. Ivy and Clematis covered. Incline to S. 2no stems.	Reduce to 2m for wildlife value	n/a	n/a
T04	Poplar *(Populus sp.)*	12.0	440	5.0	5.0	5.0	5.0	n/a	Y	20 +	**C2**	Dense ivy precludes full inspection.	No work	5.40	92
T05	Birch *(Betula*	10.0	220	4.0	4.0	4.0	4.0	n/a	Y	20 +	**C2**	Young specimen in decline. Ivy growth	No work	2.70	23

	pendula)														
T06	Birch *(Betula pendula)*	16.0	330	3.5	3.5	3.5	3.5	n/a	SM	20 +	**C2**	Die back. Ivy growth. Two small specimens of Birch and Elm at base.	Remove ivy and Elm.	3.90	48
T07	Stump	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**n/a**		Retain stump for wildlife.	n/a	n/a
T08	Birch *(Betula pendula)*	13.0	300	3.0	3.0	3.0	3.0	n/a	SM	30 +	**C2**	Ivy covered.	No work	3.60	41
T09	Poplar *(Populus sp.)*	11.0	320	3.0	3.0	3.0	3.0	n/a	EM	20 +	**C2**	Ivy covered.	No work	3.90	48
T10	Poplar *(Populus sp.)*	18.0	380	4.0	4.0	4.0	4.0	n/a	EM	n/a	**C2**	Die back. Recently pruned. 2no stems @1m. Die back . Ivy growth,	Fell to facilitate development	4.50	64
T11	Birch *(Betula pendula)*	18.0	280	3.0	3.0	3.0	3.0	n/a	M	20 +	**C2**	Clematis and ivy growth.	Remove ivy .	3.30	34
T12	Birch *(Betula pendula)*	20.0	310	3.0	3.0	3.0	3.0	n/a	M	20-	**C2**	Hanger in canopy from T05. Ivy growth.	Remove hanger and ivy.	3.60	41
T13	Poplar *(Populus sp.)*	18.0	260	3.0	3.0	3.0	3.0	n/a	SM	20-	**C2**	Ivy growth	No work	3.10	30
T14	Mixed Tree Group	22.0	n/a	3.0	3.0	3.0	3.0	n/a	SM	20-	**C2**	Ivy growth	No work	n/a	n/a
T15	Birch *(Betula pendula)*	16.0	180	4.0	2.0	3.0	3.0	n/a	SM	30 +	**C2**	Ivy growth	Remove ivy	2.10	14
T16	Birch *(Betula pendula)*	16.0	230	4.0	2.0	3.0	3.0	n/a	M	30 +	**B2**	Ivy and Clematis growth	Fell to facilitate development	2.70	23

T17	Stump	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**n/a**		Fell to facilitate development	n/a	n/a
T18	Poplar *(Populus sp.)*	23.0	230	3.0	3.0	3.0	3.0	n/a	SM	20-	**C2**	Poor specimen with ivy growth	Fell to facilitate development	2.70	23
T19	Poplar *(Populus sp.)*	18.0	300	3.0	3.0	3.0	3..0	n/a	M	20-	**C2**	Part of group with T20. Die back. Ivy growth	No work	3.60	41
T20	Poplar *(Populus sp.)*	18.0	220	4.0	4.0	4.0	4.0	n/a	M	20-	**C2**	Part of group with T19. Die back. Ivy growth	No work	2.70	23
T21	Mixed Damp Woodland	Up to 20.0	n/a	n/a	n/a	n/a	n/a	n/a	M	40 +	**B2**	Damp woodland flora. Bramble, Raspberry, Sycamore, Ash, Oak, Elm, Yew, Hazel, Salix.	No work	n/a	n/a
T22	Poplar *(Populus sp.)*	1.07	170	2.5	2.5	2.5	2.5	n/a	SM	20-	**C2**	Poor specimen with ivy and Clematis.	Fell to facilitate development	2.10	14
T23	Poplar *(Populus sp.)*	16.0	220	3.5	1.5	2.5	2.5	n/a	SM	20-	**C2**	Poor specimen with ivy and Clematis.	Fell to facilitate development	2.70	23
T24	Birch *(Betula pendula)*	22.0	380	6.0	6.0	6.0	6.0	n/a	M	30 +	**B2**	Good specimen with ivy and Clematis.	Remove ivy growth	4.50	64
T25	Poplar *(Populus sp.)*	16.0	300	2.5	2.5	2.5	2.5	n/a	SM	20-	**U**	Poor specimen. Dense ivy growth. 2no stems.	Reduce to 4m high	3.60	41
T26	Poplar *(Populus sp.)*	10.0	180	3.0	3.0	3.0	3.0	n/a	SM	20-	**U**	Poor specimen. Dense ivy growth. 2no stems. Hanger in canopy to West	Reduce to 4m high	n/a	n/a
T27	Poplar *(Populus sp.)*	17.0	350	3.0	3.0	4.5	1.5	n/a	M	20-	**U**	Poor specimen. Dense ivy and Clematis growth. Incline to East. In decline. Dieback	Reduce to 4m high	n/a	n/a
T28	Elm *(Ulmus sp.)*	18.0	400	4.0	4.0	4.0	4.0	n/a	EM	20-	**C2**	At edge of woodland. Ivy growth, 2 no stems	No work	4.80	72

