

Arboricultural Impact Assessment

BS5837 Trees in Relation to design, demolition and construction – Recommendations

Former Public Toilets, Towyn BS5837 AIA

CONWY COUNTY BOROUGH
COUNCIL
DEVELOPMENT CONTROL
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Client:

Mr Longford
Sandbank Road,
Towyn, Conwy,
LL22 9JA

Date: Friday, 19 December 2025

Report Ref:

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1 SCOPE AND ADMINISTRATIVE INTRODUCTION

1.1 Brief

I, Peter Gardner have been commissioned by Saer Architects on behalf of Mr Longford to conduct a BS5837 Trees in Relation to design, demolition and construction – Recommendations, arboricultural survey and report for the proposed extension and renovation of the former public toilets located on Sandbank Road, Towyn, Conwy, LL22 9JA.

1.2 Scope

- Conduct ground level Visual Tree Assessment in accordance with the guidance provided in Annex C of BS5837:2012 of all trees within influencing distance of the proposed development.
- Assess and quantify the retention value of the surveyed trees.
- Make recommendations on how to facilitate the Safe Useful Life Expectancy (SULE) of the surveyed trees.
- Provide a report detailing the impact the proposed development will have on the surveyed trees discussing protection measures required during the demolition/construction phase.

This report consists of:

- 1 A survey data sheet which records all relevant information for assessing the retention of trees and any impacts the proposed development may have on the trees. This document should be read in conjunction with the Tree Constraints Plans (TCP1 & TCP2)
- 2 Tree Constraints Plans - Topographical site plans which detail the location of the trees surveyed, their crown spread, estimated rooting zone and their retention category. TCP1-Existing site, TCP2-Proposed Design Conflicts, Referenced in Appendix 4 and attached as separate PDFs.
- 3 Tree Removal Plan TRP - Topographical site plan illustrating which trees require removal to facilitate the proposed design. Referenced in Appendix 4 and attached as a separate PDF.
- 4 A Tree Protection Plan TPP- Topographical site plan detailing the protection measures required to protect the retained trees for the duration of the development under the current design. Referenced in Appendix 4 and attached as a separate PDF.
- 5 Mitigation Planting Plan MPP- Topographical site plan illustrating the location and species of the proposed mitigation tree planting. Referenced in Appendix 4 and attached as a separate PDF.
- 6 An Arboricultural impact assessment, detailing the impact the proposed development may have on the trees, on and within influencing distance of the site. The above and below-ground constraints of the trees are discussed and mitigation measures are provided and illustrated. Tree management recommendations are made to facilitate the current design of the development as per the architect's topographic drawing provided.
- 7 An Arboricultural Method Statement, detailing the timing and measures to be taken to protect the trees for the duration of the development. This section is to be read in conjunction with the Tree Protection Plan (TPP) which identifies the areas of the site that require protective measures to prevent damage to the trees for the duration of the development.

These sections combine to provide the relevant information needed by the Local Planning Authority to assess the trees in the context of the proposed development.

1.3 Limitations of Scope

- The assessment of the trees impacted by the proposed development focuses solely on their retention value and safe, future contribution to the development site. Work recommendations are made to facilitate the safe retention of the surveyed trees, however no warranty or guarantee is expressed or implied that deficiencies may not arise in the future.
- The assessment of the trees was conducted from the ground therefore issues high in the crown may not be visible. If an aerial inspection is required, this will be detailed in *Recommended Works*.
- No decay inspection equipment was used as this is outside the scope of BS5837, if further inspection is deemed necessary, this will be detailed *Recommended Works*.
- No subterranean investigation was conducted during this survey therefore the condition of the roots is unknown. If a subterranean survey is deemed necessary, this will be detailed in *Recommended Works*.

2 KEY POINTS

- 3 trees have recommended for removal to facilitate the current design.
- No other tree management is required to facilitate the current design.
- Replacement planting of 5 trees has been recommended on the site to mitigate the loss of the 3 trees.

3 TREE SURVEY METHOD

The assessment of the trees has been carried out in accordance with the guidance provided in Annex C of BS5837:2012. In summary this requires that any tree on or within influencing distance of the site with a stem diameter (dbh) ≥ 75 mm at 1.5m above ground level is recorded.

3.1 Tree Categorisation

In accordance with the BS5837:2012, trees and groups are categorised objectively based on their quality and assigned a category designed to quantify their value within any future development. Table 1 presents a summary of the categories from the British Standard. The full table has been reproduced in Appendix 2.

Table 1 Summary of BS5837 tree quality categorisation criteria

Category A	Trees of high quality with an estimated remaining life expectancy of at least 40 years
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years
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
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

Additionally, BS5837:2012 provides subcategories 1-3 within the category system outlined in table 1 which indicate the area(s) in which a tree or group retention value lies.

1. Mainly arboricultural
2. Mainly landscape
3. Mainly cultural, including conservation

3.2 Tree Constraints

3.2.1 Above Ground Constraints

Where the current and/or ultimate height of a Category A, B or C tree will cause an obstruction to the proposed development, this must be considered as a constraint. This is usually considered in terms of issues relating to shade and light. However, it can also include leaf litter and potential branch drop.

3.2.2 Below Ground constraints - Root Protection Area (RPA)

The below ground constraints are defined as the likely spread and deposition of the tree's root system referred to as the **Root Protection Area (RPA)** and plotted as pink circle centred around the tree stem in the TCP and TPP.

3.2.3 As per BS 5837:2012, the RPA is calculated using the diameter of the tree at 1.5 metres (refer to appendix 2) and represents the minimum area around each tree that must be left undisturbed to ensure their survival.

3.2.4 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.

3.2.5 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. Compaction of soil removes air within the soil and causes root death, which subsequently leads to tree decline. Compaction of soils on construction sites is a major cause of tree decline, the effects of which are often not realised until after the construction phase. In this development, the ongoing risk of soil compaction exists in vehicle traffic.

3.2.6 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. For this reason the RPA may be offset from the tree stem to more accurately reflect the likely estimated deposition of roots away from rooting barriers and into more favourable substrates.

4 ARBORICULTURAL IMPACT ASSESSMENT

4.1 Site Description

- 4.1.1 The site is a former public toilet block located on Sandbank Road, which forms part of a public car park located to the rear of the building. The site is flat with a planting area located to the northwest of the building, populated with early/semi-mature sessile oak and hawthorn. Trees are also located in planting areas demarcating sections of the car park and along the car park boundaries. Access to the car park is gained via an entrance to the southeast of the building, and footpaths run parallel to the northwest and southeast elevations of the building.

