TREE SOLUTIONS



Arboricultural Impact Assessment

Proposed GRP Housing for AHU – Plas Gororau, Wrexham

Prepared for:

BCUHB

Our Ref: 25/AIA/WXM/336

September 2025

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1.0 INSTRUCTION

1.1 We have been instructed by Betsi Cadwaladr University Health Board (BCUHB) to undertake an Arboricultural Impact Assessment (AIA) to evaluate the proposed development in relation to existing trees on site. This assessment has been carried out in accordance with the principles and guidance set out in British Standard 5837:2012 *'Trees in Relation to Design, Demolition and Construction - Recommendations'*.

1.2 We have been instructed to prepare this report to assist all parties involved in the planning process in making informed and balanced judgements regarding arboricultural features in relation to the proposed installation of an GRP Unit to house an air handing unit at Plas Gororau, Ellis Way, Wrexham. Accordingly, all trees within influencing distance of the proposed works both on-site and on adjacent land have been surveyed. These trees are detailed within the Tree Survey Schedule (Appendix 1) and are plotted on all relevant accompanying plans.

1.3 A Stage 1 tree survey was carried in September 2025 by Alistair Henderson, Principal Consultant at Tree Solutions Ltd. The appraisal of the mechanical integrity of the trees on site is considered sufficient to inform the current development proposal.

1.3.1 The assessment was conducted from ground level and did not involve any invasive investigations. Consequently, the potential presence of concealed or subsurface defects cannot be fully ruled out. While the primary purpose of the survey was not to assess tree safety, any obvious structural defects considered significant in the context of the existing or proposed land use have been recorded.

1.3.2 It should be noted that detailed tree safety inspections fall outside the scope of this report, unless such assessments were explicitly instructed in writing.

1.4 One group of trees (G1) were surveyed and mapped on a Preliminary Tree Constraints & Impact Assessment Plan Ref: 25/AIA/WXM/336, Drawing No. 1 & 2 at ***Appendix 2***. All arboricultural information recorded during the survey is presented within a schedule at ***Appendix 1***.

1.5 The Arboricultural Impact Assessment is based on the proposed layout Ref: 24013, Drawing No: PGP2-TACP-PB-00-DR-A-SK-002 provided by TACP Architects.

2.0 STATUTORY CONTROLS & PLANNING POLICY

2.1 Wrexham Council does not currently make protected tree data available online. It is therefore advised that formal confirmation of the presence or absence of Tree Preservation Orders (TPOs) or Conservation Area status is obtained directly from the Local Planning Authority prior to undertaking any tree works.

2.1.2 The planning application will be assessed against relevant national planning policy and guidance. This includes *Planning Policy Wales* (Edition 12, February 2024), *Future Wales – The National Plan 2040*, and the relevant Technical Advice Note 10.

2.2 Protected Species

2.2.1 Mature trees often feature cavities, crevices, and hollows that provide potential roosting or nesting sites for protected species, notably bats and barn owls. Both species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), as well as The Conservation of Habitats and Species Regulations 2017 (as amended), which incorporates the provisions of the former 2007 Regulations. Any works affecting such trees must be preceded by appropriate ecological surveys and, if necessary, mitigation measures to ensure legal compliance.

2.3 Wildlife Habitats

2.3.1 Trees and hedgerows of various species offer valuable nesting habitat for a wide range of birds. It is likely that nesting birds will be present on site during the breeding season, typically from March to September. As such, any vegetation clearance or tree works during this period should be preceded by a nesting bird check conducted by a suitably qualified ecologist. Works should be delayed if active nests are identified, in line with wildlife protection legislation.

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3.0 THE SITE

3.1 The application site comprises an existing tarmac car park with concrete edge restraints. Trees are present within a linear plantation copse that extends around the perimeter of the site, forming a continuous landscape feature.



P1 – Location of proposed GRP unit

4.0 DEVELOPMENT PROPOSAL

4.1 The proposal comprises the installation of a glass reinforced plastic (GRP) enclosure to house a new air handling unit.