T29	Poplar *(Populus sp.)*	20.0	300	3.5	3.5	3.5	3.5	n/a	SM	30-	**C2**	Ivy growth	No work	3.60	41
T30	Birch *(Betula pendula)*	20.0	250	3.0	1.0	2.0	2.0	n/a	M	20 +	**C2**	Dense ivy growth	Remove ivy growth	3.00	28
T31	Birch *(Betula pendula)*	20.0	250	4.0	4.0	4.0	4.0	n/a	SM	30-	**C2**	Tall, elongated specimen. Ivy and Clematis growth	Remove ivy growth	3.00	280
T32	Mixed Tree Group	18.0	400+ 220+ 150	4.0	4.0	4.0	4.0	n/a	M	30 +	**C2**	Group of three small specimens. Elm and 2no Poplars. Ivy and Clematis growth.	Remove ivy growth	9.30	272
T33	Poplar *(Populus sp.)*	18.0	310	4.5	4.5	4.5	4.5	n/a	EM	20-	**C2**	Ivy growth	No work	3.60	41
T34	Poplar *(Populus sp.)*	20.0	340	3.0	3.0	3.0	3.0	n/a	EM	20-	**C2**	Ivy growth	No work	4.20	55
T35	Tree group	6.0	180	7.5	1.5	4.5	4.5	n/a	Y	20-	**C2**	Small specimen with ivy growth	No work	2.10	14
T36	Sycamore (Acer pseudoplatanus)	21.0	450	4.0	4.0	4.0	4.0	n/a	M	30 +	**C2**	Edge of woodland. Dense ivy growth. Two stems with one decayed stump	No work	5.40	92
T37	Sycamore (Acer pseudoplatanus)	20.0	350+ 200	5.0	5.0	5.0	5.0	n/a	EM	30 +	**C2**	2 no stems. In decline. Dieback. Recently pruned. Ivy growth.	No work	6.60	137
T38	Sycamore (Acer pseudoplatanus)	20.0	450	5.0	5.0	5.0	5.0	n/a	M	30 +	**C2**	Ivy growth	No work	5.40	92
T39	Sycamore (Acer pseudoplatanus)	19.0	500	6.0	6.0	6.0	6.0	n/a	M	30 +	**C2**	Dieback. Ivy and Clematis growth	Remove ivy growth	4.80	72