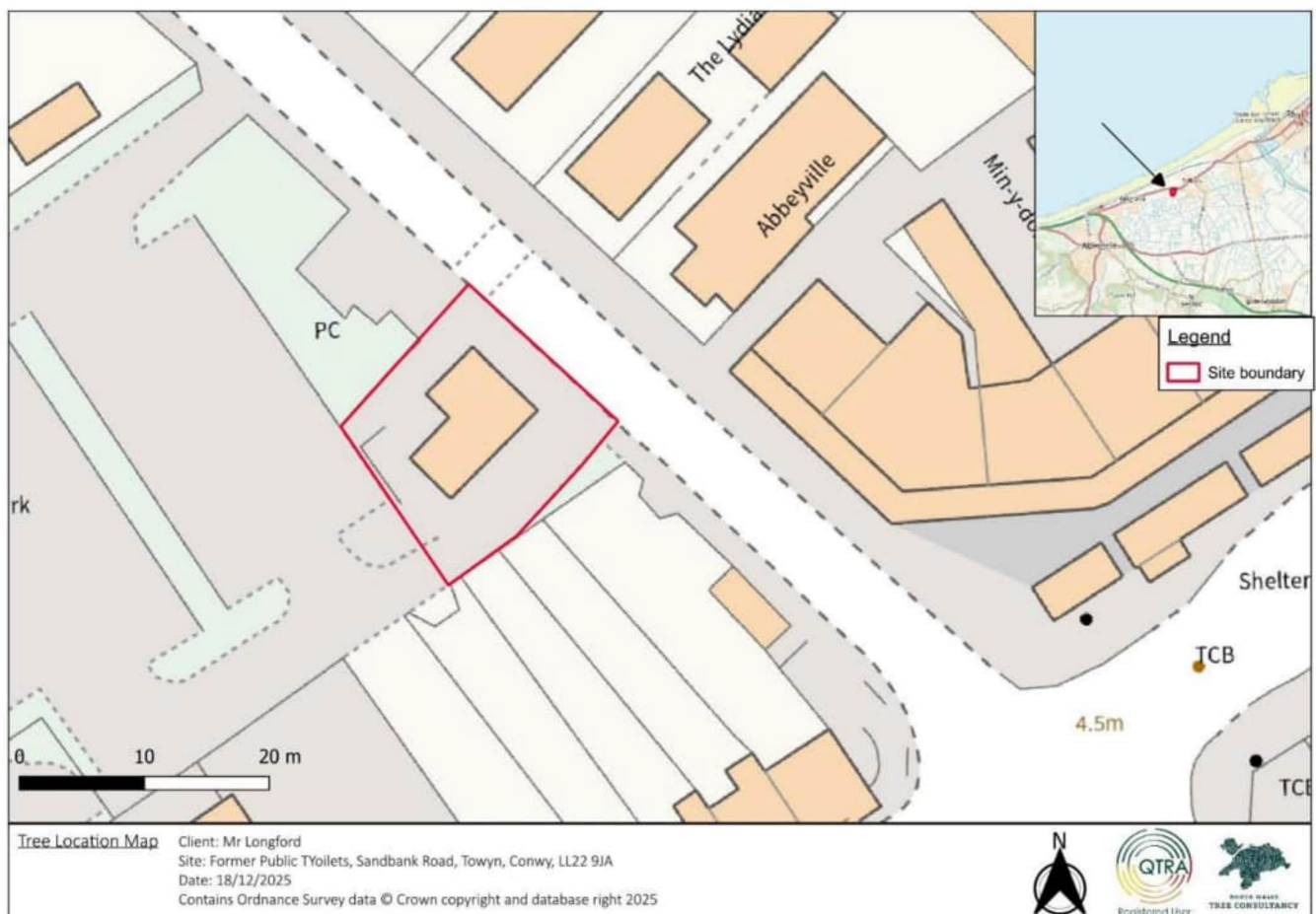
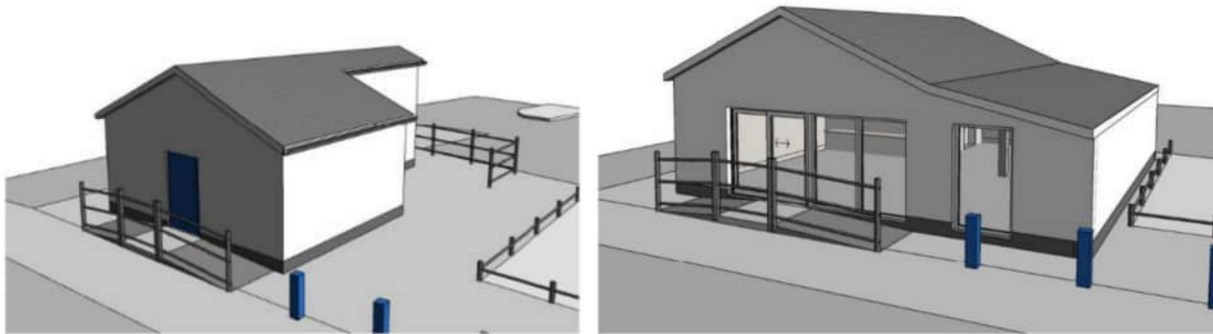


Figure 1 Site location Map

4.2 Development proposal

- 4.2.1 Extend the existing building to the northwest.
- 4.2.2 Renovate the existing building and repurpose it as a shop with minor changes to form new entrances.



EXISTING - 3D VIEW 1

PROPOSED - 3D VIEW

Figure 2 3D illustrations of the existing building and the proposed extension and renovation

4.3 Onsite Survey

- 4.3.1 The survey was carried out on Thursday, 9th December 2025, from ground level by Peter Gardner BSc (Hons), LANTRA PTI, a qualified arboricultural consultant. Trees were assessed objectively using a methodology guided by *BS5837:2012 Trees in Relation to design, demolition and construction – Recommendations*.
- 4.3.2 The weather conditions at the time of the survey were fine with scattered showers; there were no limitations to the survey.
- 4.3.3 A topographic site plan provided by the client was used to record the position of trees and vegetation. Trees were plotted using onsite measurements. Where age distribution and species mix were relatively uniform, trees were plotted as groups.
- 4.3.4 Tree diameters were measured using a calibrated surveyor's tape at a height of 1.5m, a laser hypsometer was used for recording distance and height.
- 4.3.5 Existing metal tree tags were present for the majority of trees surveyed which were used. Where no tag was present, these trees have been recorded on the site plans with a #; no tags were added to these trees as they are easily identified from the site plans.
- 4.3.6 A total of 16 individual trees (T1968- T1978, T1995 & T1#-T4#) and 2 tree groups (G1 & G2) were surveyed. All arboricultural information recorded during the survey is presented in Appendix 1. Trees were inspected visually from ground level, trees were not climbed or inspected below ground level.

- 4.3.7 The nature of soils on site was not assessed, the possibility of minor soil movement due to tree root activity cannot be discounted. Prior to any soil disturbance, the exact location of all tree root protection areas (RPA) should be measured.

