keystone
making ecology our business

Land at Quakers Yard, Treharris, South Wales

Arboricultural Impact Assessment and Method Statement

December 2022

Wales & West Utilities

keystone ecology
www.keyenv.co.uk/ecology

keystone habitats
www.keyenv.co.uk/habitats

keystone marine
www.keyenv.co.uk/marine

Land at Quakers Yard, Treharris, South Wales

Arboricultural Impact Assessment and Method Statement

December 2022

Wales & West Utilities

Version	Date	Author	Checked	Approved
Final	22/12/2022	A Cunningham	C Cartwright	R Frith
Rev 1	16/01/2023	T Adcock	C Cartwright	R Frith

Contents

Appendices

1.0 Executive Summary

1.1 The proposals are for remediation works to mitigate associated historic contamination associated with former gasworks operations to allow continued on-going open use at the site located within Quakers Yard, just south of the town of Treharris, South Wales.

1.2 Within and adjacent to the redline boundary of the site, a total of 13 survey items were identified. These included 6 individual trees and 7 tree groups.

1.3 Of these, the majority (8 of the total 13) were identified as moderate quality (Category B) with only 3 items being of a lower quality (Category C) and 2 being high quality (Category A).

1.4 No survey items were identified as Category 'U' (unsuitable for retention in the sites current context).

1.5 Parts of the site or adjacent to the site are designated as ancient woodland and/or are protected by a Woodland Tree Preservation Order (TPO). Investigations have confirmed that the site and adjacent land were once cleared of many but not all the ancient trees prior to 1914. This is obviously a consideration when assessing tree loss as part of the current proposals.

1.6 The remediation proposals will result in the removal of 5 survey items which include 4 individual trees (2 moderate quality and 2 low quality) and 1 tree group (moderate quality). Furthermore, the partial removal of four moderate quality tree groups will also be required. All high-quality items will be retained during the proposed works.

1.7 Facilitation pruning will be required in the form of lateral pruning and canopy lifting to trees adjacent to the access route into the site from the public car park on Perrott Street, Treharris. These works are considered routine and should have minimal impact to the tree's overall health.

1.8 The overall impact from the proposed remediation works are considered to have an overall moderate impact on the local arboricultural resource. Impacts to retained trees can be minimised through robust tree protection and new tree planting once the works are complete.

2.0 Introduction

Background

2.1 Keystone Environmental was instructed by Wales and West Utilities to undertake an Arboricultural Impact Assessment and Method Statement for the removal of existing underground structures on a parcel of land located at Quakers Yard, just south of the town of Treharris, South Wales.

No Topographical Survey Plan was available to allow the survey to be undertaken, therefore current aerial imagery was utilised as a base for the tree survey.

Aims and Objectives

2.2 The aim of the Arboricultural Impact Assessment (AIA) and Method Statement was to undertake the following in accordance with BS5837:2012, '*Trees in relation to design, demolition and construction – Recommendations*':

- Survey relevant trees, tree groups and woodlands within or adjacent to the site;
- Highlight the arboricultural resource and the constraints/opportunities it presents;
- Produce a Tree Survey and Constraints Plan (TCP) including Root Protection Areas (RPA);
- Undertake a full assessment of the potential impacts the remediation proposals will pose to the existing arboricultural resource within the site;
- Set out clear mitigation measures to ensure the impacts from remediation activities are kept to an acceptable level and therefore the successful retention within the scheme; and
- Produce a Tree Retention/Removal Plan (TRRP) to indicate the extent of tree and hedgerow removal and a Tree Protection Plan (TPP) to indicate the specification and location of tree protection measures such as protective fencing and ground protection.

Site Characteristics

2.3 The site is located within Quakers Yard, just south of Treharris which is approximately 7 miles to the south-east of the town of Merthyr Tydfil and approximately 5 miles to the north-west of the town of Ystrad Mynach.

2.4 The site is a disused parcel of land which lies directly to the north/north-west of Mill Street and adjacent to the River Taff Bargoed which skirts its southern boundary. There is a public right of way which navigates from Mill Street, across an existing foot bridge then north-east through the site Treharris in the north-east.

2.5 Tree cover consists of either established areas of woodland or areas of natural regeneration of varying age and structure and is predominantly broadleaved species.

Statutory Tree Protection

2.6 A Tree Protection Order (TPO) prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of trees or woodlands without the prior consent of the local planning authority.

2.7 It is also an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75 millimetres diameter at 1.5 metres height without formal consent from the Local Planning Authority (LPA).

2.8 Planning Policy Wales (PPW) recognises the significant value of ancient woodlands and makes provision for their protection against damage or loss. Natural Resources Wales (NRW) advise that planning permission should be refused if development will result in the loss or deterioration of ancient woodland, given that ancient woodland is irreplaceable unless there are wholly exceptional reasons and where a decision maker is satisfied there is a wholly exceptional reason, every endeavour should be made to minimise and compensate for loss.

2.9 Detrimental impacts upon the veteran trees from proposed development might include damage to roots and understorey, damage to or compaction of soil around the tree roots, changes to the water table or drainage within the nearby soil and increased pollution.

2.10 NRW standing advice ‘Advice to planning authorities considering proposals affecting ancient woodland’ is a material planning consideration which should be considered when making decisions on planning applications. In reaching a planning decision, the LPA should assess the potential impacts, and avoid, mitigate or compensate these identified impacts. A key method of mitigation is the use of a ‘buffer zone’ with is dictated by RPAs according to the advice.

3.0 Methodology

Field Survey

3.1 The tree survey was undertaken on 9th September 2022 by Andrew Cunningham, FdSc (Arb), Tech Cert (AA), M.ArborA, Keystone Environmental Arboricultural Consultant.

3.2 The tree survey was carried out with reference to methodology set out in BS5837:*2012 'Trees in relation to design, demolition and construction – Recommendations'*.

3.3 Trees were surveyed (from ground level) individually or as groups where it was considered that they had grown together to form cohesive arboricultural features. However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups/woodlands were also surveyed as individuals.

3.4 Within the tree survey schedule, each surveyed tree (T), group (G) or woodland (W) on or adjacent to the site is given a reference number which refers to its position on the TCP.