T40	Common Ash *(Fraxinus excelsior)*	18.0	200+ 250	5.0	5.0	5.0	5.0	n/a	EM	20-	**C2**	In decline. Dieback. 10m Sycamore at base. Ivy growth.	Reduce to 4m.	5.40	92
T41	Sycamore (Acer pseudoplatanus)	18.0	400	8.0	2.0	5.0	5.0	n/a	M	30 +	**B2**	Edge of path.	No work	4.80	72
T42	Poplar *(Populus sp.)*	18.0	180	5.0	5.0	5.0	5.0	n/a	EM	20-	**C2**	2no stems @6m. Ivy growth	No work	2.10	14
T43	Birch *(Betula pendula)*	16.0	300	3.0	1.0	2.0	2.0	n/a	EM	20-	**C2**	20% incline to north. Ivy growth	No work	3.60	41
T44	Stump	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**n/a**	n/a	Retain for wildlife	n/a	n/a
T45	Common Ash *(Fraxinus excelsior)*	6.0	n/a	6.0	6.0	6.0	6.0	n/a	Y	20 +	**C2**	Group of 8 no small emergent trees	No work	n/a	n/a

11.2 TABLE 1 from BS 5837:2012
Trees in relation to design, demolition & construction – Recommendations. 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.*			RED
	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)	GREEN
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	BLUE
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	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	GREY

11.3 TREE PROTECTION SIGNS

No equipment, machinery or materials shall be brought onto the site for the purposes of the development until fencing has been erected in accordance with the plans and particulars which shall have been previously approved by the local planning authority in writing.

The areas forming the Construction Exclusion Zone are to be protected by Tree Protection Barriers as per the recommendations in BS 5837:2012 (Figure 2) or as specified below.

This fencing is to be erected before any work commences on site and is to remain in place undamaged for the duration of all work or each phase. It will only to be removed once all work is completed and if required by planning condition, with the formal consent of the local planning authority.

If the fencing be broken or removed during the course of carrying out the development, it shall be promptly repaired or replaced to the satisfaction of the local planning authority.

Within any area fenced in accordance with this condition, nothing shall be stored, placed or disposed of on the above or below ground, the ground level shall not be altered, no excavations shall be made, nor shall any fires be lit, without the prior written consent of the local planning authority.

Other than works detailed within this method statement or approved in writing by the local planning authority, no works at all (including storage or dumping of materials) shall take place within the exclusion zones defined by the protective fencing.

The fencing is to carry waterproof warning notices denying access within the RPA. The following signs or similar will be attached to the fence panels.





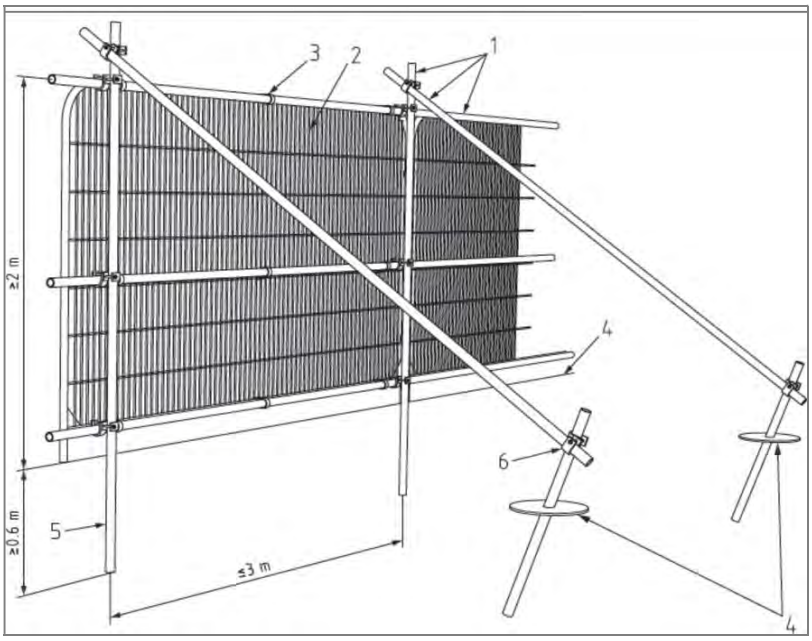
Arboricultural Site Considerations – To be displayed in a prominent place.