Table 2: Summary of the tree population quality at Former WCs Sandbank Road

Individual Trees			
Category A	Category B	Category C	Category U
5	8	3	0
Tree Groups			
Category A	Category B	Category C	Category U
2	0	0	0

4.4 Statutory Protection Constraints

4.4.1 Tree Preservation Orders & Conservation Area Designations

Consultation with Conwy County Council confirms that trees along the northwest boundary of the car park are subject to a tree preservation order ref TPO #CCBC45: T1 is an oak and G1 was originally a line of 5 oaks of which now only one remains. These tree were not surveyed as they are located a sufficient distance from the development, they have been plotted on the MPP for reference as TPO 1 and TPO 2.

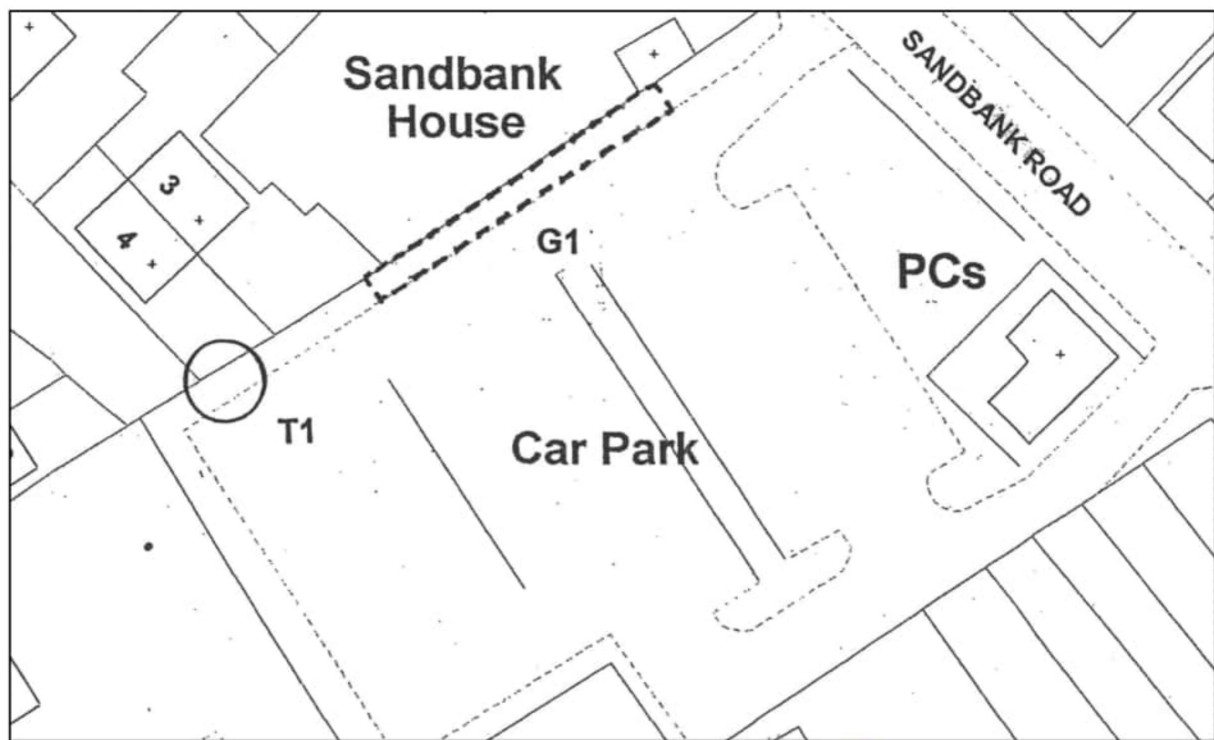


Figure 3 Site designations

4.4.2 Protected Species – Bats

Mature trees can contain features of significant habitat value for roosting bats which are protected under Schedule 5 of the *Wildlife and Countryside act 1981* and Schedule 2 of the *Conservation of Species and Habitats Regulations 2010*. Therefore, disturbing a roost site is an offence.

4.4.3 A preliminary ground-level appraisal of the habitat potential of each tree or group was made. The site contains 2 mature trees along the northwest boundary marked as TPO1 and TPO2 on the MPP with hollowing features and ivy suitable for bat roost habitat. These trees were not surveyed as they are located at a suitable distance from the proposed development and as such, these features will remain undisturbed. Due to the early/semi-mature age class of the majority of the site trees, these trees do not contain any suitable roosting features. This report concludes that the proposed development will not negatively impact any bat roosting potential on the site.

4.4.4 Protected Species - Birds

Trees are potential habitat for nesting birds, which are protected under *Wildlife and Countryside act 1981*. It is therefore a criminal offence to intentionally or recklessly damage or destroy an active bird nest.

4.4.5 Due to the suitability of all the trees surveyed on the site for nesting birds, any recommended works should be undertaken outside of the British nesting birds season **March-August inclusive**. If this is not possible then a detailed inspection of each tree by the project ecologist should be undertaken immediately prior to the arboricultural works. Should an active nest be found then all work must stop until chicks have fledged and the nest is inactive.

4.5 Impact of Development Overview

4.5.1 The proposed extension of the existing building will extend onto an existing block-paved footpath.

4.5.2 Above-ground conflicts

The proposed design conflicts with the tree crowns of T1968-1970. To retain these trees, the tree crowns would require heavy pruning to facilitate the construction of the extension. The position of the trees relative to the proposed design means that the trees will require ongoing management in the long term to mitigate conflict with the building fabric.

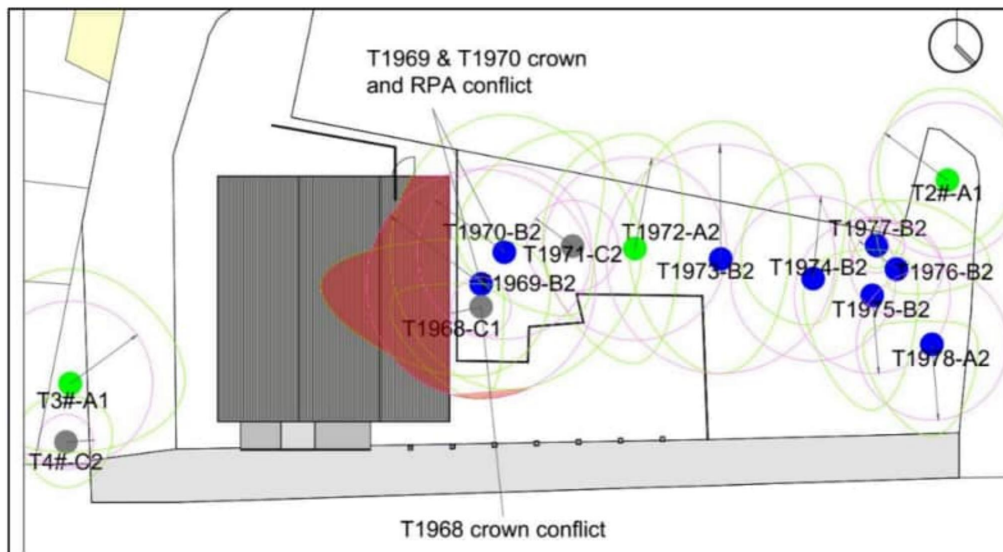


Figure 4 Excerpt from TCP2 showing above and below ground conflicts with the proposed design

4.5.3 Below-ground conflicts

The proposed design foundations conflict with the RPA of T1969 by 32% & T1970 by 13%. Under the British standard, the incursion into the RPA has to stay under 20%. Furthermore, a practical working space is required to construct the extension.



