LAND ADJ. CAE STANLEY, BONTNEWYDD; ARBORICULTURAL IMPACT ASSESSMENT

Report Ref: RTA.89.001
January 2023

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LAND ADJ. CAE STANLEY, BONTNEWYDD
ARBORICULTURAL IMPACT ASSESSMENT

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EXECUTIVE SUMMARY

Based on an objective assessment made in accordance with *BS 5837:2005 Trees in Relation to Construction – Recommendations*, there are 5 Category B, 5 Category C, 4 Category U trees and groups and one woodland on or within influencing distance of the site. Tree locations, their quality categories, Root Protection Areas (RPA) and canopy spreads are shown on Drawing 1 - Tree Constraints Plan.

1 individual tree must be removed to facilitate the development proposals. This is a low value sycamore growing directly adjacent the existing field fence which is proposed to be replaced by a new wall.

Category U trees are unsuitable for retention and are recommended for removal due to severe crown decline and potential hazard they pose as they further decline and become unstable.

The remaining trees may be retained and incorporated into the development although some pruning of trees overhanging the site boundary will be required.

Temporary protective barrier fencing will be required to demarcate a **Construction Exclusion Zone (CEZ)** around retained trees. This must be put in place prior to the commencement of any development works, including bringing machinery or materials onto site, the erection of site huts.

Alignment of the proposed retaining wall in the north of the development encroaches marginally within the RPAs of existing trees. To minimise damage to the rooting area of retained trees, construction of the wall foundations when encroaching into the RPAs should be carried out using sensitive excavation techniques.

The proposed location of the Sustainable Urban Drainage System (SUDS) flood basin is within the RPA of small number of retained trees. This will necessitate the production of an **Arboricultural Method Statement (AMS)** (see Section 6) which will detail sensitive construction techniques adopted to maximise the likelihood of healthy and stable tree retention.

Ornamental tree planting will take place amongst the new residential development. Following the establishment of the planting scheme, a **net increase** in tree cover, arboriculture and amenity value will be achieved.

An arboricultural consultant will be appointed to oversee all aspects of tree care and protection for the duration of the construction works.

1.0 INTRODUCTION

1.1 Enfys Ecology have been commissioned by Kingscrown Group to conduct an arboricultural survey of land adjacent Cae Stanley, Bontnewydd, North Wales. This report details the arboricultural impact of developing the site, subsequent mitigation recommendations and protective measures.

1.2 The survey was carried out on the 25th of November 2022 by means of inspection from ground level by Rob Taylor FdSc, MSc, a qualified Arboricultural Consultant. Trees were assessed in accordance with *BS 5837:2012 Trees in Relation to design, demolition and construction – Recommendations.*

1.3 Under the British Standard the assessment of trees is made objectively. The categorisation method identifies the quality and value of the existing tree stock.

1.4 A topographic plan was used to record the position of trees and vegetation (PMS21277/01). Where the age distribution and species mix of tree cover was relatively uniform, trees were plotted as groups. A number of trees were not plotted on the topographic plan, in which case, on-site measurements and estimations were used to plot their locations.

1.5 A total of 11 individual trees (T1-T11), 3 groups of trees (G1-G3) and 1 woodland (W1) were surveyed and mapped (refer to Drawing 1). All arboricultural information recorded during the survey is presented at Appendix 1.

1.6 The nature of the soils on site was not assessed during the survey.

1.7 This report provides the results of the survey and includes the following:

- A schedule of all trees located on, or within influencing distance of the proposed development (Appendix 1);
- An assessment based on *BS 5837:2012*, of trees in terms of their potential value within any future development. On the basis of this assessment trees have been categorised into one of four categories: A, B, C or U (Appendices 1 & 2);
- An assessment, based on *BS 5837:2012*, of the requirement for protection of trees during the demolition and construction phase (Section 5);
- Advice on removal, retention and management of trees based on their current condition (Section 6);
- A Tree Constraints Plan detailing tree quality categories, canopy spreads and Root Protection Areas (**RPA**) for all trees surveyed (Drawing 1); and
- A Tree Implications and Protection Plan detailing the development proposals, trees to be retained and removed, tree protection fencing alignment and areas of specialised ground treatment (Drawing 2).

2.0 THE SITE AND SURROUNDINGS

2.1 The site lies off Pwllheli Road (A487), to the immediate northeast of the village of Bontnewydd, Gwynedd, North Wales. The northern boundary of the site is marked by the course of Afon Beuno beyond which is pastoral land which adjoins residential properties along the A487. Land use to the south of the site is residential.

2.2 The survey area is characterised by sheep pasture which continues to the east. Topographically, the land slopes down very gradually from south to north until it meets Afon Beuno.

2.3 Weather conditions during the survey were dry and overcast.

Development Proposals

2.4 The proposed development includes the construction of 24 new residential units which comprise two-storey walk up apartments. Soft landscaping, parking bays and bin stores will be established throughout the development as well as water detention basins in the western end of the site.

2.5 Detail of the proposals is shown on Drawing 2 and is based on the proposed site plan (Ref: C1104-005-A) supplied by Ainsley Gommon Architects.