1. Tree Protective Barriers must be regarded as sacrosanct and must not be removed or altered without prior consultation with either the Local Planning Authority (LPA) or the arboricultural consultant responsible for the site supervision.
2. Ground protection must not be lifted or removed without prior consultation with either the LPA or the arboricultural consultant responsible for the site supervision.
3. Damage caused to protective fencing or ground protection must be reported to the site supervisor immediately to ensure efficient repair.
4. No materials, chemicals, machinery, or vehicles must be stored within the Construction Exclusion Zone as defined on the Tree Protection Plan (TPP) and identified on site by fencing and above ground root protection.
5. No materials must be rested against a tree's trunk or machinery chained to it.
6. No pruning of trees may be undertaken by anyone other than an arborist, and all work must be approved by the supervising arboricultural consultant.
7. Any physical damage caused to a tree retained on site must be reported to the site manager so remedial work can be undertaken without delay.
8. Builder's sand, which contains salt, must not be used to back fill excavation within or in close proximity to tree roots, as this can have a toxic affect. Sharp sand can be used instead.
9. Material that will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, must not be discharged within 10 metres of a tree stem.
10. Fires must not be lit in a position where their flames can extend to within 5 m of foliage, branches, or trunk. This will depend on the size of the fire and wind direction.
11. Notice boards, telephone cables or other services must not be attached to any part of a tree.

11.4 SPECIFICATION FOR TREE AND ROOT PROTECTION BARRIERS

Fencing specification reproduced from BS 5837:2012 Trees in relation to design, demolition, and construction – Recommendations.