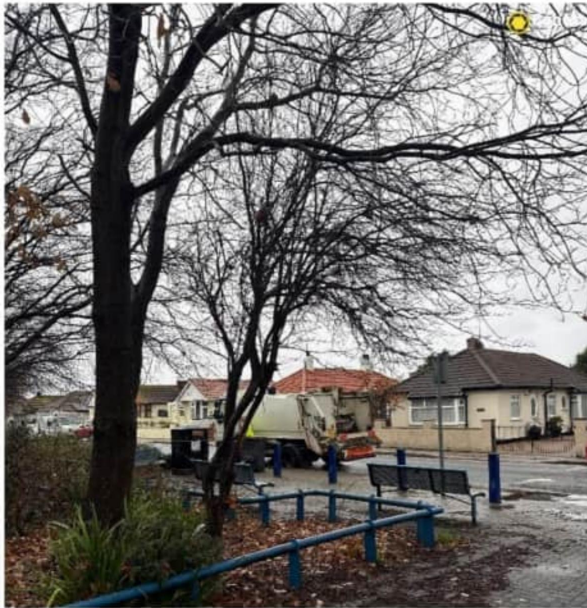
Figure 5 Picture illustrating tree positions relative to the proposed extension (red box)

4.5.4 Conclusions

The conflicts can be mitigated for through a heavy crown reduction of the trees. This would stress the trees and leave the trees looking unsightly, and does not address the issue of the tree stems so close to the proposed building elevation. The RPA conflict can be mitigated by constructing the building on pile and beam foundations. However, given the location of the trees relative to the proposed building elevation, they will continue to be a management concern. Also, the scale of the development is such that it is more practical in the long term to remove the trees to avoid future management complications and enable an easy construction process. There is sufficient space on the site to compensate for the loss of these trees along the northwest boundary, where the TPO G1- originally 5 trees now only 1 – is located (ref figure 3). T1969 and T1970 are semi-mature oaks in good condition category B2, while it is undesirable to remove trees in good condition, they are still relatively juvenile and can be easily replaced on the site. T1968 is a hawthorn in poor condition, category C2 and under the standard can be justifiably removed.

4.6 Trees and groups that require removal to facilitate development

4.6.1 T1968 Hawthorn C2



Subdominant tree in poor condition, conflicting with the proposed building footprint. Remove and replace.

4.6.2 T1969 & T1970 Oak B2



2 Semi-mature oaks in good condition conflicting above and below ground with the proposed building footprint and practical construction space. Remove and replace

4.7 Trees and groups to be retained that require work to facilitate development.

None

4.8 Trees recommended for work to improve long-term contribution to the site

- 4.8.1 T3 oak – North crown is conflicting with BT lines, prune the north crown to achieve a 2m clearance from the lines.
- 4.8.2 T1972 Oak – The crown overhangs the seating area and requires pruning to raise the crown to achieve a 3m height clearance.

5 TREE PROTECTION REQUIREMENTS

5.1 Protective Fencing and Construction Exclusion Zones (CEZ)

- 5.1.1 The use of protective fencing to create a Construction Exclusion Zone (CEZ) is recommended to protect the retained trees in the shrub boundary; the existing fencing in this area is deemed sufficient to create a construction exclusion zone. The alignment of the fences is detailed in the TPP. The fencing serves to protect the estimated RPA and the above-ground tree parts from accidental damage from construction machinery the fenced sections form Construction Exclusion Zones (CEZ). As the site is a car park that is in use, there is sufficient clearance of tree crowns from vehicles and consolidated hard surfacing is already present over estimated RPAs therefore, it is not deemed necessary create further CEZs as the most practical areas to store materials and machinery is on the existing hard surface of the car park.
- 5.1.2 Storage of vehicles, machinery and building materials should be in areas of hard standing or open ground outside of the CEZs. The TPP indicates suitable areas. Storage of vehicles, machinery and building materials inside CEZs and within the RPA's of trees will cause root damage and violate the protection recommendations of this report. Examples of protective fencing are shown in Appendix 3.

5.2 Excavations within the RPA

- 5.2.1 There are no planned excavations within the RPAs of the retained site trees.

5.3 Ground Contamination

- 5.3.1 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. Particular care must be taken when working on or close to sloping ground to avoid unintentional runoff into the rooting areas of retained trees and into the small stream running through the site.

5.4 Ground Level Changes

- 5.4.1 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. 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.

5.5 Site Access

- 5.5.1 Site access is gained from two points on the roadside to the north, all areas of existing hard standing can be utilised for the storage of machinery and construction materials. (Ref TPP)

5.6 Mitigation Planting

5.6.1 Species

The current design requires the removal of 3 individual trees, to ensure there is a net gain in biodiversity on the site, it is recommended that these trees be replaced by 5 new trees. It is recommended that the species are replaced like-for-like, i.e. 2 oaks and 1 hawthorn, and introduce 2 more native species not present on the site. Field maple *Acer campestre* and yew *Taxus baccata* have been proposed with the aim to increase the biodiversity of the site. The ultimate species choice is at the discretion of the Council Tree Officer.

5.6.2 Location and arrangement

A suitable location for the planting is along the northwest boundary where the TPO group G1 is located (ref figure 3). This was originally 5 trees now only one oak remains. The locations of the species proposed are arranged to complement the existing mature oaks present. 2 oaks proposed for planting are located a sufficient distance from the existing mature oaks that they can grow relatively unimpeded to maturity. The location of the field maple, yew and hawthorn are located closer to existing tree crowns as they are more shade-tolerant and are more suited to growing under the canopy of mature trees (ref MPP)

5.6.3 Planting Stock

Local provenance heavy standards are recommended, supported with a double stake and crossbar.

5.6.4 Planting should be conducted post-development during the winter months.

6 ARBORICULTURAL IMPACT ASSESSMENT SUMMARY

- The survey conducted in accordance with BS5837:2012 identified 16 individual trees and 2 tree groups within influencing distance of the proposed development
- The northwest section of the site is subject to a Tree Preservation Order; however, the two trees this relates to are not within influencing distance of the proposed development.
- No Category A trees require removal to facilitate the design.
- A total of 3 trees require removal to facilitate the current design.
 - 2 category B trees, T1969 & T1970.
 - 1 category C trees T1968.
- No other tree management is required to facilitate the current design.
- Planting of 5 trees has been recommended to mitigate the loss of the removed trees.
- A section protective fencing is required to protect the site trees for the duration of the development detailed in TPP.