5.0 GENERAL CONSTRAINTS DATA - CONSTRUCTION EXCLUSION ZONES (CEZ's)

5.1 GENERAL

5.1.1 *During the development process, there may be three or even four key constraints to consider in relation to retained trees. These include:*

1. ***Construction Exclusion Zones (CEZ):*** *Areas around retained trees where no construction activity, ground compaction, or material storage is permitted, to protect the root system and overall tree health.*
2. ***Crown Protection Areas (or CEZ 2):*** *Above-ground space required to accommodate the tree's existing and future crown spread, including allowances for safe working distances and potential pruning limits.*
3. ***Root Protection Areas (RPA):*** *Below-ground zones defined to safeguard the tree's root system, as per BS5837:2012 guidelines, where development and soil disturbance are strictly limited.*
4. ***Working Space Buffers (if applicable):*** *Additional space around CEZ or RPA boundaries required to ensure safe access for construction personnel and machinery, without compromising tree protection measures.*

5.2 ROOT PROTECTION AREA (RPA)

5.2.1 The Root Protection Area (RPA), expressed in square metres (m²), must be protected both prior to and throughout any demolition or construction activities. This protection is essential to ensure the successful retention of trees by safeguarding a sufficient quantity of viable, functioning roots.

The RPA is derived from a radial measurement taken from the centre of the tree stem. For single-stemmed trees, this is calculated by multiplying the stem diameter (measured at 1.5 m above ground level) by a factor of 12. For multi-stemmed trees, the calculation is based on the formula: (mean stem diameter²) × number of stems**.**

5.2.2 During the Arboricultural Impact Assessment (AIA) process, this radial distance is converted by the Arboriculturalist into an actual area to be protected, considering the specific site conditions and any environmental or developmental influences that may have impacted the tree's rooting pattern.

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Initially, the RPA for each tree should be represented as a circle centred on the base of the stem. However, where site conditions suggest asymmetric rooting due to factors such as physical obstructions, topography, or historic ground disturbance a polygon of equivalent area may be substituted. Any deviation from a circular RPA must be underpinned by a robust arboricultural assessment, accurately reflecting the likely distribution of roots.

5.2.3 The Root Protection Area (RPA) must be safeguarded through the installation of appropriate tree protection fencing prior to the commencement of any demolition or construction activities on site. This fencing should remain in place and be respected for the duration of the works.

A strict prohibition on potentially harmful activities within the RPA must be observed. These include, but are not limited to:

- Mechanical excavation
- Soil stripping
- Fire lighting
- Storage of materials, equipment, or waste
- Ground level reduction
- The installation of impermeable or excessively sealed surfaces

Where construction activity is proposed in close proximity to retained trees or within the RPA, additional protective measures may be required. These may include the use of temporary ground protection to prevent soil compaction, or the implementation of special engineering solutions such as elevated surfaces or low-impact foundations designed to minimise disturbance to the rooting environment.

5.3 CEZ 2: TREE CROWN PROTECTION ZONE

5.3.1 The Tree Crown Protection Zone (CEZ 2) is defined as the area above ground occupied by the crown (branch structure) of a tree, including an allowance for safe working distances and, where appropriate, anticipated future crown development. The extent of CEZ 2 is determined by considering the current and projected crown spread, with reference to any acceptable levels of pruning in accordance with *BS 3998:2010 – Tree Work – Recommendations*.

5.3.2 The southern canopy of retained trees to the north are clear of the GRP unit and as such no access facilitation pruning is required.

5.4 CEZ 3: TREE DOMINANCE ZONE

5.4.1 This constraint is not considered relevant given the nature and limited scope of the proposed works.

5.5 CEZ 4: NEW PLANTING ZONE

5.5.1 Replacement tree planting will be undertaken during the first available planting season following the removal of the diseased Ash. The new trees will be of appropriate native or locally characteristic species and specification to ensure long-term landscape and ecological value, in accordance with best practice guidance.