3.5 Tree species are listed by common name only.

3.6 Heights are measured in metres. They are recorded to the nearest half metre for dimensions up to 10 metres and to the nearest whole metre for dimensions over 10 metres.

3.7 Trunk diameters are measured in millimetres and are rounded to the nearest 10 millimetres. Single stemmed tree diameters are measured at 1.5 metres above ground level or, where a fork or swelling makes this impractical, at the narrowest point beneath. Diameters of multi-stemmed trees are calculated as 'combined stem diameters' (as per guidance set out within BS5837:2012).

3.8 Branch spreads are taken at the four cardinal points to derive an accurate representation of the tree crown. They are recorded up to the nearest half metre for dimensions up to 10 metres and up to the nearest whole metre for dimensions over 10 metres.

3.9 Crown clearance is expressed both as existing height above ground level of first significant branch along with its direction of growth.

3.10 Canopy radius is an average measurement of the radius of the tree canopies within the group.

3.11 Hedge width is an average measurement of the overall width of the hedge along its length.

3.12 Where any other measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

3.13 Life stage is defined as Y – young (stake dependent), SM - Semi-Mature (still capable of being transplanted without preparation, up to 30 centimetres girth and not yet sexually mature), EM – Early Mature (not yet having reached 75% of expected mature size), M – Mature (anything else up to normal life expectancy for the species), OM – Over Mature (anything beyond mature and in natural decline), V – Veteran.

3.14 General observations are recorded in relation to a tree's structural and/or physiological condition (i.e., the presence of any decay and physical defect) and/or any preliminary management recommendations that may be appropriate.

3.15 Physiological condition is described as Good (no indications of impaired physiological function and in optimum condition for age and species), Fair (with indicators of reduced vitality. Some intervention may be required), Poor (with significantly impaired physiological function for age and species).

3.16 Structural condition is described as Good (without any observable significant biomechanical structural weaknesses), Fair (with minor biomechanical structural flaws. Some remedial action may be required), Poor (with significant biomechanical weaknesses requiring intervention particularly where risk management is required).

3.17 Useful life expectancy (ULE), or the length of time a tree's is estimated to be able to make a useful contribution, is expressed in years as: <10, 10+, 20+, 40+.

3.18 Quality of individual trees, groups of trees and woodlands is assessed in terms of quality and benefit within the context of proposed remediation works and graded into one of four categories (A, B, C and U) which are differentiated on the TCP by the colours highlighted in *Table 1* below:

Table 1: Categories for Categorisation of Quality of Individual Trees, Groups of Trees and Woodlands

Category A	Trees of high quality with an estimated remaining life expectancy of 40 years. Retention is desirable.
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Retention is desirable.
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 150mm. Trees could be retained but are not considered a significant constraint to the proposed works.
Category U	Unsuitable for retention. Trees in such a poor condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. These trees may have high conservation value.

3.19 A, B and C trees have also been given a sub-category of 1, 2 or 3 which reflects their arboricultural, landscape or cultural and conservation values. Each sub-category has an equal weight, for example a B1 tree has the same retention priority as a B3 tree.

3.20 The tree survey schedule also describes each tree's RPA in terms of radius (metres) and overall area (square metres).

3.21 This survey is for planning purposes only and is not intended as a tree condition survey. However, the base line data may be used as a guide for future detailed tree surveys if required.

Root Protection Areas

3.22 With reference to BS5837:2012, an RPA is defined as "a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure should be treated as a priority". "The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained".

3.23 BS5837:2012 states that, "where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced." The BS goes on to state that, "modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution," and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- Topography and drainage;
- Soil type and structure;
- Likely tolerance of the tree to root damage/disturbance based on factors such as species, age, condition and past management.

3.24 Taking the above into account, RPAs will be determined and shown on a TCP.

Nomenclature

3.25 The English names of flora and fauna species are given in the main text of this report. Scientific names are used only in the absence of English names. Vascular plants and Charophytes follow the nomenclature of The Botanical Society for the British Isles database (2007) with all other flora and fauna following the UK Species Inventory (Natural History Museum, 2016).

Limitations

3.26 This report has been instructed to identify the arboricultural constraints within and adjacent to the site. Its purpose is not to identify and evaluate risk or set out detailed tree work specifications.

3.27 Any management recommendations set out within this report are of an advisory and preliminary nature only which relate to the site in its current context.

3.28 It is beyond the scope of this report to highlight direct or in-direct damage that existing trees could cause to structures on site, whether through annual growth or tree related subsidence.

3.29 Trees are living organisms as well as self-supporting dynamic structures. Their physiological and structural condition can change rapidly in response to a wide range of biotic/abiotic factors. They have the potential to fail structurally, without prior manifestation of any reasonably observable symptoms. It is therefore not possible to categorically state that any tree is 'safe'.

3.30 Physical alterations to site conditions after the date of the tree survey could have the potential to change/invalidate the findings and recommendations within this report.

3.31 Findings and any recommendations set out in this report will only be valid for a maximum of 12 months.

4.0 Results

Field Survey

4.1 All individual trees and tree groups identified during the survey are shown on the TCP at *Appendix 1* and the tree survey schedules at Appendix 2.

4.2 Within or adjacent to the planning redline boundary for the proposed remediation works, a total of 13 relevant items were identified during the tree survey and assessed in accordance with BS5837:2012. *Table 2* below summarises tree survey finding;

Table 2: Tree Survey Results as per BS5837:2012

Category/Survey items	Individual Trees	Tree Groups	Total
A	1	1	2
B	3	5	8
C	2	1	3
U	0	0	0
Total	6	7	13

4.3 A total of 8 survey items were identified as moderate quality (Category B). These included 3 individual trees and 5 tree groups. These items were considered better in the terms of their overall size, significance within local landscape or for their collective form as groups. Their anticipated useful life expectancy is likely to be at least 20 years.

4.4 A total of 3 survey items were identified as low quality (Category C). These included 2 individual trees and 1 tree group. Generally, these items were of a lower quality due to their species type, modest overall size or general structural or/and physiological condition. Their anticipated useful life expectancy is likely to be somewhere in the region of 10 years.