3.0 STATUTORY PROTECTION

Tree Preservation Orders & Conservation Area Designations

3.1 Where it is considered expedient to do so, local authorities reserve the right to create Tree Preservation Orders (TPO) to protect the amenity value conferred to a location by a tree or group of trees. Where a TPO is in force, lopping, topping, felling, uprooting or wilful damage caused to a tree is prohibited and such actions may be prosecuted and incur an unlimited fine. Works to TPO protected trees must only be undertaken with the written consent of the local authority.

3.2 Trees also have a significant role in complimenting and enhancing the character, history and architectural form of those areas which have been designated with Conservation Area status. Prior to undertaking any tree work within a Conservation Area, there is a legal obligation to submit a six week 'Notice of Intent' to the LPA in accordance with section 211 of the Town & Country Planning Act 1990.

3.3 Consultation with the Gwynedd County Council interactive planning map revealed that the site is not within a Conservation Area. At the time of writing, it has not been established whether any trees within the survey area are subject to Tree Preservation Orders.

Protected Species – Bats and Barn Owls

3.4 Mature trees often contain cavities, crevices and hollows which are a potential habitat for roosting bats. Bats are afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), as well as under Schedule 2 of the Conservation of Species and Habitats Regulations 2010 (as amended), and as such causing damage to a bat roost constitutes an offence.

3.5 Tree cavities, crevasses and hollows are also potential nesting sites for owl species, including barn owls; a species included on the 'Amber List' of Birds of Conservation Concern in the UK owing to habitat loss.

3.6 A preliminary ground level appraisal of the wildlife habitat value of each tree was undertaken by a trained layperson during the arboricultural survey. Several trees flanking Afon Beuno contain features suitable for roosting bats and their location alongside the river may increase their potential as habitat. Specialist surveys may determine the presence/absence of roosts.

3.7 Should the presence of a bat roost or owl nest be suspected whilst undertaking works on any other trees and groups on site, operations must be halted until a licensed bat handler or ecologist can provide advice.

Protected Species - Birds

3.8 Trees are a potential habitat for nesting birds, which (as well as their nests and eggs) are protected under the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to intentionally or recklessly, damage or destroy an active birds' nest or any part thereof.

3.9 Due to the suitability of the trees within the survey boundary for nesting birds, all tree work should ideally be undertaken outside the bird nesting season (British bird nesting season: March to September inclusive).

3.10 If this is not possible then a detailed inspection of each tree should be undertaken by a qualified ecologist immediately prior to the arboricultural works. Should an active nest be found (being built, containing eggs or chicks) then any work likely to affect the nest must be halted until chicks have fledged.

4.0 TREE POPULATION

4.1 11 individual trees (T1-T11), 3 groups of trees (G1-G3) and 1 woodland (W1) were recorded within influencing distance of the development. A schedule of all trees and groups in terms of species, condition, age management recommendations and *BS 5837:2012* quality categories is provided at Appendix 1.

4.2 With the exception of T11, a low value sycamore on the southern site boundary, the surveyed trees are located along the bank of Afon Beuno, beyond the western and northern fence line. They form a crescent of semi-mature to mature trees which continues along the course of the river to eventually form closed canopy woodland to the east.

4.3 The far eastern end of the group, a stand of semi-mature alder forms a closed canopy for roughly 20m alongside the riverbank (Image 1). They are in overall reasonable condition with good vitality although minor to moderate basal decay was observed affecting the southernmost tree which overhangs the site and highway by up to 3m. Further west along the crescent of trees, the species composition changes to comprise more sessile oak, ash and sycamore with an understorey of hazel, hawthorn, holly and field maple.

4.4 Trees T1 and T5 are semi-mature sessile oak growing from the stream bank on the western site boundary and both overhang the site boundary by up to 5m. Despite typical minor crown dead wood and asymmetric crown form due to competition with neighbouring trees they have reasonable crown vitality and no significant defects were visible. Trees T2 and T3 are semi-mature sycamore standing alongside T1 and T5. T1 was in the better quality of the two trees as T3 displayed early signs of crown senescence and decline.

4.5 Three semi-mature ash trees (T4, T6 and T8) were recorded beyond the northern boundary of the site. All three displayed severe crown decline resulting from ash dieback infection and abundant stem decay and crown dead wood (Image 2).

4.6 Standing beyond the northeast boundary of the site is tree T9, a mature sessile oak. It is a broad and dominant tree with good vitality and only minor visible defects such as small decay pockets on the man stem. Tree T10 (semi-mature sycamore) stands immediately to the east of T9 and despite reasonable vitality has poor, asymmetric form due it proximity to the oak.

4.7 Further to the east along the Afon Beuno, the tree cover begins to form a more mature broadleaved woodland structure. The principal species is alder with an understorey of mainly hazel and a varied range of age classes are represented. Although dieback disease was prevalent and observed affecting the majority of the ash within the woodland, the remaining trees display good vitality. A large mature and dominant sycamore stands on the far side of the stream bank.