6.0 SURVEY METHODOLOGY

6.1 The method used in the preparation of this report is based on the principles of BS 5837: 2012.

1. Tree heights were surveyed to the nearest 1m
2. Trunk diameters were measured by use of forestry girth tape
3. The category assessment (Table 1) on which the trees is based include current and long-term arboricultural, landscape, cultural and conservation values (BS5837: 2012). This table can be found at ***Appendix 1***
4. For clarity, the grading system is summarised from ***Table 2*** of the BS as follows:

U grade – trees for removal, effective for less than 10 years
A grade – trees of high quality and value, effective for more than 40 years
B grade – trees of moderate quality and value, effective for more than 20 years
C grade – trees of low quality and value, effective for 10 years

Note: We have indicated colour coding on the drawing and therefore a monochrome copy should not be relied on.

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6.2 SOIL ASSESSMENT

6.2.1 A soil assessment should be undertaken by a competent person to inform decisions relating to:

- the root protection area (RPA)
- tree protection
- new planting design; and
- foundation design to take account of retained, removed and new trees (potential soil subsidence/heave)

Tree Solutions do not undertake soil assessments, and the client is advised to seek specialist advice in this respect.

7.0 JUXTAPOSITION OF TREES AND STRUCTURES

7.1 Below ground constraints

7.1.1 The below ground constraints are generally summarised as the root protection area (RPA). The shape of the RPA and its exact location will depend upon arboricultural considerations including likely tolerance of the tree to root disturbance; morphology and disposition of the roots when known influenced by past or existing site conditions; soil type and structure; and topography and drainage.

7.1.2 The purpose of the Root Protection Areas (RPAs) is to prevent physical damage to tree roots and to prevent damage to the soil structure. Tree roots are damaged by soil compaction, changes in soil levels or soil contamination which could reduce tree health and/or stability.

7.1.3 In accordance with BS 5837:2012, the RPAs have been determined based on stem diameter measurements and adjusted to reflect on-site conditions that are likely to influence root morphology. Root development is affected by both site topography and the physical characteristics of the soil or substrate. Where trees are located adjacent to existing hard surfaces or below-ground obstructions, lateral root spread may be constrained due to compacted subgrades and structural barriers.

7.1.4 The RPA of all trees have been plotted as standard circles based on the stem diameter measurements recorded during the detailed tree survey, as no significant subsurface constraints were identified that would require modification.

7.2 Underground Services

7.2.1 No new underground service runs are proposed within the RPA of retained trees. This ensures full compliance with the requirements of BS 5837:2012, which prescribes that new utilities should be routed outside RPAs to avoid root damage and soil disturbance.

8.0 Arboricultural Impact Assessment Summary

8.1.1 A detailed tree survey was undertaken by Tree Solutions Ltd in accordance with the methodology set out in BS 5837:2012. All trees and arboricultural features within and adjacent to the site were recorded, with data collected on species, dimensions, physiological and structural condition, and categorisation in line with the standard's criteria (Table 1). Root Protection Areas (RPAs) were calculated and shown on a Tree Constraints Plan, which informed the early stages of the site layout. This information was subsequently developed into a combined Constraints and Impact Assessment Plan to evaluate the potential effects of the proposed development.

8.1.2 The proposed GRP unit has been predominantly located within the footprint of the existing hard surfaced car park. A minor incursion is required beyond the northern concrete edge restraint into the adjacent grass verge, extending up to 2.5m at its furthest point. The nearest trees are located approximately 4m north of the car park edge. The only tree directly affected is a single Ash specimen which is already in evident decline as a result of Chalara Ash Dieback. This tree is scheduled for removal as part of the wider programme of diseased Ash management around the site perimeter.

8.1.3 All required excavation has been carefully designed to remain outside the Construction Exclusion Zones (CEZs) of retained trees. Subject to the implementation of the protective measures detailed within the accompanying Arboricultural Method Statement and Tree Protection Plan, the development can proceed without any foreseeable adverse effects on the physiological condition, structural stability, or amenity value of retained trees.

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8.1.5 The proposal is therefore consistent with the recommendations of BS 5837:2012 and demonstrates compliance with relevant local and national planning policy, which seek the protection and integration of existing trees within development. On this basis, there are no arboricultural grounds on which the application should be refused.