4.5 2 survey items were identified as high quality (Category A) which included 1 individual tree and 1 tree group. These were considered either good for their overall form or/and significance arboricultural features within or adjacent to the site. These items are likely to contribute to the arboricultural resource within the site for somewhere in the region of 40 years.

4.6 No survey items were identified as Category U (considered unsuitable for retention in the sites current context).

4.7 The following photographs were obtained during the tree survey;

Photograph 1: Looking north-east from Mill Street towards the existing foot bridge and moderate quality tree group G1 located south of the river Taff Bargoed.

Photograph 2: Former monitoring station located close to the foot bridge over the river Taff Bargoed and within tree group G2. This will be removed as part of the proposals.

Photograph 3: Looking south-west through the site. Existing cycle path shown through central frame.

Photograph 4: Looking north-east along access route into the site. There is reasonably good ground clearance, but some facilitation pruning will be required. Note topography of the site with steep slopes either side of cycle path.

Statutory Tree Protection

4.8 The site is administered by Merthyr Tydfil County Borough Council (MTCBC). Their online mapping system (accessed 10/11/2022) has confirmed that the trees located within and adjacent to the site are not located within a Conservation Area. However, there is a Tree Preservation Order (TPO) which covers some of the trees contained within the redline boundary of the site as well as those within surrounding areas.

4.9 Trees which appear to be protected through the Tree Preservation Order relate to sections of tree groups G1, G3, G4, G5, G6, G7 and individual trees T4, T5 and T6.

4.10 An area mapped as ancient woodland by the NRW Ancient Woodland Inventory 2021 was identified around and overlapping the site. Following an investigation of the history of the site and comparing the data available in the inventory to Ordnance Survey County Series maps, it is evident that much of the area designated as ancient woodland is in fact re-growth on areas previously cleared prior to 1914. However, it appears that during the survey some of the original trees may still be present within woodland groups G6, G7 and maybe individual trees T4, T5 and T6.

4.11 As described in the Ancient Woodland Inventory Handbook (Sansum and Bannister, 2018), if remote evidence clearly indicates the imposition of another land-use which would represent a break in continuity, if woodland were to re-establish (i.e., irreversible vegetation change) then such areas should not be assessed as ancient woodland, however, it is likely consultation will still be required with the local tree officer, given its current designation. The area of historically cleared trees is shown on the Tree Constraints Plan – Historic Tree Removals at Appendix 1.

4.12 The TPO and areas of ancient woodland/woodland previously cleared are shown on the Tree Survey and Constraints Plans at Appendix 1.

5.0 Preliminary Tree Constraints

5.1 Below ground constraints, or RPAs, for the surveyed trees have been plotted onto the Tree Survey Plan for the site.

5.2 If trees and vegetation are retained within a scheme, consideration should be given to allowing adequate space for these established arboricultural features to mature. This will reduce the need for continued arboricultural management.

5.3 Root systems can be damaged in several ways as follows:

- Severance of a root will destroy all parts of the root beyond that point. This can affect the overall functionality of the tree but also more importantly affect the trees stability which could cause a safety risk.
- Soil compaction, which may occur from storage of material or passage of heavy equipment over the root area, can restrict and even prevent gaseous exchange through the soil, which can lead to reduced functionality and potentially decline and death. This is also the case with raising soil levels.
- Lowering the soil level will strip out the mass of roots near the surface.
- Spillage of chemicals, oils etc.

5.4 Any future proposals on the site should be designed bearing in mind the arboricultural constraints highlighted within this report. The Arboriculturist should play an active role in the planning process. They should liaise with all disciplines involved to ensure the viability of the scheme, as well as retaining the green infrastructure in an appropriate manner.

5.5 An Arboricultural Impact Assessment (AIA) should be undertaken to assess potential impacts that the remediation proposals will have on the existing arboricultural resource. This should include an evaluation of the trees lost during works compared to the tree/s being retained and the mitigation planting required.

6.0 Arboricultural Impact Assessment (AIA)

6.1 With reference to BS5837:2012 '*Trees in relation to design, demolition and construction*', this AIA evaluates the direct and indirect effects of the proposals on the site's arboricultural resource.

6.2 The AIA considers the effects of any tree loss required to implement the proposed remediation works as well as any potentially damaging activities proposed in the vicinity of retained trees. BS5837:2012 suggests that such activities might include:

- Removal of existing buildings, infrastructure and hard surfacing;
- Installation of new hard surfacing that includes car parking;
- Installation of underground services;
- Excavations of trenches and changes in ground level;
- The viability of the proposals in terms of access, adequate working space, provision for storage of materials including topsoil.

6.3 With reference to BS5837:2012, the AIA includes an evaluation of the impact presented by the proposals.

Proposed Tree Losses

6.4 Table 3 and comments below summarise the tree retention and removal of trees across the site as part of the current proposals.

Table 3: Summary of Tree Retention and Removal

BS Category	Trees	Groups	Total Loss Number	Percentage Tree Loss
A	**0**	**0**	**0**	**0%**
B	**T3, T4**	**G2**	**3**	**23%**
C	**T1, T2**	**0**	**2**	**15%**
Totals	**4**	**1**	**5**	**38%**

6.5 The table shows that a total of 5 survey items (2 moderate quality individual trees and 1 tree group, and 2 low quality individual trees) will have to be removed in their entirety to allow the proposals to be implemented. This equates to 38% of the overall arboricultural resource within the site. In addition, the proposals will also require the partial removal of 4 moderate quality tree groups G3, G4, G5 and G6.

6.6 Tree/hedgerow losses as a direct result of the proposals are shown on the TRRP at *Appendix 3*.

Significance of Proposed Tree Losses

6.7 The significance of the tree loss is considered 'moderate' as some trees proposed for removal are within the designated ancient woodland and/or are protected by the Tree Preservation Order (TPO). The tree losses are mostly regrowth from the historic site clearance and not trees that were considered part of the original woodland.

6.8 The trees removed will be mitigated by new and better-quality mostly native tree planting as part of the proposals. The proposed new tree planting includes Oak (Pedunculate), Field maple, Alder, Willow, Hawthorn, Hazel, Holly and Elder.