6.1.1 The overall arboricultural impact of the proposed design is considered as low as reasonably practical, the current design attempts to utilise the existing hard standing, currently a footpath. Complicated construction and tree protection measures are considered impractical for the scale of the development, and the pruning work required to retain the trees would significantly reduce the quality of the trees, decreasing their long-term contribution to the site. Removal will enable a smoother construction process and allow the retained trees to be protected. Replacement planting on the site will reinstate a boundary group of trees that has been lost and increase the species diversity of the site.

7 ARBORICULTURAL METHOD STATEMENT

7.1 Pre-start Meeting

- 7.1.1 To reinforce the required tree protection measures and avoid the requirement for ongoing arboricultural supervision, a pre-start meeting should be arranged between the site contractor, the project Arboricultural Consultant, the project architect and the Conwy Council Tree Officer. During the meeting the alignment of protective fencing and RPAs will be marked out and any technical or logistical issues discussed.

7.2 Timing of operations

- 7.2.1 Tree protection and retention post-development can only be achieved if a logical timeline of operations is established and adhered to, as follows:

- 1 Undertake **all** tree works recommended to facilitate the development outlined in **section 4** before the construction phase of the development begins. These works must account for statutory constraints outlined in **section 4.4**.
- 2 Install protective tree fencing as per the TPP to create CEZs on the site prior to the site becoming an active construction site in consultation with the project arboriculturist and the Conwy Council tree officer. This fencing will remain in place for the duration of the development, signs indicating the CEZ shall be affixed to the fence panels for the duration of the development such as the example below.
- 3 Construction of proposed development.



- 4 Completion of development, all materials, machinery and construction waste removed from the site.
- 5 Remove protective fencing construction phase has been completed.
- 6 Conduct post-construction replacement planting of trees of 5 trees in consultation with the Conwy Council tree officer and project arboriculturist.

APPENDIX 1 ARBORICULTURAL SURVEY DATA SHEETS

Former Public Toilets, Towyn BS5837 AIA

Survey Date	09/12/2025	Client	Mr Longford
Site	Former Public Toilets, Towyn BS5837 AIA	Surveyor	Peter Gardner

ID	Species	Height (m)	DBH (mm)	Crown Spread (m)				Canopy Height (m)	Age Class	Structural Condition	Physiological Condition	Comments	Recommendations	Priority	SULE	Cat	RPA (m)	RPA area (m2)
				N	E	S	W											
T1	Oak (sessile) Quercus petraea	11	200	1	2	4	4	2	Early Mature	Good	Good	Crown biased south due to suppression from 1995 West crown extends over the garage roof No defined apical leader unions are well-formed Straight stem bifurcates at 2m Base obscured by dense vegetation Rz transected by car park and building	.	NWR	> 40	B2	2.4	18.1
T2	Oak (Turkey) Quercus ceris	13	290	3	3	4	3	2	Semi Mature	Good	Good	Isolated tree well-formed open crown overhanging car park in good condition Stem slight lean to the east Bulge at the stem base south side and kink Rz transected by car park	.	.NWR	> 40	A1	3.48	38.0
T3	Oak (sessile) Quercus petraea	13	300	3	5	5	5	2	Semi Mature	Good	Good	North crown tips starting to conflict with BT line crown biased south over garden area due to previous crown lifting over car park entrance wounds occluding well Well-formed unions Stem slight lean to south Located in shrub boundary Rz transected by car park hard surface	Prune north crown to achieve 2m clearance from BT lines	Low	> 40	A1	3.6	40.7
T4	Elder Sambucus niger	4	100	2	2	2	2	1	Semi Mature	Fair	Fair	Multistemmed elder previous topped at 1.8m Forming shrub feature on boundary	.	.NWR	> 20	C2	1.2	4.5
T1968	Hawthorn Crataegus monogyna	5	110	4	4	1	1	2	Early Mature	Fair	Fair	3 stems bifurcate at 0.5m East stems occlude at 2m Crown biased north due to suppression from adjacent oak Cambium wounds on north stems at 3 m Rz transected by hard surfacing	Remove to facilitate design	High	> 40	C1	1.32	5.5
T1969	Oak (sessile) Quercus petraea	13	410	4	7	2	3	3	Semi Mature	Good	Good	East crown extends east over the building elevation by ~3m Well-formed unions throughout no major deadwood Several nails in the stem at 2m Rz transected east by hard surfacing	Remove to facilitate design	High	> 40	B2	4.92	76.0
T1970	Oak (sessile) Quercus petraea	13	320	3	6	6	6	2	Semi Mature	Good	Good	Subdominant crown biased southwest overhanging car park by ~2m previous minor crown lifting over walkway to east Stem lean to southeast Lower limbs at 2 and 3m are slender due to suppression Unions well formed Rz transected east and south by hard surfacing	Remove to facilitate design	High	> 40	B2	3.84	46.3
T1971	Oak (sessile) Quercus petraea	12	180	3	5	5	1	2	Early Mature	Fair	Fair	Poor form subdominant tree low crown break at 1.8m l to slender limbs main limb extends north over seating Ivy forming on stem to 2m RZ transected north and south by hard surface		NWR	> 20	C2	2.16	14.7
T1972	Oak (sessile) Quercus petraea	13	330	5	4	5	2	2	Semi Mature	Good	Good	Straight stem, well-formed, regular branching with well-formed unions The crown is biased northeast over the seating area, suppressed to the west by T1973 South crown extends over the car park by ~3m Pruning stub on south limb to avoid conflict with lamp post RZ transected north and south by hard surface	Crown raise to achieve 3m clearance over the seating area	Low	> 40	A2	3.96	49.3