1.High Construction Pressure

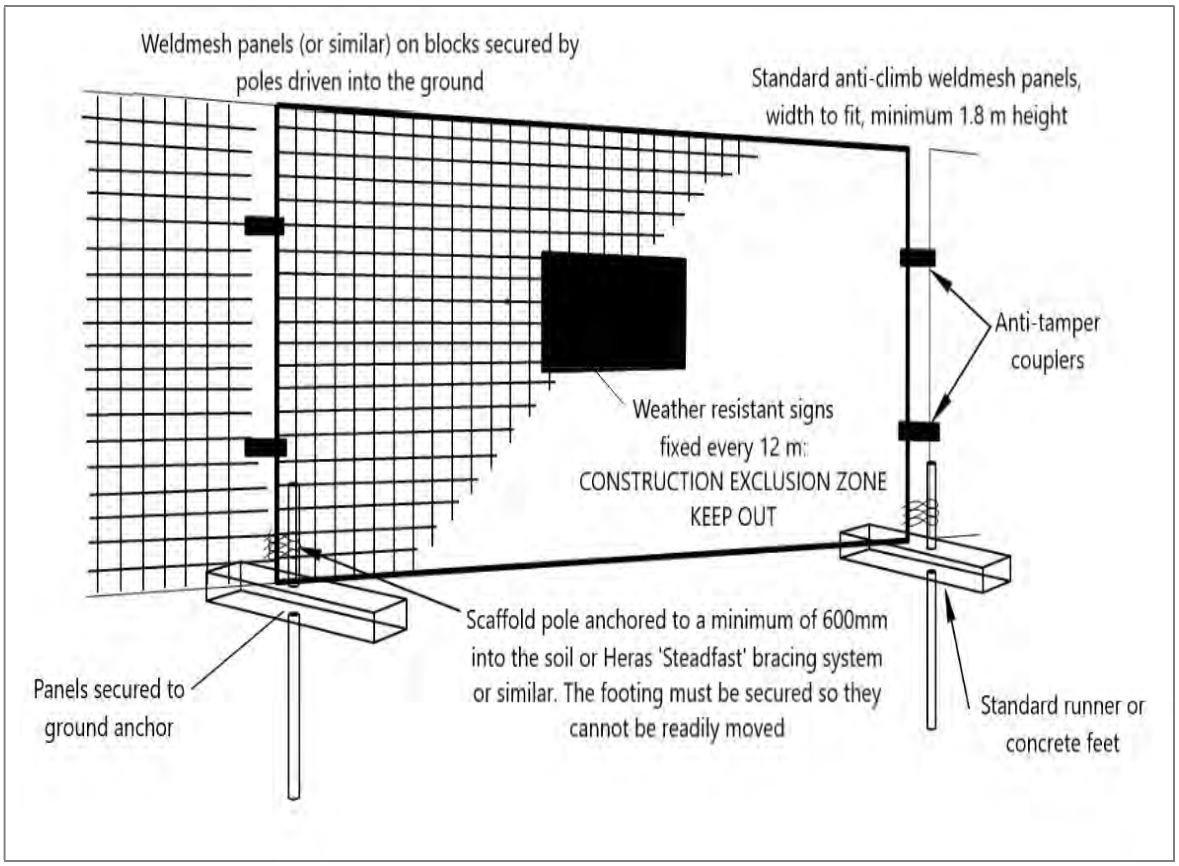


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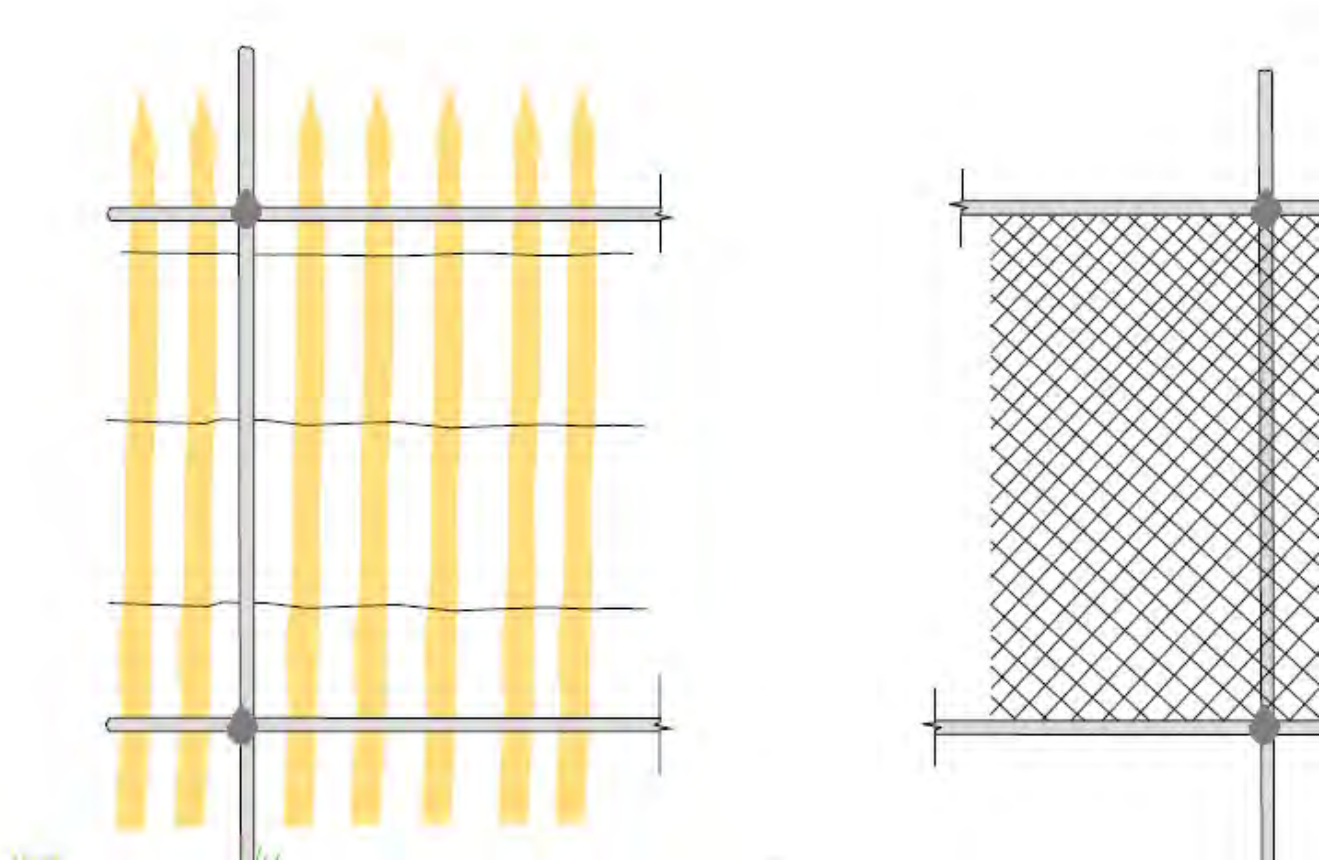
1. Standard scaffold poles
2. Heavy gauge 2 m tall. galvanized tube and welded mesh infill panels
3. Panels secured to uprights and cross-members with wire ties
4. Ground level
5. Uprights driven into the ground until secure (minimum depth 0.6 m)
6. Standard scaffold clamps