Facilitation Pruning

6.9 It is considered that there will have to be some facilitation pruning to allow adequate clearance for plant machinery to access the site. This will take place along the access route into the site along the existing cycle path. This 'zig-zags' down into the site from Perrot Street public car park which is located to the north-east. These works are likely to be minor lateral pruning and canopy lifting which is considered as routine. Overall impact to the health of the trees following these works is likely to be negligible.

6.10 All tree works should be in accordance with BS3998:2010 and carried out by a fully qualified and competent tree contractor. They will be responsible in providing a site-specific risk assessment as well as ensuring they adhere to current wildlife legislation.

Record of Tree Felling

6.11 Wales & West Utilities have committed to plant 5 trees for every tree felled from 1st April 2021 as part of the ambition to protect and enhance the environment. To help achieve this, an internal recording procedure has been set up to track tree losses across sites where trees are defined as having a minimum diameter of 50 millimetres measured at 1.5 metres from ground level.

6.12 The responsibility and accountability for ensuring the reporting requirements are fully complied with are placed with the appropriate Wales & West Utilities Manager or Project Manager depending on the nature of the work, however any appointed vegetation clearance contractor will need to assist with gathering this information.

Tree Protection

6.13 Once the tree removals have taken place, tree protection fencing should be installed in accordance with BS5837:2012 and in locations shown on the Tree Protection Plan (TPP) at Appendix 4. The fencing should be erected before any activities take place within the site.

6.14 There is an existing boundary retaining wall which separates high quality tree group G7 from the main site. This marks a minor level change up from ground levels within the site. This feature would restrict movement of plant machinery into this area, however temporary tree protection fencing should still be installed along the route of the wall as shown on the TPP.

6.15 Due to the topography of the site, it is considered that no temporary tree protection is required adjacent to the tarmac cycle path which will be utilised to access to the site. There is adequate space for plant and vehicles to access the site without leaving the tarmac surface.

Excavations

6.16 Excavations are required throughout the site to remove a variety of underground structures and apparatus. A 14-20 tonne narrow track excavator with pneumatic breakers and crusher buckets will be utilised to undertake these works. As the excavations will be significant and space within the site is limited, it is considered that it would be unviable to retain much of the existing trees within the redline boundary.

6.17 Once the trees are removed, excavations within the site should have minimal impact to the retained adjacent trees if all tree protection fencing is installed (as per the Tree Protection Plan - Appendix 4) before works commence.

Storage of Materials/Machinery, Contractor Parking, Site Huts, etc

6.18 The site compound incorporating site huts, generator, storage area, contractor parking, and welfare facilities will be located within an existing car park located to the north-east of the site adjacent to Perrott Street in Treharris. As the main car park will be utilised for the compound, there will be no impact to adjacent trees within this area.

6.19 An additional welfare unit will be installed on existing hard surfacing (compacted type 1) adjacent to the gas governor compound to the south of the river Taff Bargoed/adjacent to Mill Street. There is adequate space here to install the unit without impacting the health of the adjacent trees.

7.0 Tree Protection Plan

7.1 The TPP is attached at *Appendix 4*.

7.2 In accordance with BS5837:2012 the TPP is superimposed onto the proposed site layout plan and based on the topographical survey. Any hard surfacing and structures within the RPAs of trees to be retained are shown on the TPP. In addition, where relevant, the TPP shows the following information, accompanied by descriptive text as required:

- Precise locations of protective barriers (forming Exclusion Zones in relation to RPAs of retained trees);
- Other protection measures necessary e.g., site perimeter fencing.

7.3 The preparation of the TPP has considered the following factors where relevant:-

- Site access;
- Intensity and nature of remediation activity;
- Contractors car parking;
- Phasing of remediation works;
- Availability of special remediation techniques; and
- Spatial requirements.

7.4 The tree protection measures shown on the TPP demonstrate the feasibility of the proposed remediation works in relation to retained trees. However, they must be implemented with specific reference to an arboricultural method statement that is relevant to the proposals.

8.0 Arboricultural Method Statement

Arboriculture Methodology and Tree Protection

8.1 Before remediation activities commence on site, the Arboriculturist must brief all site operatives to ensure they understand and comply with the contents of the AMS. This 'induction' should be documented and retained by the Site Manager for future reference.

8.2 The AMS should be made available to all site operatives during remediation works to ensure understanding of the scope and importance of the tree protection specified for the site.

8.3 The AMS is a bespoke document that is relevant to the planning permission for the site. If there are any deviations from this, the appointed Arboriculturist should be consulted so that he/she can evaluate any additional impacts to retained trees and set out clear tree protection measures as appropriate. MTCBC should be notified of any deviation to the AMS before any works commence.

8.4 Where site operations have potential to result in more substantial impacts on retained trees, an arboricultural watching brief shall be required.

Relevant Contacts

8.5 Arboricultural contacts for the project:

- Project Arboriculturist – Andrew Cunningham (Keystone Environmental) – 01666 503687 – trees@keyenv.co.uk
- Tree Officer (MTCBC) – TBC
- Project manager – Stephen Kidley (Englobe) 07985 836241 – Steohen.Kidley@englobecorp.com

General Guidance

8.6 General guidance for remediation works operatives:

- Do not undertake any activity that does not comply with the AMS and TPP.
- Do not carry out any work within the Exclusion Zone (EZ) without guidance from the Project Arboriculturist and MTCBC.
- Prohibited activities within the EZ are as follows:
    - No mechanical excavation whatsoever
    - No hand digging without an approved AMS (or guidance from the Arboriculturist)
    - No altering of ground levels
    - Storage of materials/machinery

- Parking of vehicles/plant
- Depositing of soil or rubble
- Lighting of fires or disposal of liquids/chemicals

- Fires on site should be avoided. If unavoidable, they must be positioned away from any retained trees so as not to cause damage to foliage, bark etc.
- Any materials whose accidental spillage would cause damage to a tree should be stored and handled well away (down slope where relevant) from the outer edges of RPAs of retained trees on site.