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T1973	Oak (sessile) Quercus petraea	13	430	5	4	6	3	2	Semi Mature	Good	Good	DBH measured at 1m due to bifurcation at 1.5 Tag occluded into stem at 2m north Crown elliptical extending over car park by 4m limb is slender beginning at 1.5. Minor deadwood in the internal crown of no concern Previous crown lifting pruning wounds on north stems occluding well Well-formed buttresses Rz transected by hard surfacing to north east and south	.	.	> 40	B2	5.16	83.6
T1974	Oak (sessile) Quercus petraea	13	300	2	3	5	1	2	Early Mature	Good	Fair	Suppressed crown biased southeast and northeast Stem bifurcates at 1.8m into 2 codominants with well-formed unions South crown extends over car park by 4m Minor epicormic on stems Slender undeveloped laterals Good buttress development Rz transected south by hard surfacing	.	.	> 20	B2	3.6	40.7
T1975	Oak (sessile) Quercus petraea	13	290	5	3	2	2	2	Early Mature	Good	Good	Stem slight lean to north Majority of laterals extend north towards footpath unions, well-formed. Minor internal deadwood of no concern Well-formed buttresses Rz transect by car park	.	.	> 40	B2	3.48	38.0
T1976	Oak (sessile) Quercus petraea	13	180	1	0	3	4	2	Early Mature	Fair	Good	Slender subdominant tree crown biased west due to suppression Stem kink at 1m Minor internal deadwood of no concern Rz transected by car park	.	.	> 20	B2	2.16	14.7
T1977	Hawthorn Crataegus monogyna	3	110	1	1	2	1	1	Early Mature	Good	Good	Small hawthorn growing against metal fence south-west crown overhangs car park by 2m Previous pruning throughout crown to avoid conflict with car park rz transected by hard surface to south west	.	.	> 20	B2	1.32	5.5
T1978	Hawthorn Crataegus monogyna	13	280	4	3	1	2	2	Semi Mature	Good	Good	Dense developed crown biased north on edge of planting area crown extends over car park exit by 1m 2 mainstems cup union at 1.5m DBH measured below Fluted bark patterning consistent with age and species Rz transected by hard surface to northwest	.	.	> 40	A2	3.36	35.5
T1995	Oak (sessile) Quercus petraea	13	330	5	4	3	4	3	Semi Mature	Good	Good	Dominant well formed crown regular branching with well formed unions Crown overhangs property to west and car park to south east Previous crown lifting wounds at 1.5m occluded Base obscured by vegetation Rz transected by garage and fence to west and carpark	.	.	> 40	A1	3.96	49.3
Tree Groups																		
G1	Oak (sessile) Quercus petraea	13	200	4	4	4	4	4	Semi Mature	Good	Good	Tagged 1983-89 Ivy on the middle 3 stems BT lines run through T1986 and T1987 Group forms a unified crown with appropriate clearance for car parking Rz transected east and west by hard surface		NWR	> 40	A2	2.4	18.1
G2	Oak (sessile) Quercus petraea	13	200	3	3	3	3	3	Semi Mature	Good	Good	Tagged 1980-1982 3 trees in good condition low crown breaks at 2m unions well formed good buttress development Rz transected by car park to east and west		NWR	> 40	A2	2.4	18.1

APPENDIX 2 TERMS AND DEFINITIONS

Data field	Definition/ description
Tree No.	Recorded as either individuals e.g. T1 or groups e.g. G1
Species	Common tree name and taxonomic name recorded in italics in brackets e.g. Wild cherry (<i>Prunus avium</i>)
Age Class	Young Recently planted or establishing tree i.e., less than 150mm DBH
	Semi- Mature An established tree, but with some growth to make before reaching its potential maximum height. A tree within the first third of its lifespan
	Early Mature A tree that is reaching its ultimate height potential, who's growth rate is slowing but if healthy will still increase in stem diameter and crown spread. A tree within its second third of its lifespan
	Mature A specimen with limited potential for any significant increase in size. A tree within its final third of its lifespan
	Over Mature A senescent or moribund specimen of low vigour. A tree within the final third of its lifespan. Possibly also containing sufficient structural defects with safety/duty of care implications
	Veteran Specimens exhibiting features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.
Height (m)	Measured from ground level using Nikon Forestry Pro hypsometer
DBH (mm)	Diameter of tree stem at 1.5m. For multi stemmed trees all stems are measured, and an average taken. Where trees fork before 1.5 the measurement was taken below the fork
Crown spread (m)	Measured from the base of the stem to the extreme of the tree crown in all 4 cardinal point directions and used to plot the crown shape of the tree or group
1st significant branch (m/dir)	The height and direction of the first significant branch from the tree stem
Canopy height (m)	Distance from the ground to the main bulk of the tree crown
General Observations	A brief description of the tree and any noteworthy observations to aid identification of the tree(s) and to provide context, N E S W used refer to the cardinal points. Accompanied by an assessment of the trees structural conditions SC and physiological condition PC as good fair or poor
	Good Generally, in good health typical of the species needing little if any attention. Few minor defects of little overall significance such as physical damage or suppressed branches. Showing no obvious adverse risk of failure/defects
	Fair A tree or trees with minor but rectifiable defects or in the early stages of stress, from which it may recover. Showing minor signs of deterioration. Tree that may require work to remove or improve defect.
	Poor A tree or trees with major structural and or physiological defects or stressed such that it would be a risk to retain in its current situation. Unlikely to return to a good condition given time or remedial work

Recommendations	Management required to improve the trees condition and or reduce the risk it poses to an acceptable level. Sometimes more than one option is recommended
Priority	The time frame within which the work recommendations should be carried out
	Urgent – As soon as possible
	High – Within 3 months of survey
	Medium – Within 1 year of survey
	Low – Within 2 years of survey
	NWR – No work Required
Remaining Contribution (years)	An estimate of the remaining life expectancy as a healthy functioning tree. This will be influenced by species and the condition of the tree at the time of survey. < 10, 10 – 20, >20, >40
Root Protection Area RPA diameter (m)	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.
BS5837 Cat.	See Table 1

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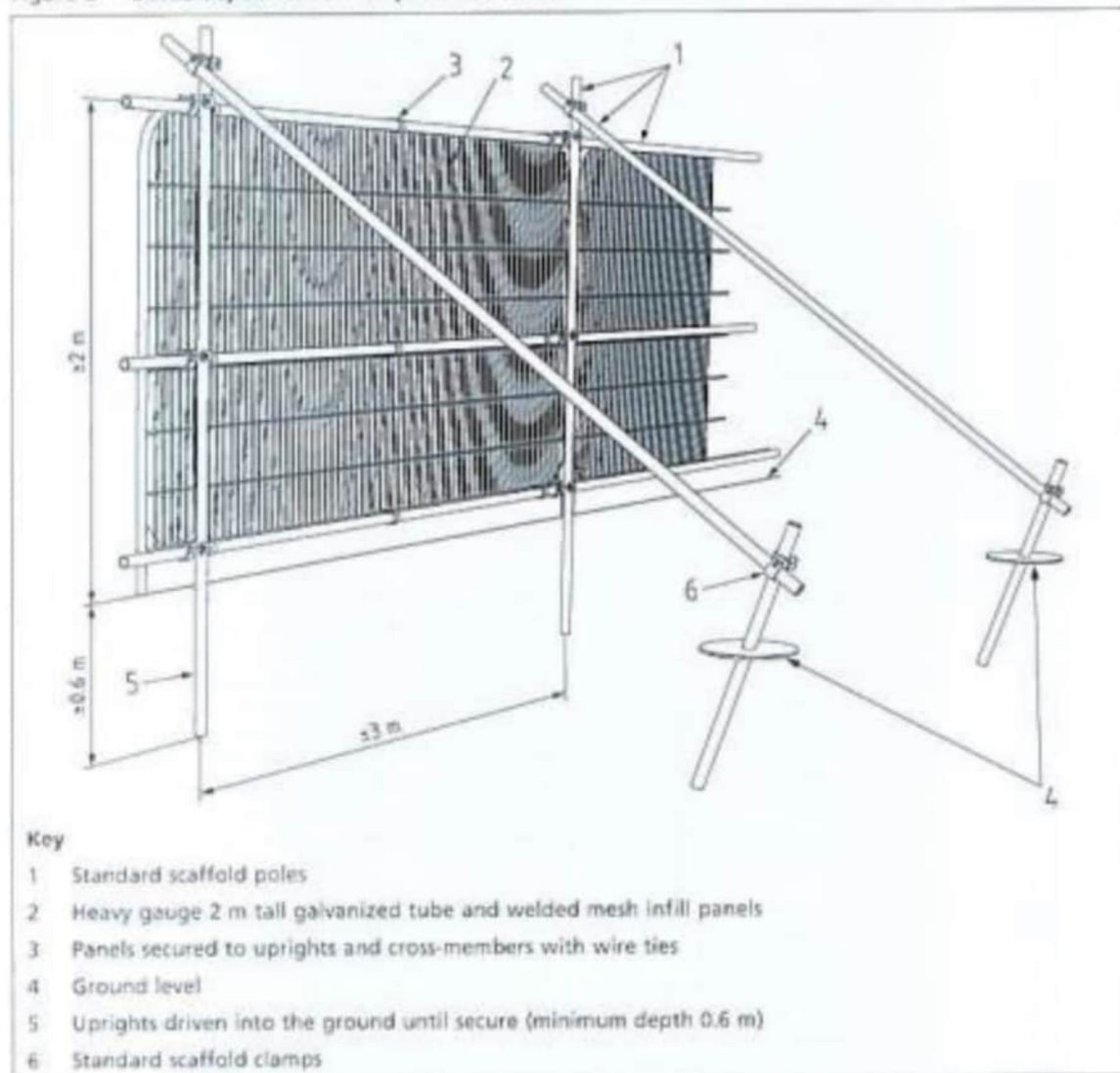
Table 1 Cascade chart for tree quality assessment