4.8 Tree and group locations, their quality categories and canopy spreads are shown on Drawing 1.

Image 1: Group G1, semi-mature alder

Image 2: Advanced ash dieback disease

Image 3: W1, mature alder woodland

Image 4: Northern boundary trees. T9 and T10

Tree Quality Categorisation

4.9 Under *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* trees and groups are objectively assigned a quality category designed to quantify their value within any future development. Table 1, below, presents a summary of the categories presented in the British Standard. The full table has been reproduced at Appendix 2.

4.10 Table 2, overleaf, details which of those trees surveyed come under each tree quality category.

Table 1: Summary of BS 5837 tree quality categorisation criteria

Category A	Trees of high value including those that are particularly good examples of their species and/or those that have visual importance or significant conservation or other value
Category B	Trees of moderate value including those that do not qualify as Category A due to impaired condition and/or those that collectively have higher value than they would as individuals; also trees with material conservation or other value
Category C	Trees of low value including those with very limited merit or impaired condition; trees offering transient or temporary landscape benefits
Category U	Trees with irremediable defects and anticipated early loss due to collapse; dead trees or those in immediate decline and those with infection pathogens that threaten other trees

Table 2: *BS 5837:2005* Quality Categorisation for surveyed trees

Category A	Category B	Category C	Category U
Trees			
-	T1, T2, T5, T9	T3, T10, T11	T4, T6, T7, T8
TOTAL: 0	**TOTAL: 4**	**TOTAL: 3**	**TOTAL: 4**
Groups/woodland			
W1	G1	G2, G3	-
TOTAL: 1	**TOTAL: 1**	**TOTAL: 2**	**TOTAL: 0**

5.0 IMPACTS OF THE PROPOSED DEVELOPMENT

5.1 Table 3, below, lists the number and quality of trees that will require removal in order to facilitate the development proposals and those that can be retained. This is the result of an assessment based on the proposed site plan and discussions with the client regarding their application strategy.

Table 3: Arboricultural implications of the proposed development

	Tree Quality Category			
	A	**B**	**C**	**U**
Tree features that can be retained	W1	T1, T2, T5, T9, G1	T3, T10, G2, G3	T4, T6, T7, T8
Tree features that require removal to facilitate development	-	-	T11	-

See Appendix 1, Arboricultural Data Sheets for subcategories

5.2 1 individual tree (T11) must be removed to facilitate the development proposals. This is a low value sycamore growing directly adjacent the existing field fence which is proposed to be replaced by a new wall.

5.3 Category U trees are unsuitable for retention and are *recommended* for removal due to severe crown decline and potential hazard they pose as they further decline and become unstable.

5.4 The remaining trees may be retained and incorporated into the development provided protective measures and sensitive working techniques are adhered to during construction (see Section 6). They will also serve as a soft screen against the new development when viewed from the north and west.

5.5 The proposed location of the Sustainable Urban Drainage System (SUDS) flood basin is within the RPA of small number of retained trees. This will necessitate the production of an Arboricultural Method Statement (AMS) (see Section 6) which will detail sensitive construction techniques adopted to maximise the likelihood of healthy and stable tree retention.

5.6 Some pruning of trees overhanging the site boundary will be required (see Section 7).

5.7 Where planning permission is granted, the retention schedule shown in Table 3 and Drawing 2 would normally form a part of that permission. Any change to this schedule would therefore be likely to require an application to vary the consent.

6.0 TREE PROTECTION REQUIREMENTS

Root Protection Areas

6.1 As per *BS 5837:2012*, the **Root Protection Area (RPA)** is calculated using the trees diameter at 1.5 metres (refer to Appendix 1) and represents the minimum area around each tree that must be left undisturbed to ensure their survival.

6.2 Tree roots typically spread two times the width of the crown, although this figure may be significantly increased for certain species and where specific ground conditions are present. The majority of tree roots are found in the top 600 mm of soil and most of the fine roots that absorb water and nutrients are found in the top 100 mm.

6.3 The morphology of roots is influenced by past and present site conditions (the presence of roads, structures and underground services), soil type, topography and drainage. This means that a tree's roots may not be uniform in their extent and the **RPA** may not be a circular area centred on the tree stem.

6.4 Notable barriers to growth on this site are likely to be exist around the riverbed and embankment. Roots are unlikely to be absent in all these areas but where unfavourable conditions exist, growth will certainly be impeded. The **RPA** may be adjusted or offset to most accurately represent the likely spread of roots for each individual tree (refer to Drawing 1).

Protective Fencing and Exclusion Zones

6.5 Temporary protective barrier fencing will be required to demarcate a **Construction Exclusion Zone (CEZ)** around retained trees. This must be put in place prior to the commencement of any development works, including bringing machinery or materials onto site, the erection of site huts.

6.6 The **CEZ** acts to protect both tree roots and branches and has been extended to incorporate canopy spread where appropriate.

6.7 Protective fencing alignment is shown on Drawing 2.

6.8 The fencing must be fixed into the ground to withstand accidental impact from machinery and to ensure that a sufficient protective area is maintained. A weatherproof notice stating 'Construction Exclusion Zone – Keep Out' must be fixed to each fencing panel Details of recommended protective fencing are shown in Appendix 3.

6.9 Any alteration to the fencing alignment to allow for approved activities will be made in agreement with the council's Arboricultural Officer.