Phasing of Operations

8.7 The arboricultural protection should be carried out in the following order:

- Site meeting with the Arboriculturist, MTCBC Tree Officer, Project Manager (if required)
- Tree removals (as shown on TRRP at *Appendix 3*) and facilitation pruning along access route
- Erection of Tree Protection Fencing (locations and specification shown in TPP, *Appendix 4)*
- Remediation works (monitor tree protection measure for duration of remediation)
- Re-instate cycle path
- Removal of Tree Protection measures following completion of remediation works
- Final landscaping including new tree planting (if proposed)

Site Meeting

8.8 The purpose of the meeting is to enable all relevant parties within the works team to meet on site and discuss all aspects of the AIA/AMS and the scheme of tree protection. This should take place before each stage of the project.

8.9 The meeting will give opportunities to:

- Exchange contact information
- Familiarise with all aspects of the AIA/AMS in the context of the site
- Discuss any potential issues regarding retained trees and agree solutions

Tree Removals and Facilitation Pruning

8.10 Any trees to be removed/pruned are highlighted on the TRRP at *Appendix 3.*

8.11 All tree works shall be carried out by a suitably competent and qualified Arboriculturist and in accordance with BS3998:2010 Tree work – Recommendations and adhere to current wildlife legislation.

8.12 All tree work operations must be carried out in-line with the contractor's own site-specific risk assessment and method statement that shall be approved prior to commencement of works by the Project Manager.

8.13 All tree work operations will be carried out so as not to damage or impact adjacent retained trees. No retained trees should be used for anchorage and all arisings shall be removed from site unless agreed with Project Manager.

8.14 Prior to commencement of site works, the details of Construction Environmental Management Plan (CEMP): Biodiversity must be understood in full by the Head Contractor/Site Manager. It will be the responsibility of the Head Contractor/Site Manager to disseminate the content of the CEMP: Biodiversity to all contractors involved in site works, and to ensure that this is clearly understood and adhered to by all persons at all times.

Installation of Temporary Tree Protection Barriers and Notices

8.15 The locations and specification for tree protection fencing is shown on the TPP included at *Appendix 4*. Once the fencing is erected, MTCBC should be informed for their approval before the next stages of the project commence.

8.16 All temporary tree protection barriers must be installed in accordance with the default BS5837:2012 specification (12 x stem diameter).

8.17 All weather A4-sized notices reading, "EXCLUSION ZONE" or equivalent shall be attached to tree protection barriers to heighten awareness of the CEZ. An example exclusion notice is included at *Appendix 5*.

8.18 Once erected, all TPF will be regarded as sacrosanct and should not be removed or altered without guidance from the Project Arboriculturist as well as informing MTCBC.

Main Remediation Phase

8.19 Following tree removals, all other proposed remediation activities should have little impact to retained trees if tree protection fencing is installed before this phase of the project commences.

8.20 No excavations whatsoever should take place outside of the defined working area without consulting the Project Arboriculturist in the first instance.

8.21 No machinery should be positioned within the RPAs of retained trees.

8.22 Care will be taken not to damage the canopies of the retained trees within this group from boom arms of machinery. If damage does occur, then advice should be gained from the Project Arboriculturist.

8.23 Any amendments to the proposals which can potential impact retained trees should be reported to the Project Arboriculturist in the first instance. The Project Arboriculturist will offer advice as well as informing MTCBC.

Removal of Tree Protection Fencing

8.24 The tree protection shall remain in place until works are completed except for final landscaping (if proposed).

8.25 On completion of all remediation works, all tree protection can only be removed following approval of site condition from the Arboriculturist/Project Manager.

8.26 The Arboriculturist will then give MTCBC notice of the intention to remove the TPF.

8.27 All fencing should be removed from site side (i.e., outside the EZ). Contractors should still be aware of EZ and the protection of trees.

Monitoring

8.28 A summary of the monitoring required is set out below:

Work stage	Job description	Project Arboriculturist Action
1	Installation of tree protection fencing and signage	Contactor to work to TPP (*Appendix 4*). Project Arboriculturist to report to MTCBC once erected.
2	Main remediation phase	Provide arboricultural advice if required. Provide site visits on a 3 weekly basis to ensure all tree protection is effective and fit for purpose. Report findings to MTCBC.
3	Removal of tree protection barriers, temporary ground protection notices	Project Arboriculturist to give notice to MTCBC of intention to remove fencing.

Tree planting

8.29 Once the works are complete, new tree planting will be implemented within the site, or at an alternate site as agreed by the Project Manager and Client (Wales & West Utilities). Numbers and specification will be confirmed.