2. Medium Construction Pressure

Fencing specification reproduced from BS 5837:2012 Trees in relation to design, demolition, and construction – Recommendations.



3. Low Construction Pressure Secondary Tree Protection Barrier



Cleft chestnut pale or chain link fencing attached to scaffold framework. Uprights driven well (min 0.6 m) into the ground with bracing as required by ground conditions.

4. Ground Protection

- Ground protection to protect underlying soil and roots in the RPA to consist of sheets of heavy gauge exterior plywood laid over 50mm bed of compressible woof chip. Plywood to be secured to ground with steel pins.
- Ground protection to be installed at locations shown on the Tree Protection Plan (TPP).
- Ground protection locations will not be altered without the approval of the Arboricultural Clerk of Works (ACW).
- Ground protection will not be removed at the end of the construction phase without the approval of the Arboricultural Clerk of Works (ACW).

11.5 PHOTOGRAPHS

1. General view looking Northeast across site from Llangollen Road



2. General View looking Southwest from Llangollen Road site to adjoining houses



3. General view looking East to T41 Sycamore



4. General view looking South across site



11.6 GLOSSARY OF TERMS

Arboriculture:	The culture and management of trees as groups or individuals, primarily for amenity and urban forestry excluding commercial purposes.
Aerial inspection:	The crown is assessed by a climber who inspects defects at close range.
Architecture:	In a tree, a term describing the pattern of branching of the crown or root system.
Arboricultural Implication Assessment (AIA):	Study undertaken by an arboriculturist to identify, evaluate and possibly manage the extent of direct and indirect impact on existing trees that may arise as a result of the implementation of the site layout.
Arboricultural Method Statement:	Methodology for the implementation of any aspects of development that has the potential to result in the loss or damage to a tree.
Assessment:	In relation to tree hazards, the process of estimating the risk which a tree or group of trees poses to persons or property
Branch:	A limb extending from the main stem or parent branch of the tree
Construction Exclusion Zone:	Area based on the RPA (metres as a radial measurement and sometimes a m^2). Identified by the use of barriers and/or ground protection for the purpose to ensure the successful; long term retention of a tree.
Crown:	Total volume occupied by the foliage
Crown thinning:	Removal, pruning of selected branches throughout the crown of the tree.
Crown reduction:	Pruning the height and overall crown spread to achieve a smaller crown size.
Crown cleaning:	Removal of all dead twigs and small dead branches, diseased wood, cracked and damaged wood and rubbing branches.
Defect:	In relation to tree hazards, any feature of a tree that detracts from the uniform distribution of mechanical stress or which makes the tree mechanically unsuited to its environment.
Dysfunction:	In woody tissues, the loss of physiological function, especially water conduction.
Epicormic sprouts:	New branches that grow from dormant buds just beneath the bark. They are usually associated with lopping or topping cuts.
Failure:	In connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil.