6.10 The protective fencing must not be removed until the physical construction phase has been completed and all vehicles have been removed from site, to the satisfaction of the council's Arboricultural Officer.

Retaining wall construction within RPAs

6.11 Alignment of the proposed retaining wall in the north of the development encroaches marginally within the RPAs of existing trees. To minimise damage to the rooting area of retained trees, construction of the wall foundations when encroaching into the RPAs should be carried out using the following techniques.

6.12 Installation of protective fencing should take place prior to any excavation or bringing of materials onto site. Where any material storage or access beyond the fencing is unavoidable, temporary ground protection should be used to protect the underlying soil structure. Ground protection must be fit for the purpose of supporting any machinery entering or using the site without being distorted or causing compaction of underlying soil.

6.13 In accordance with *BS5837: 2012*, excavation using hand tools with be carried out prior to any mechanical excavation within the RPA of the retained trees. This should be done to the required depth of the retaining wall foundations.

6.14 Roots smaller than 30mm may be cut back to the trench face using hand secateurs or pruning saws. Any roots greater than this size will also be cut back using pruning saws, however, the project arboricultural consultant will be informed and will be present prior to any severance in order to assess the impact on tree stability and health.

6.15 Plant machinery may be used within the trench once hand excavation has been completed and any exposed roots cleanly severed to the satisfaction of the project arboriculturist. A long reach should be used which will allow the machine to sit outside the RPA.

Ground Contamination

6.16 Storage areas for liquids such as fuels, oil or paint should not be located within 10m of any trees on or within proximity to the site due to the risk of soil contamination caused by accidental spillage.

6.17 Particular care must be taken when working on or close to sloping ground to avoid unintentional runoff into the rooting area of retained trees.

Ground Level Changes

6.18 A rise or reduction in soil level can have major implications on the longevity and health of the trees. Minor changes (up to 100mm) can be tolerated in some cases but is heavily dependent on tree species, condition and growing environment.

6.19 Existing ground levels within the **Construction Exclusion Zone** should be respected as far as is reasonably practicable. The advice of a qualified Arboricultural Consultant should be sought if level changes are required.

Arboricultural Method Statement (AMS)

6.20 The proposed location of the Sustainable Urban Drainage System (SUDS) flood basin is within the RPA of trees T1, T2 (category B), T3, G3 (category C) and T4 (category U). An **Arboricultural Method Statement (AMS)** will be required in order to demonstrate that the proposed operations can be undertaken with minimal risk of adverse impact on trees to be retained. The **AMS** is typically drafted as part of reserved matter/planning conditions and will detail a precautionary approach towards tree protection that will be adopted and any operations proposed within the RPA in order to demonstrate that the operations can be undertaken with minimal risk of adverse impact on trees to be retained.

6.21 Removal of existing soil and hard surfaces, temporary ground protection, fencing and installation of new permanent hard surfacing, including material, design constraints and implications for levels will all be addressed in detail in the **AMS.** This will likely be the result of collaboration between an Arboricultural Consultant and other project specialists. This process may result in the use of un-conventional materials and excavation methods to allow more control over soil and root disturbance. As outlined in BS5837:2012, manual excavation within the RPA may be acceptable, subject to justification. Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement.

7.0 TREE MANAGEMENT

Planning and communication

7.1 An arboricultural consultant will be appointed to oversee all aspects of tree care and protection for the duration of the construction works. The arboricultural consultant will liaise with the project manager to ensure that there are no conflicts between the construction method statements and the arboricultural method statement

7.2 Prior to the start of any site construction works the developer will convene a pre-commencement site meeting. This shall be attended by the operations manager, the groundwork contractor(s) and the arboricultural consultant. The LPA tree officer will be invited to attend. If appropriate, the tree felling/surgery contractor should also attend. At that meeting contact numbers will be exchanged, and the methods of tree protection outlined in this statement shall be fully discussed, so that all aspects of their implementation and sequencing are made clear to all parties. Any clarifications or modifications to this statement arising from the meeting shall be circulated to all parties in writing.

Tree removal and pruning

7.3 A number of trees standing immediately beyond the boundary fence and overhang the site by up to 4m. Pruning of low hanging branches (<4.5m above ground) back to the boundary fence will be necessary to reduce conflict with and future encroachment on the development.

7.4 A number of the surveyed trees standing beyond the northern and western boundary (T4, T6, T7 and T8) are in a state of severe decline and are likely to become increasingly unstable in the near future. Although not directly required to facilitate the development, their removal is recommended on the grounds of safety followed by their replacement by means of natural regeneration. Alternatively, heavy reduction of their crowns may be preferred leaving standing dead stems ~3m in height for the purposes of retaining deadwood habitat along the river course. It is recommended that this takes place prior to the commencement of the development construction to ease extraction of any waste material.

7.5 Trees will be removed using specialist arboricultural contractors ensuring no damage to surrounding woodland occurs. Arisings will be removed from site or chipped/stacked within the woodland according to the preferences of the relevant landowner.

Mitigation tree planting

7.6 Although only one tree must be removed to facilitate the development, tree planting will take place during the landscaping phase and to mitigate for its loss and to enhance visual amenity value of the scheme.