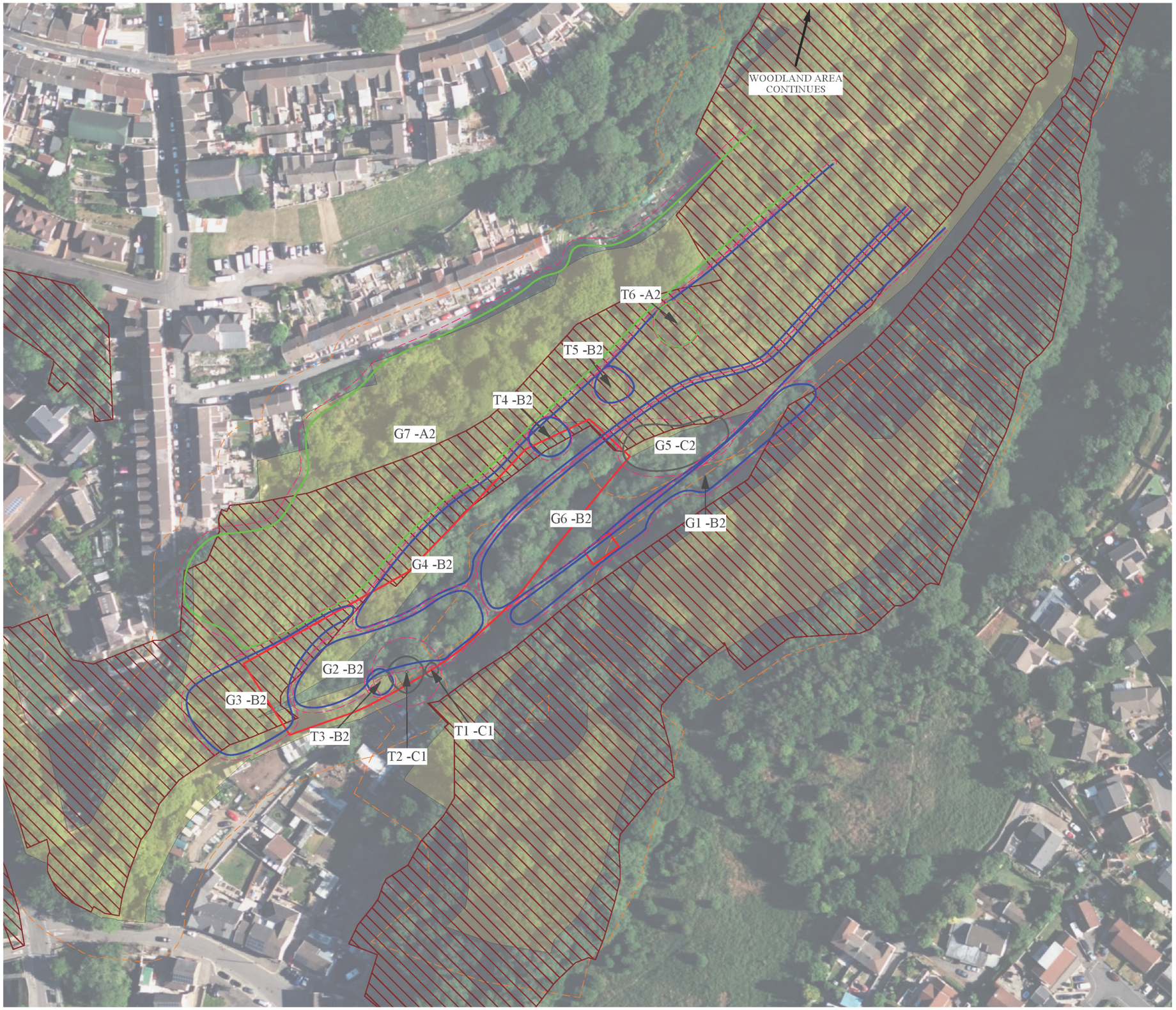
8.30 The new trees shall be planted in accordance with *BS8545: Trees: from nursery to independence in the landscape* to ensure successful establishment and contribute to the overall tree/canopy cover loss throughout the site.

8.31 The Project Arboriculturist can offer additional guidance on locations and species choice as required.

Appendices

Appendix 1

Tree Survey and Constraints Plans



KEY **BS 5837 : 2012 Categories**

- Tree Category A - High Quality
- A Category - Hedgerow, Group, Woodland
- Tree Category B - Moderate Quality
- B Category - Hedgerow, Group, Woodland
- Tree Category C - Low Quality
- C Category - Hedgerow, Group, Woodland
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS 5837:2012
- Shrub Mass / Offsite Tree / OOS (Out of scope)
- Ancient/Semi-natural Woodland
- Ancient Woodland 15m buffer
- Site Boundary
- TPO - Tree Preservation Order

N

0 10 20 30 40 50
Metres

keystone
making ecology our business

LAND AT QUAKERS YARD, TREHARRIS

TREE SURVEY & CONSTRAINTS PLAN

DWG NO- ACU_068_01	REVISION-
DATE- 20/09/2022	SHEET- 1/1
DRAWN BY - AD	APPROVED BY - AC
SCALE - 1:1,500 @ A3	CLIENT - WALES & WEST UTILITIES

Appendix 2

Tree Survey Schedule

TREE SURVEY SCHEDULE

Site: Mill Street, Quakers Yard, Treharris

Date: 09.09.2022

Client: Wales and West Utilities

TREES

Tree ID	Species	Height	Stem dia	Spread				Crown clearance height			Life stage	General observations	Structural condition	Physiological condition	ULE	Quality grading	RPA radius	RPA area
				N	S	E	W	1st branch height	1st branch direction	Canopy height								
T1	Alder (common)	5.5	125	3	2.5	2.5	3	1	North	4	SM	Self-set off-site tree located within riverbank. Limited access.	Fair	Good	10+	C1	1.5	7
T2	Ash (common)	18	1100	6	8	6.5	7	4.5	South	6	M	Multi-stemmed mature Ash tree located on northern edge of river bank. Serious decline in health with dieback and deadwood (Ash dieback). Self-set Sycamore growing between stems.	Fair	Fair	10+	C1	13.2	547
T3	Sycamore	17	500	5	5	5.0	5	0.5	North	4	M	Obviously larger tree located on northern river bank, typical form. Co-dominant stems at 3m. Forms part of larger adjacent tree group.	Fair	Good	20+	B2	6.0	113
T4	Ash (common)	18	700	8	7	8.0	8	4	North-east	6	M	Individual tree located on edge of off-site woodland. Situated at top of old wall raised from adjacent group. Some canopy dieback. Obviously larger than adjacent trees.	Fair	Fair	10+	B2	8.4	222
T5	Ash (common)	16	600	8	6	9.0	6	1	North	6	M	Mature tree located on edge of woodland. Situated on corner of boundary wall retaining ground to north, obvious canopy dieback.	Fair	Fair	10+	B2	7.2	163
T6	Oak (sessile)	19	750	9	9	9.0	9	2.5	East	5	M	Mature tree located adjacent to/outside of redline boundary. Typical form. May be part of original Ancient woodland. Typical form for woodland tree.	Good	Good	40+	A2	9.0	255

GROUPS

Group ID	Species	Height range	Est	Stem numbers	Maximum Stem diameter	Average radius	Average canopy height	Life stage	General observations	Structural condition	Physiological condition	ULE	Quality grading	RPA radius	RPA area
G1	Sycamore, Ash, Alder, Elm, Birch, Hawthorn, Willow, Beech, Hazel	2-16	-	100	450	4	2	EM-M	Linear off-site tree group locate£ to the south of the river. Trees suppressed and drawn up with high canopy form. Decline to some Ash trees. Japanese knotweed present on river bank. Unmanaged.	Fair	Good	20+	B2	5.4	92
G2	Ash, Alder, Holly, Hazel, Sycamore, Willow	2-17	-	75 (est)	500	4	3	EM-M	Linear tree group located adjacent to northern edge of river, mostly Ash which are exhibiting signs of decline, trees subsiding/ hung up, Himalayan balsam present. Better when considered as collective. Some larger declining Ash trees located adjacent to river bank which will require management.	Fair	Fair/good	20+	B2	6.0	113