Flush Cuts:	Where a branch has been cut very close to the stem, removing the branch collar. This can also be very injurious, allowing decay to enter.
Fluted stem:	A stem that has distinct raised ribs at the buttress.
Group:	The term 'group' is intended to identify trees that form cohesive arboricultural features either **aerodynamically** (e g trees that provide companion shelter), **visually** (e.g. avenues or screens or **culturally** including for biodiversity (e.g. parkland and wood pasture).
Hanger:	A branch that has completely broken and is hanging in the crown.
Heave:	In relation to a shrinkable clay soil, expansion due to re-wetting , sometimes after felling or root severance of a tree which was previously extracting moisture from the deeper layers; also in relation to root growth, the lifting of pavements and other structures by radial expansion; also, in relation to trees stability, the lifting of one side of wind-rocked root plate.
Included bark:	Where a branch and stem or two stems have a very tight union, bark presses on bark and becomes ingrown. The result is structurally a weak junction.
Internal inspection:	Can be undertaken by invasive drilling techniques or by the use of ultrasound technology
Leader:	Leading shoot or stem – usually applied to a single stemmed tree.
Occluded:	A cavity or wound where new bark has completely sealed the wound.
Preventative action:	In a tree hazard management, action that helps to prevent injury to persons or damage to property,
Pruning:	The removal or cutting back of twigs, branches or roots; in some contexts applying only to twigs or small branches only, but more often used to describe all kinds of work involving cutting.
Retained Tree:	A tree that has been considered suitable by an Arborist for retention and which during the design stage is selected for retention and incorporated within the development.
Risk:	The likelihood of the potential harm from a particular hazard becoming actual harm.
Ribs:	A protrusion of reactive wood growth that has formed over a crack or other anomaly.
Root Protection Area:	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 in m^2.

Sprouts:	These are re-growth branches that grow rapidly from large wounds, more so on some species such as poplar and lime. They do not have a strong union with the stem and tend to break out when they grow large.
Stem	The single main stem of a tree.
Subsidence:	In relation to soil or structures resting in or on soil, a sinking due to shrinkage when clay soils dry out sometimes due to extraction of moisture by tree roots.
Suppression:	A tree which is beneath the crown(s) of another canopy and is being restricted by it.
Sucker:	Shoots that grow from roots, often at the base of the tree
Targets:	In a tree hazard assessment (and with somewhat incorrect technology), persons or property or other things of value, which might be harmed by mechanical failure of the tree or by objects falling from it.
Tipping:	Cutting the ends of branches between nodes.
Topping:	Indiscriminate reduction of height leaving a large wound. Can be very injurious to tree health.
Tree constraint Plan (TCP):	Plan prepared by an arboriculturalist or similar qualified person for the layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have layouts through shade dominance etc.
Tree Preservation Order:	In Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.
Tree Protection Plan:	Scale drawing prepared by an arboriculturalist showing the final layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS) which can be shown graphically.
Vigour:	In tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter of growth.
Visual tree Assessment (VTA):	In addition to the literal meaning, a system expounded by Mattheck & Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.
Wind exposure:	The degree to which a tree of other object is exposed to wind, with regard both to duration and velocity.
Wind pressure:	The force exerted by wind on a tree or other object.
Wind snap:	The breaking of a tree by a stem by wind.
Wind throw:	The blowing over of a tree at its roots.