7.7 Ornamental tree planting will take place amongst the new residential development. Indicative locations are shown on Drawing 2 and more detail is provided in the landscape design produced out by Richards, Moorhead and Laing Ltd. (drawing ref: 3247/01). Native species such as bird cherry (*Prunus padus)* and rowan (*Sorbus aucuparia)* as well as ornamental cultivars of Norway maple (*Acer platanoides*) and apple (*Malus sp.)* will be used alongside native shrubs, wildflowers and amenity hedgerows.

7.8 Following the establishment above planting scheme, a **net increase** in tree cover, arboriculture and amenity value will be achieved.

7.9 Aftercare is vital to the survival of newly planted trees. Provision should be made for the maintenance of newly planted trees and include watering, formative pruning and the checking of tree ties and stakes.

7.10 The extent of mitigation planting will ultimately be determined in agreement with Gwynedd County Borough Council.

Post Construction Tree Care

7.11 Hazard recommendations are based on observations at the time of survey. Trees are dynamic living organisms whose structure is constantly changing. Even those in good condition can suffer from damage or stress. Following site development, regular (annual or biennial) inspections of all retained trees should be undertaken by a qualified Arboricultural Consultant.

APPENDIX 1

ARBORICULTURAL SURVEY DATA SHEETS

No.	Species	Age class	Height (m)	DBH	FSB	N	S	E	W	Comments	SULE	Category	Recommendations
T1	Sessile oak (*Quercus petraea*)	MA	8	690	2	6	5	9	4	Regrowth from previously felled tree. Overhanging site by 5m. reasonable vitality. Minor dead wood. Growing on stream bank.	L	B1	Crown raise and reduce where growing into site to achieve ~4.5m height clearance
T2	Sycamore (*Acer pseudoplatanus*)	MA	10	710	4	5	4	4	4	Stems trifurcate at 1.5m. Poor stem unions with included bark. Reasonable vitality. Growing on stream bank.	L	B1	
T3	Sycamore (*Acer pseudoplatanus*)	MA	8	310	2	3	4	3	2	Growing directly on stream bank. Reduced vitality. Moderate dead wood throughout crown.	M	C1	
T4	Ash (*Fraxinus excelsior*)	MA	7	240	4	3	4	2	3	Severe decline. Poor asymmetric form. Moderate stem decay and dead wood throughout crown.	S	U	Remove
T5	Sessile oak (*Quercus petraea*)	MA	8	390	2	5	6	3	5	Asymmetric form leaning to the west due to proximity to T6. Overhanging site by 4m. Survey restricted due to dense vegetation. Reasonable vitality.	M	B1	
T6	Ash (*Fraxinus excelsior*)	MA	8	440	4	7	5	3	4	Severely declining crown with dead wood and decay throughout.	S	U	Remove

No.	Species	Age class	Height (m)	DBH	FSB	N	S	E	W	Comments	SULE	Category	Recommendations
T7	Sycamore (*Acer pseudoplatanus*)	M	11	800	2	5	5	5	4	Densely ivy clad. Severe crown decline and dieback. Upper crown dead.	S	U	Remove
T8	Ash (*Fraxinus excelsior*)	MA	9	510	3	5	6	5	3	Severe crown decline due to ash dieback disease. Stems bifurcate at base. Ivy clad. Moderate dead wood throughout crown.	S	U	Remove
T9	Sessile oak (*Quercus petraea*)	M	7	530	1	6	6	4	5	Broad and dominant oak. Survey restricted due to dense vegetation. Ivy clad. Good vitality. Minor decay pockets on stem.	L	B1	Crown raise and reduce where growing into site to achieve ~4.5m height clearance
T10	Sycamore (*Acer pseudoplatanus*)	MA	7	310	2	3	3	1	3	Severely asymmetric crown weighted to the west. Poor form and densely ivy clad. Reasonable vitality.	M	C1	
G1	Alder (*Alnus glutinosa*)	MA	to 9	To 420	9	1				Group of alder beside stream. Overhanging site by up to 3m. Good vitality. Moderate basal decay on southernmost tree.	L	B1	Crown raise and reduce where growing into site to achieve ~4.5m height clearance
G2	Ash; hazel (*Corylus avellana*); sycamore; field maple (*Acer campestre*); sessile oak,	Y - MA	To 8	To 320	20+	0				Dense riparian group along stream. Some decaying stems and dead wood but overall good vitality.	L	B1	

No.	Species	Age class	Height (m)	DBH	FSB	N	S	E	W	Comments	SULE	Category	Recommendations
	hawthorn (*Crataegus monogyna*);												
G3	Sessile oak, hawthorn, hazel, holly (*Ilex aquifolium*)	Y - MA	To 4	To 350	0					Dense streamside group. Mainly vigorous multi-stemmed hazel. Dense ivy and holly present.	M	C1	
W1	Sycamore, alder, ash, hazel, hawthorn,	M	To 15	To 750	-					Mixed broadleaved woodland along stream bank. Predominantly alder with hazel beneath. Varied age structure. Generally good vitality although ash die back disease present. Large mature sycamore in good condition in far side of stream back.	L	A1	

APPENDIX 2

SURVEY METHODOLOGY

The survey of trees is conducted from ground level only. The nature of the soils on site is not assessed.
Trees are dynamic living organisms with a constantly changing structure; even trees in good condition can suffer from damage or stress. The information recorded is presented as being correct at the time of survey.
The following features of each tree, group of trees or wood may have been recorded in the Arboricultural Survey Data Sheets at Appendix 1.