TREE SURVEY SCHEDULE

Site: Mill Street, Quakers Yard, Treharris

Date: 09.09.2022

Client: Wales and West Utilities

Group ID	Species	Height range	Est	Stem numbers	Maximum Stem diameter	Average radius	Average canopy height	Life stage	General observations	Structural condition	Physiological condition	ULE	Quality grading	RPA radius	RPA area
G3	Ash, Sycamore, Holly, Cherry laurel, Hazel, Alder	1-19	-	75 (est)	600	5	1	EM-M	Corner within site. Larger Ash/Sycamore trees with mostly Sycamore understory. Ash in decline, mostly multi-stemmed. Typical unmanaged woodland area. Better collectively. Some trees subsiding/hung up.	Fair	Fair/good	20+	B2	7.2	163
G4	Alder, Ash, Hazel, Willow, Hawthorn.	1-18	-	100(est)	450	4	1	EM-M	Linear group on northern edge of site and neighboring woodland. Obvious wall/change of levels to on northern edge into adjacent woodland. Decline to some Ash within group.	Fair	Fair/good	20+	B2	5.4	92
G5	Ash	17-19	-	5	850	8	6	M	Obvious linear group of mature trees. All trees in decline with major canopy dieback which is likely to be progressive. Better collectively but useful life expectancy limited due to their overall condition.	Fair	Fair/poor	10+	C2	10.2	327
G6	Butterfly bush, Willow, Birch, Alder, Ash, Hazel, Sycamore	2-16	-	100(est)	450	4	3	EM-M	Linear tree group located on northern bank of river. Similar size trees but with some alder/ ash to 16m in height. On bank down sloping to river, decline to Ash trees. Better collectively but will need Ash removal due to potential safety risk adjacent to footpath.	Fair	Fair/poor	10/20+	B2	5.4	92
G7	Oak, Ash, Sycamore Holly, Hawthorn, Hazel, Elm, Willow, Privet, Beech	2-19	-	100 plus	900	8	3	EM-M	Ancient off-site woodland, mostly regeneration, but has some larger Oak, Ash, Beech and Sycamore trees. Some Japanese knotweed. Prominent landscape feature although access is limited due to undergrowth/topography. Decline to Ash.	Fair	Fair/good	10-40+	A2	10.8	366

Appendix 3

Tree Retention and Removal Plan

KEY **BS 5837 : 2012 Categories**

- Tree Category A - High Quality
- A Category - Hedgerow, Group, Woodland
- Tree Category B - Moderate Quality
- B Category - Hedgerow, Group, Woodland
- Tree Category C - Low Quality
- C Category - Hedgerow, Group, Woodland
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS 5837:2012
- Shrub Mass / Offsite Tree / OOS (Out of scope)
- Ancient/Semi-natural Woodland
- Ancient Woodland 15m buffer
- Site Boundary
- TPO - Tree Preservation Order
- Tree requiring removal to allow development proposals to be implemented
- Facilitation pruning - see AIA for details