P2 – Trees set back 4m from concrete edge restraint – unit extends within verge



P3 – Small Alder and dead Willow to east of unit



P4 – Ash with Chalara Ash Dieback

9.0 PROPOSED REVISIONS TO THE SCHEME

9.1 It is recommended that any proposed revisions to the scheme which may have implications for retained trees, or their associated Root Protection Areas should be referred to us for review and comment. This will ensure that appropriate arboricultural advice is provided at the earliest opportunity and that the scheme remains compliant with *BS 5837:2012* and best practice guidance throughout its implementation.

10.0 CONCLUSIONS

10.1 *BS 5837:2012 – Trees in Relation to Design, Demolition and Construction – Recommendations* provides the current best practice framework for assessing, retaining, and protecting trees on development sites. The proposed development has been designed in accordance with this guidance through the following key measures:

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- Arboricultural advice was sought at an early stage, with a Phase 1 Preliminary Tree Survey commissioned to inform site layout and design decisions.
- The design respects the constraints posed by moderate- and high-quality trees, ensuring their retention and appropriate integration into the proposed development.
- 1 diseased tree to be removed as part of wider site risk assessment management plan.
- Arboricultural input has been incorporated throughout the design process to deliver a balanced and sustainable scheme that meets development objectives while safeguarding retained tree stock.
- The development will not result in any adverse impact on retained trees.
- Detailed tree protection measures will be achieved through an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) to be submitted as part of reserved matters application

11.0 LIMITING CONDITIONS

Unless stated otherwise, the following conditions apply:

- The information contained in this report pertains only to the trees that were inspected and reflects their condition at the time of the survey.
- The findings and recommendations within this report are considered valid for a period of two years from the date of inspection.
- The inspection was limited to a visual assessment from ground level only. No invasive investigations—such as dissection, excavation, probing, or coring—were undertaken. As such, no warranty or guarantee, express or implied, is offered that undetected issues may not arise in the future.
- This report has been prepared solely for the use and benefit of the client. Tree Solutions Ltd accepts no liability or responsibility to any third party.
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Appendix One

Tree Survey Schedule

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TREE SURVEY SCHEDULE (BS5837: 2012)

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SITE:	PLAS GORORAU, WREXHAM
CLIENT:	BCUHB
BRIEF:	ARBORICULTURAL IMPACT ASSESSMENT

SURVEYOR:	A. HENDERSON
ASSESSMENT DATE:	15/09/2025
VIEWING CONDITIONS:	CLEAR
JOB REFERENCE:	25/AIA/WXM/336

TREE NO. T - Tree G - Group H- Hedge	SPECIES (COMMON NAME)	AGE	HEIGHT (m) + CROWN CLEARANCE/ DIRECTION OF GROWTH (N.S.E.W)	RADIAL CROWN SPREAD (m) N	S	E	W	STEM/ MULTI-STEM* DIA. (mm)	VITALITY	COMMENTS	MANAGEMENT	CATEGORY & SUB-CATEGORY GRADING BS 5837	BS 5837 RADIUS (m) RPA (m^2)
G1	Ash, Cherry, Sweet Chestnut, Willow, Alder	SM/ EM	≤15 1	3	3	3	3	≤250	M/G	• Boundary screen planning group that extends around the perimeter of the site • Planted at 1.5m centres and never maintained resulting is tall drawn stems and top-heavy crown • Two rows 3m apart – trees in nearest row impacted by works • Predominantly young Ash which is in advanced decline due to spread of Chalara Ash Dieback (30-60% dieback in crowns) – Ash proposed for removal over next 5 years as part of ongoing tree management works around entire site boundary • 1 White Willow to east heavily topped in past with mass of secondary adventitious regrowth • E.R.C.10+ if maintained	• Remove 1 No Ash	U, C & B	3 30m²