Species Common name and scientific name is given.

Height Top height of tree recorded in metres.

Stem Diameter For single-stemmed trees the measurement is taken at 1.5 metres above ground level and recorded in millimetres.
For multi-stemmed trees an average all stems measured at 1.5m above ground level is used.
For tree groups a range from minimum to maximum diameters is provided based on measurements taken using one of the aforementioned methods.

Crown Spread The N, S, E and W branch spreads are recorded in metres to provide a representative crown shape.

First Significant Branch (FSB) Crown clearance above ground level recorded in metres.

Age

Young Trees that can reasonably be relocated or replaced like for like, without undue cost;

Middle Age Trees in the established growth stage of their life with the potential to continue increasing in size;

Mature Trees that have reached their ultimate size, given their location and surroundings;

Comments A brief evaluation and description of the tree with comments on form, vitality, health and any significant defects or symptoms of ill-health.

BS 5837 Tree Quality Assessment

The tree quality assessment is based on the Cascade Chart from of BS 5837:2012 (See below). Four categories (A, B, C and U) are used to denote tree quality (A= High, B = Moderate, C = Low, U= Unsuitable for retention).
Subcategories (1-3) denote the specific function value of the trees and the reasoning behind the allocation of a specific category (the subcategories may be used in combination but do not accumulate collective weight).

Root Protection Area (RPA)

RPA is allocated to ensure that a sufficient area is left undisturbed during development. It is provided as an area (m^2) and as the radius of a circle (m) typically plotted from the centre of the stem.
The RPA is calculated using a mathematical equation included in BS 5837:2012 (Section 4.6 and Table D.1) and is based on a trees stem diameter. In some cases the RPA may need to be adapted to best reflect the likely area and position of roots required to ensure survival; this may be based on criteria such as the tree's condition, species, crown spread and any barriers to growth. Any alteration must be justifiable but is made at the Arboricultural Consultants discretion.

Recommendations

Recommendations for arboricultural works, etc. are based on the **current** land use, and take into account the tree or group attributes without bias to the proposed development.

Safe Useful Life Expectancy (SULE)

An estimation of the life expectancy as healthy functioning tree. This will be influenced by species and the condition of the tree at the time of survey.

Long > 40 years
Medium 20 – 40 years
Short less than 20 years

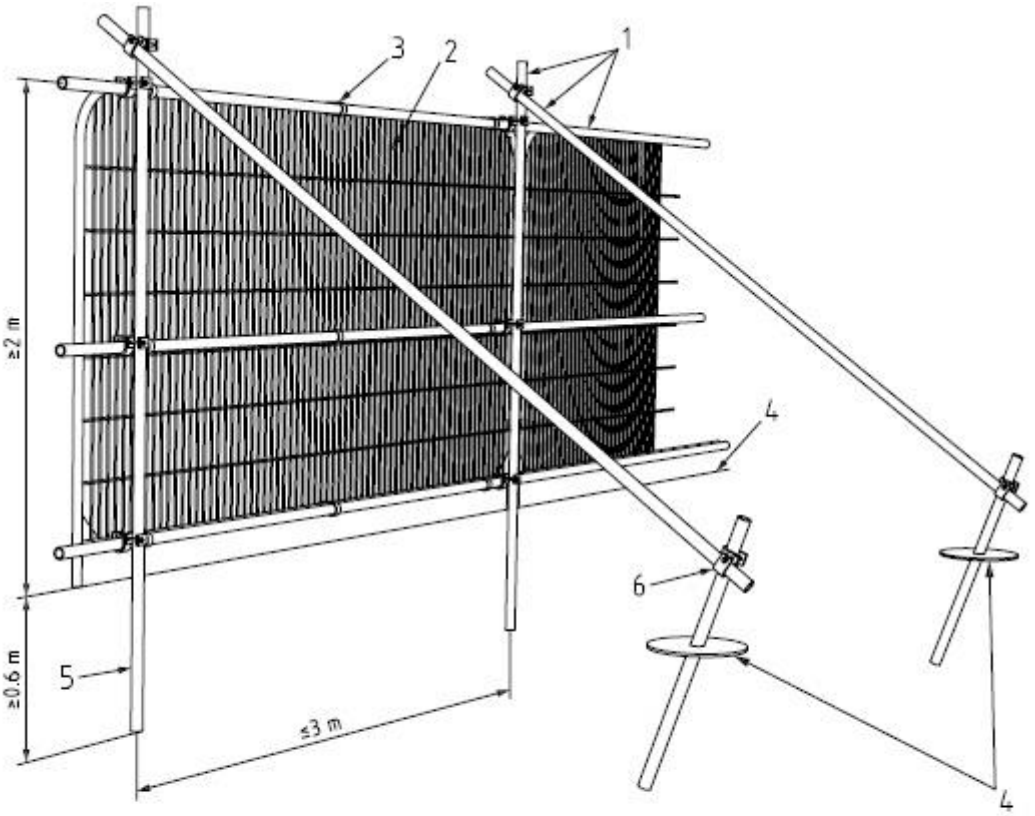
Table 1 Cascade chart for tree quality assessment