N

0 10 20 30 40 50
Metres

keystone
making ecology our business

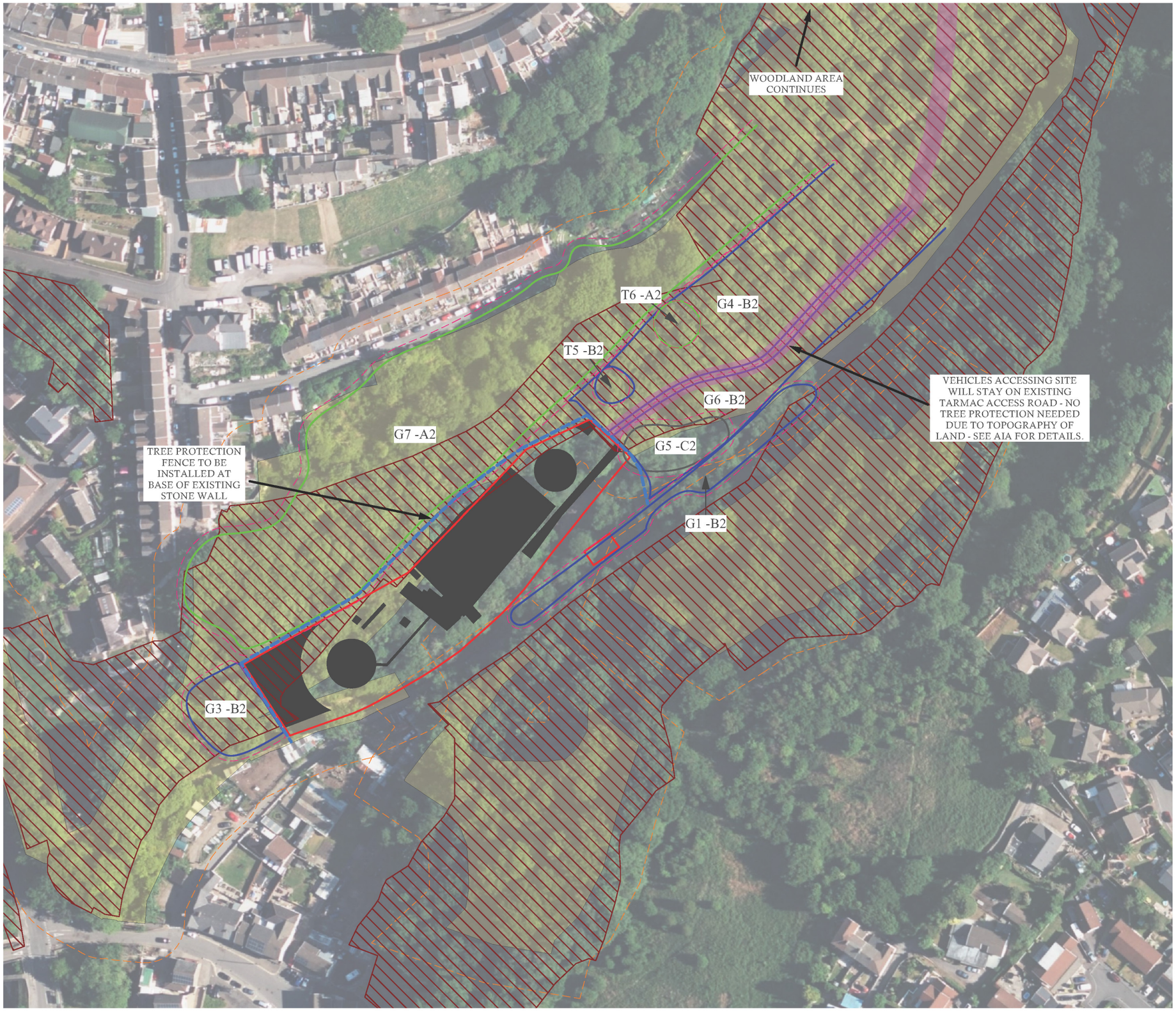
LAND AT QUAKERS YARD, TREHARRIS

TREE RETENTION & REMOVAL PLAN

DWG NO- ACU_068_02
REVISION-
DATE- 01/12/2022
SHEET- 1/1
DRAWN BY - AD
APPROVED BY - AC
SCALE - 1:1,500 @ A3
CLIENT - WALES & WEST UTILITIES

Appendix 4

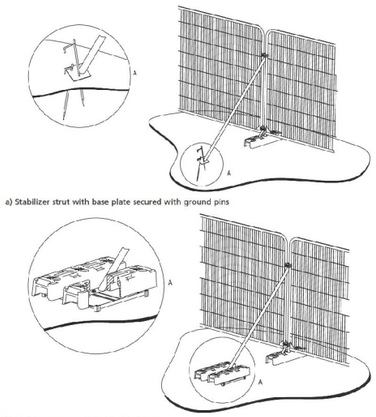
Tree Protection Plan



KEY **BS 5837 : 2012 Categories**

- Tree Category A - High Quality
- A Category - Hedgerow, Group, Woodland
- Tree Category B - Moderate Quality
- B Category - Hedgerow, Group, Woodland
- Tree Category C - Low Quality
- C Category - Hedgerow, Group, Woodland
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS 5837:2012
- Shrub Mass / Offsite Tree / OOS (Out of scope)
- Ancient/Semi-natural Woodland
- Ancient Woodland 15m buffer
- Site Boundary
- TPO - Tree Preservation Order
- Tree Protection Barrier to BS 5837:2012
- Facilitation pruning - see AIA for details

BS:5837:2012 Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

For more details refer to BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations' p 21

N

0 10 20 30 40 50
Metres

keystone
making ecology our business

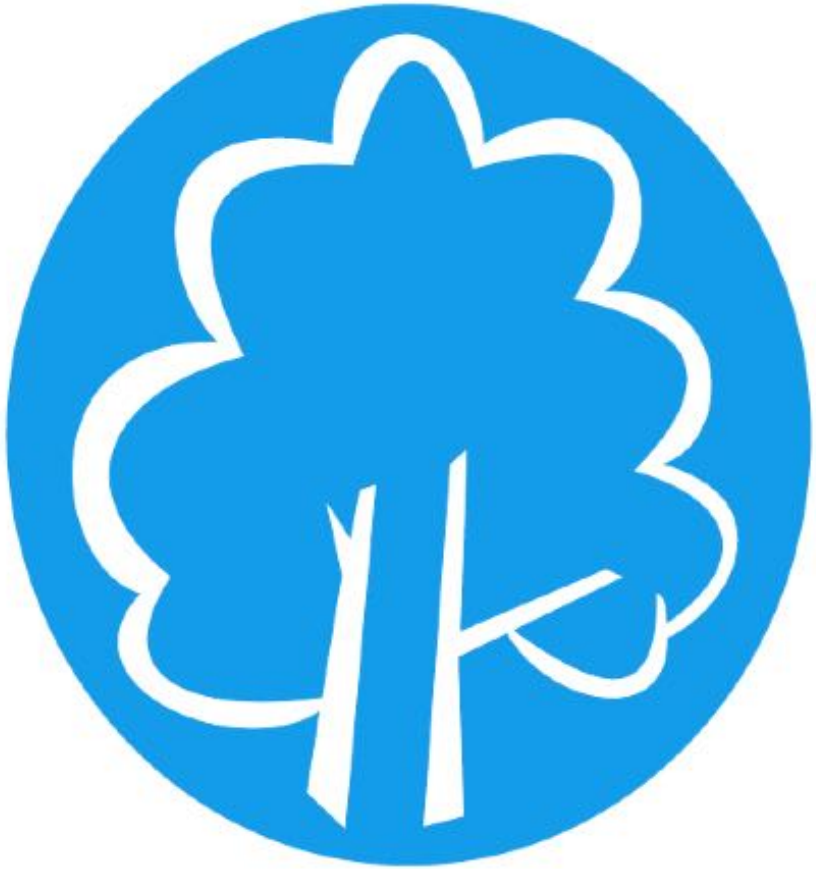
LAND AT QUAKERS YARD, TREHARRIS

TREE PROTECTION PLAN

DWG NO- ACU_068_03	REVISION-
DATE- 01/12/2022	SHEET- 1/1
DRAWN BY - AD	APPROVED BY - AC
SCALE - 1:1,500 @ A3	CLIENT - WALES & WEST UTILITIES

Appendix 5

Exclusion Zone Notice (EZ)



PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.

TREE PROTECTION AREA

KEEP OUT !

(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

Keystone Contact Details

Project Manager

Rob Frith BSc (Hons), MCIEEM
Principal Ecologist

Head/Southern Office
The Old Barn, Park Farm Buildings,
Beverston, Tetbury
Gloucestershire GL8 8TT

T +44 (0) 1666 503687
M +44 (0) 7720 740283
E rob.frith@keyenv.co.uk

www.keyenv.co.uk/ecology

Head/Southern Office
The Old Barn, Park Farm Buildings, Beverston, Tetbury, Gloucestershire GL8 8TT
T +44 (0) 1666 503687

Welsh Office
Falcon Drive, Cardiff Bay, Cardiff CF10 4RU
T +44 (0) 2920 504024