HEADINGS & ABBREVIATIONS

TREE NO.	REFERENCE NUMBER. REFER TO PLAN OR NUMBERED TAGS WHERE APPLICABLE (T = TREE, G = GROUP, H = HEDGE)
SPECIES:	COMMON NAME (LATIN NAMES AVAILABLE ON REQUEST)
AGE RANGE/LIFE STAGE:	Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, PM = POST MATURE
HEIGHT:	ESTIMATED AND RECORDED IN METRES. APPROXIMATELY 1 IN 10 TREES ARE MEASURED USING A CLINOMETER AND THE REMAINDER ESTIMATED AGAINST THE MEASURED TREES
CROWN SPREAD:	MAXIMUM CROWN RADIUS MEASURED TO THE FOUR CARDINAL COMPASS POINTS FOR SINGLE SPECIMENS ONLY (MEASUREMENT FOR TREE GROUPS - MAXIMUM RADIUS OF THE GROUP)
CROWN CLEARANCE & DIRECTION OF GROWTH:	HEIGHT IN METERS OF CROWN CLEARANCE ABOVE ADJACENT GROUND LEVEL (TO INFORM ON GROUND CLEARANCE, CROWN/STEM RATIO AND SHADING)
STEM DIA/MULTI-STEM DIA:	STEM DIAMETER - MEASURED AT APPROXIMATELY 1.5 METRES ABOVE GROUND LEVEL OR A COMBINATION OF STEMS FOR MULTI-STEMMED TREES
VITALITY:	A MEASURE OF PHYSIOLOGICAL CONDITION. D = DEAD, MD = MORIBUND, P = POOR, M = MODERATE, G = GOOD
E.R.C. = ESTIMATED REMAINING CONTRIBUTION:	RELATIVE USEFUL LIFE EXPECTANCY (YEARS)
BS 5837CATEGORY & SUB-CATEGORY GRADING:	A = HIGH QUALITY AND VALUE, B = MODERATE QUALITY AND VALUE, C = LOW QUALITY AND VALUE, U = UNSUITABLE FOR RETENTION (SUB-CATEGORY REFERS TO ARBORICULTURAL., LANDSCAPE AND CULTURAL/CONSERVATION VALUES)
BS 5837 RADIUS & BS 5837 RPA:	PROTECTIVE DISTANCE - RADIUS FROM THE CENTRE OF THE STEM TO THE LINE OF TREE PROTECTION (CONSTRUCTION EXCLUSION ZONE - CEZ) AND PROTECTIVE BARRIER ROOT PROTECTION AREA - BS 5837 (2012) ANNEX D (THE RECOMMENDATIONS STATE THAT THE RPA SHOULD BE CAPPED AT 707 M^2) NOTE – ALL CALCULATIONS ROUNDED TO NEAREST DECIMAL

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
	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)	See Table 2
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	See Table 2
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	See Table 2

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Appendix Two

Preliminary Tree Constraints Plan

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N

W E S

G1

Cherry

Chestnut

Ash

Ash

Ash

Ash

Ash

Ash

Ash

Willow (topped)

Sm Alder

Dead Willow

5m 10m

Legend

Root Protection Area Modified to Account for Site Features

Category

Crown Spread

Tree Number

Root Protection Area

- Category A (High Quality)
- Category B (Moderate Quality)
- Category C (Low Quality)
- Category U (Dead/Dying/In Decline)

NOTE: Tree/group numbers marked have approximate locations

Client:
Betsi Cadwaladr University Health Board (BCUHB)

Project:
GRP Unit, Plas Gororau, Wrexham

Title:
Preliminary Tree Constraints Plan

Scale:	Date:
1:200 @ A3	September 2025
Drawn By:	Revision:
NB	----
Job Ref:	Drawing No:
25/SAIA/WXM/336	01

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Appendix Three

Impact Assessment Plan

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Legend

Root Protection Area Modified to Account for Site Features

Category
Crown Spread
Tree Number
Root Protection Area

- Category A (High Quality)
- Category B (Moderate Quality)
- Category C (Low Quality)
- Category U (Dead/Dying/In Decline)
- Tree Proposed for Removal

NOTE: Tree/group numbers marked have approximate locations

Client: Betsi Cadwaladr University Health Board (BCUHB)	
Project: GRP Unit, Plas Gororau, Wrexham	
Title: Arboricultural Impact Assessment	
Scale: 1:200 @ A3	Date: September 2025
Drawn By: NB	Revision: ----
Job Ref: 25/SAIA/WXM/336	Drawing No: 02

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