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

British Standards Institute (2012) *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.*

APPENDIX 3

TEMPORARY TREE PROTECTIVE FENCING EXAMPLE



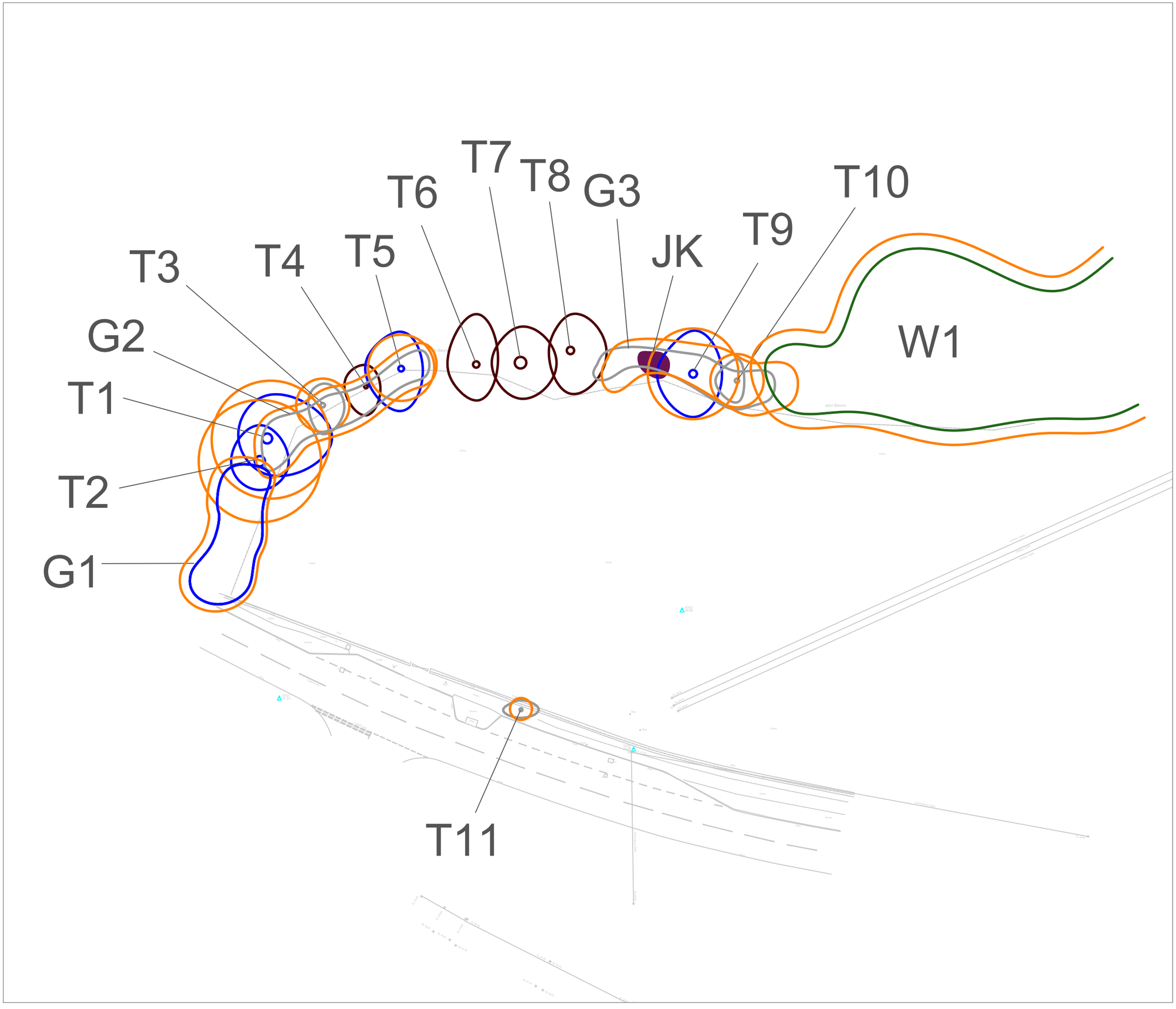
Key

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

British Standards Institute (2012) *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.*

DRAWING 1

TREE CONSTRAINTS PLAN



KEY

- T1 — Individual trees
- G1 — Groups of trees
- W1 — Woodland
- Root Protection Area (RPA)
- JK — Japanese Knotweed

Tree Quality Categorisation

- Category A trees/groups
- Category B trees/groups
- Category C trees/groups
- Category U trees/groups

Note: Categorisation based on BS5837:2012
This drawing should be read in conjunction with the respective Arboricultural Data Sheets