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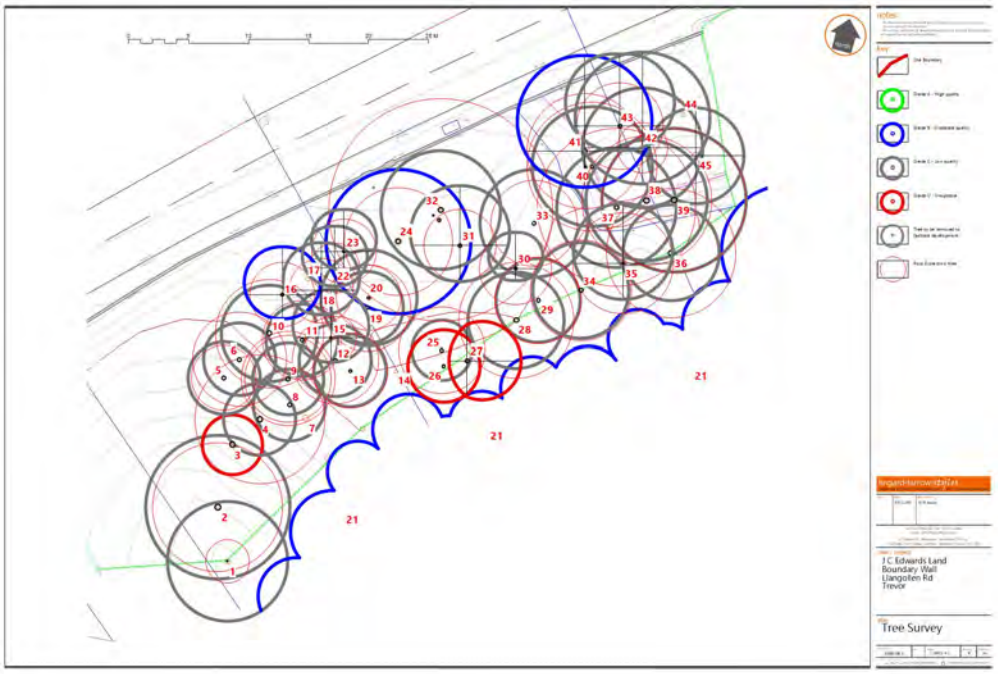
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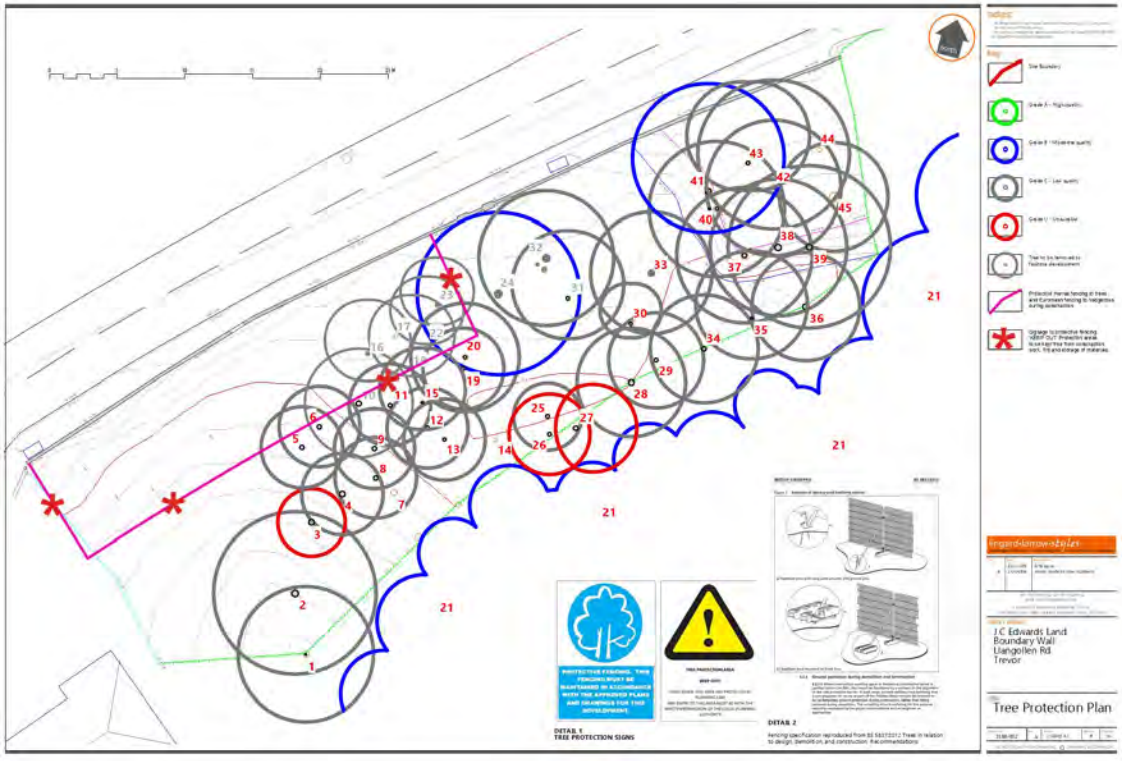
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  Derek Patch and Ben Holding.

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  April 2014
  Forestry Commission/Natural England

11.8 TREE SURVEY AND TREE PROTECTION PLANS

LFS dwg nos 3188-001 and 318-002A





AIA J.C. Edwards Site ref 3188. Nov 2023 rev A