Amendments		
Rev	Date	Description
A	19/01/23	Tree locations updated with topo

N

Enfys Ecology
Llys Garth
Garth Road
Bangor
LL57 2RT

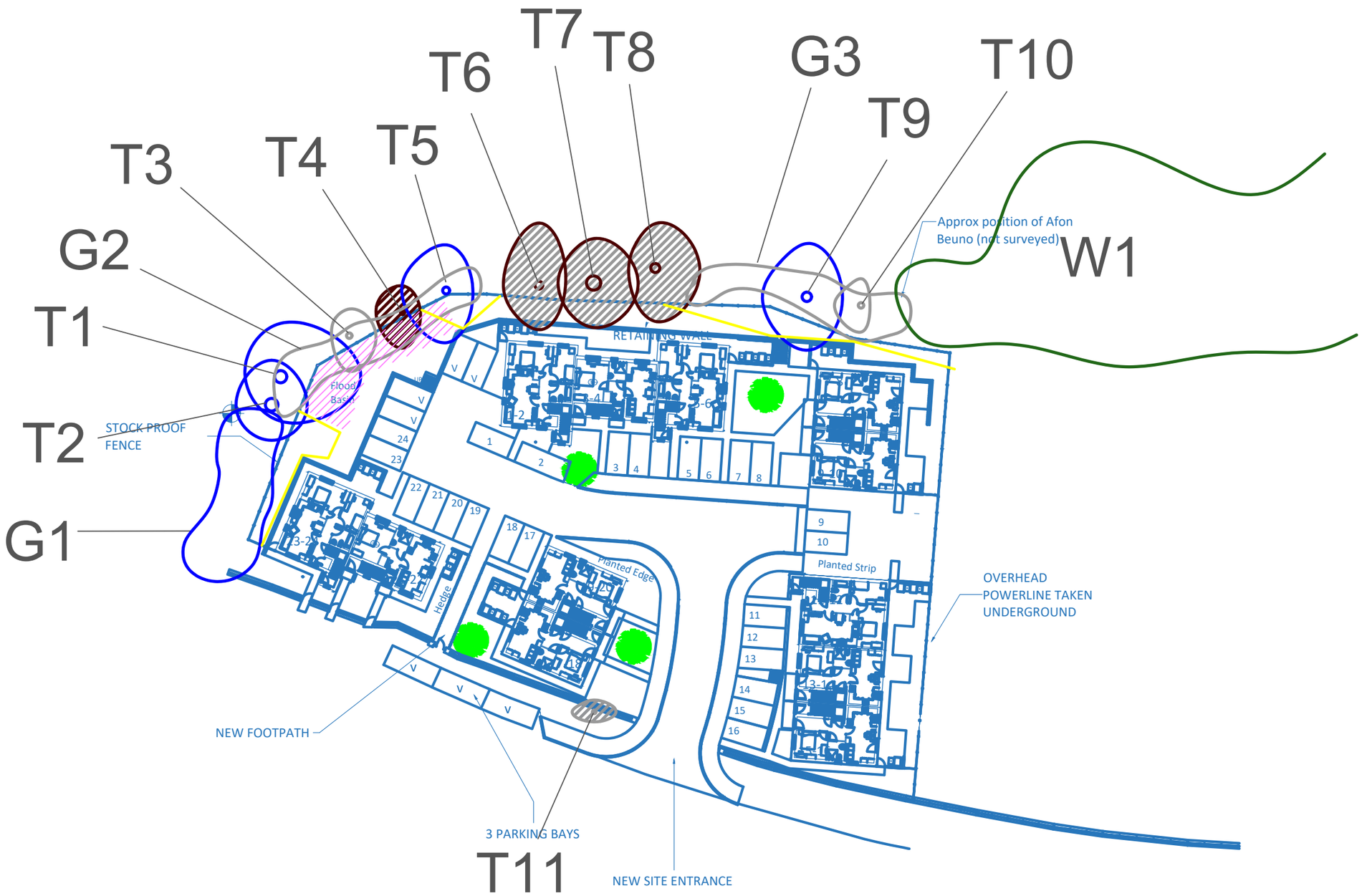
Project: Land Adjacent Cae Stanley, Bontnewydd
Arboricultural Impact Assessment

Drawing Title: Tree Constraints Plan

Drawn by	Drawing number	Scale	Date
RNT	D.RTA.89.01-A	1:500 @ A3	27/11/22

DRAWING 2

TREE IMPLICATIONS AND PROTECTION PLAN



KEY

- T1 Individual trees
- G1 Groups of trees
- W1 Woodland
- Design proposal
- Protective fencing alignment
- New tree planting
- Construction activities to follow an Arboricultural Method Statement

Tree Quality Categorisation

- Category B trees/groups
- Category C trees/groups
- Category U trees/groups

Trees/groups to be removed

- Category B trees/groups
- Category C trees/groups
- Category U trees/groups

Note: Categorisation based on BS5837:2012
This drawing should be read in conjunction with the respective Arboricultural Data Sheets

Amendments		
Rev	Date	Description
A	19/01/23	Amended layout

N

Enfys Ecology
Llys Garth
Garth Road
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Project
Land Adjacent Cae Stanley, Bontnewydd
Arboricultural Impact Assessment

Drawing Title
Tree Protection Plan

Drawn by	Drawing number	Scale	Date
RNT	D.RTA.89.02-A	1:500 @ A3	16/12/22