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, irreparable, structural defect, such that their early loss is expected due to collapse, including those that will become unstable 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
Trees to be considered for retention		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	1 Mainly arboricultural qualities 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)	3 Mainly cultural values, including conservation Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees with no material conservation or other cultural value

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APPENDIX 3 PROTECTIVE FENCING EXAMPLES

Figure 2 Default specification for protective barrier

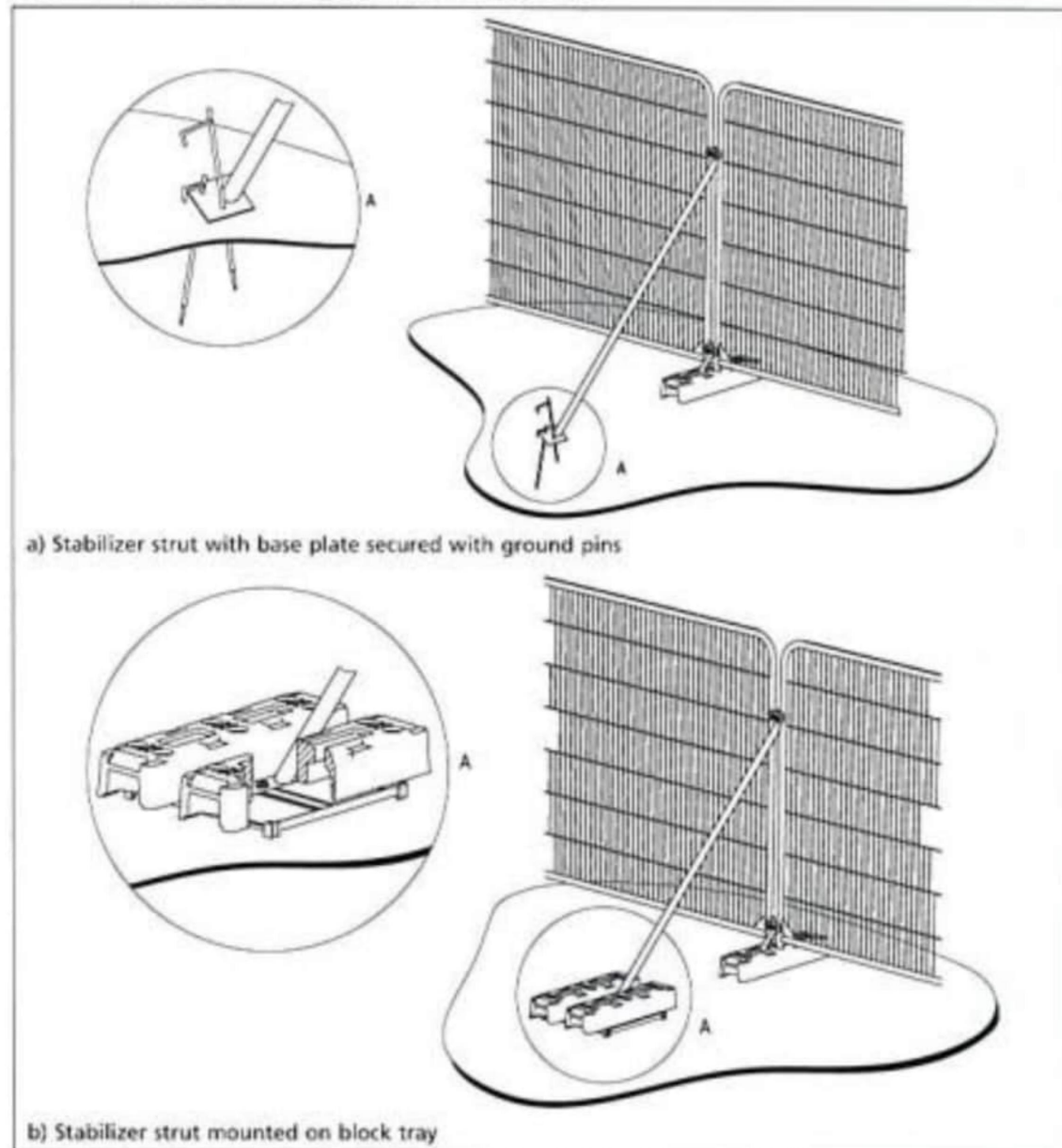


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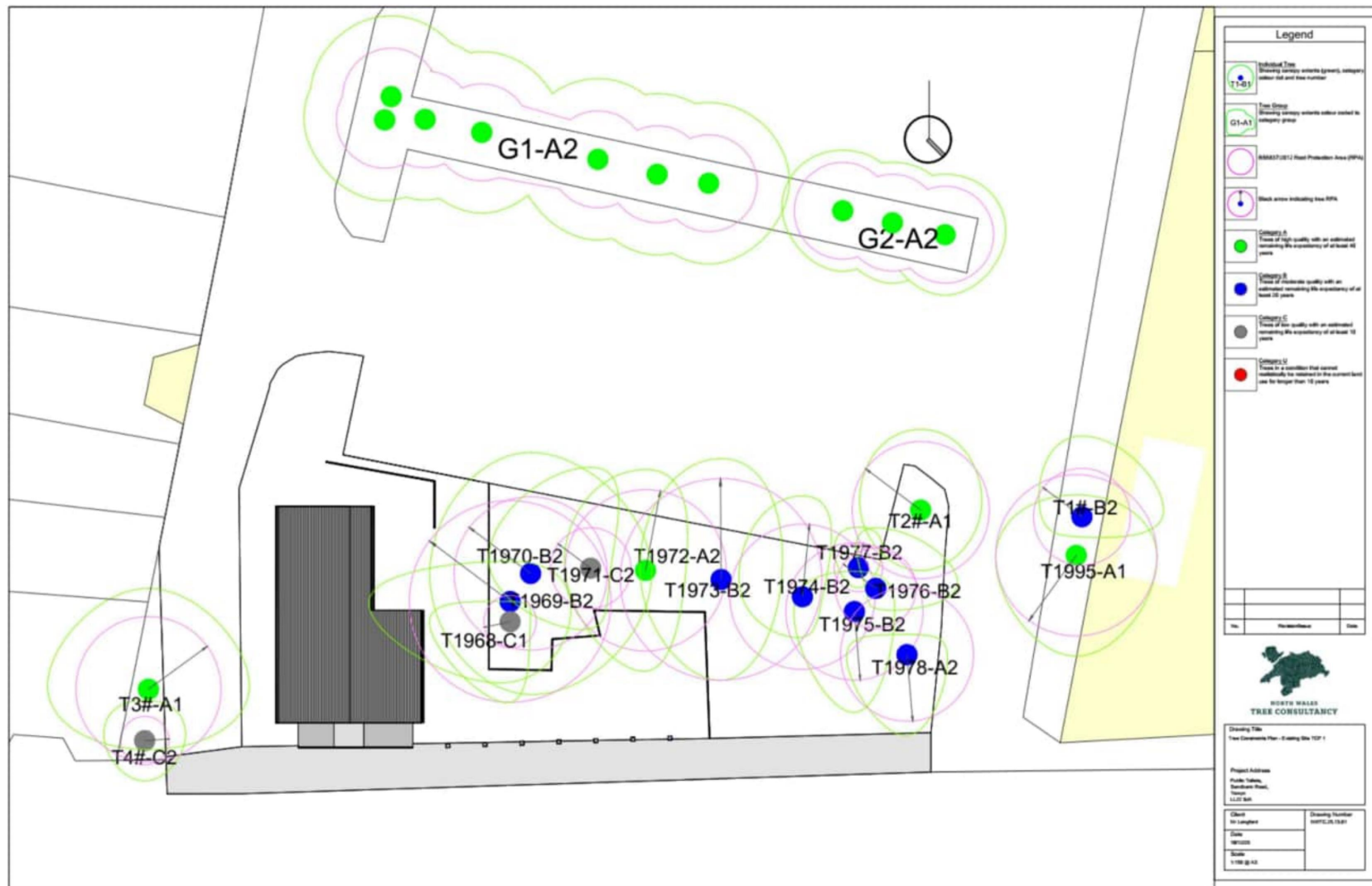
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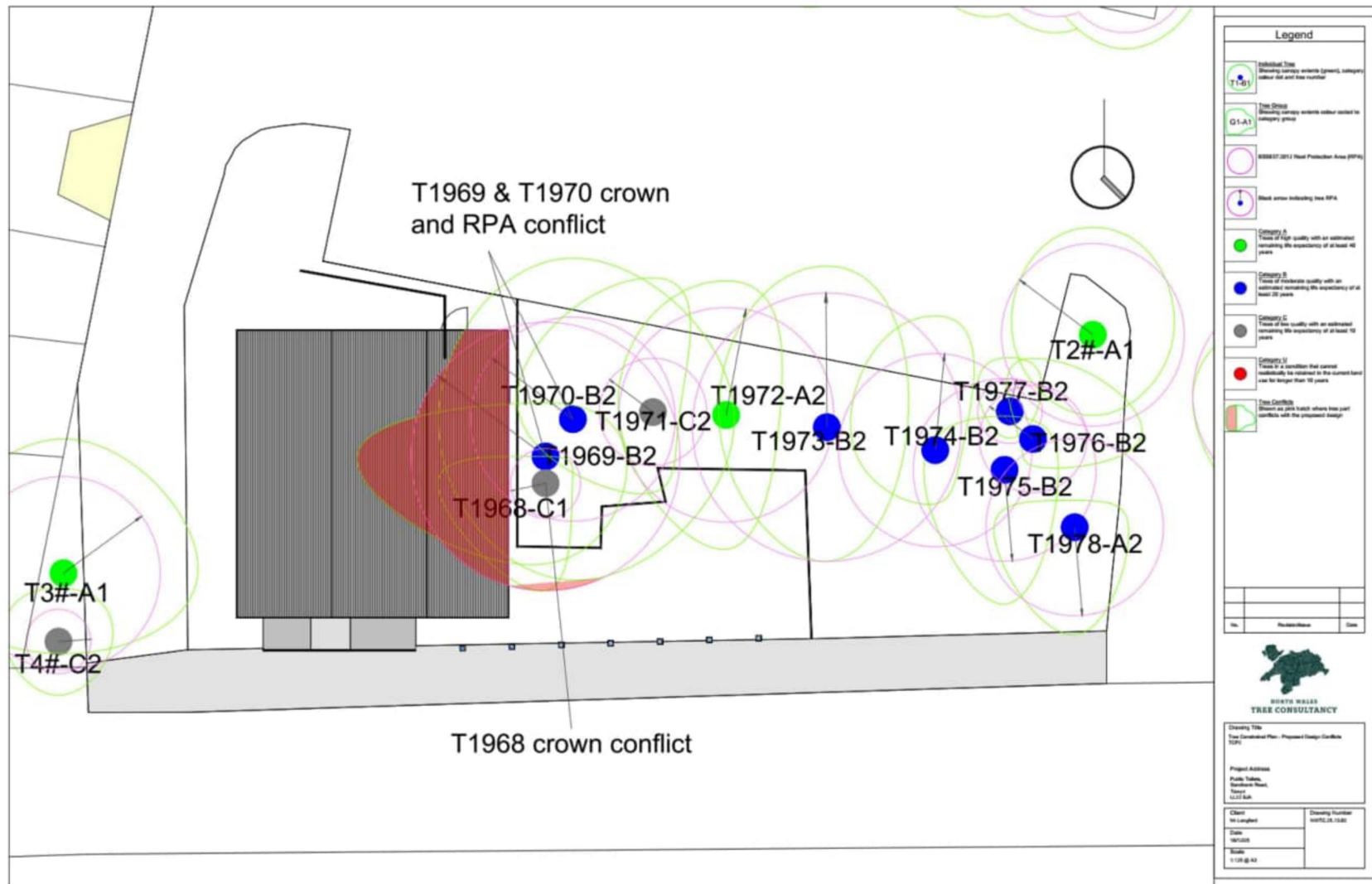
BS 5837:2012

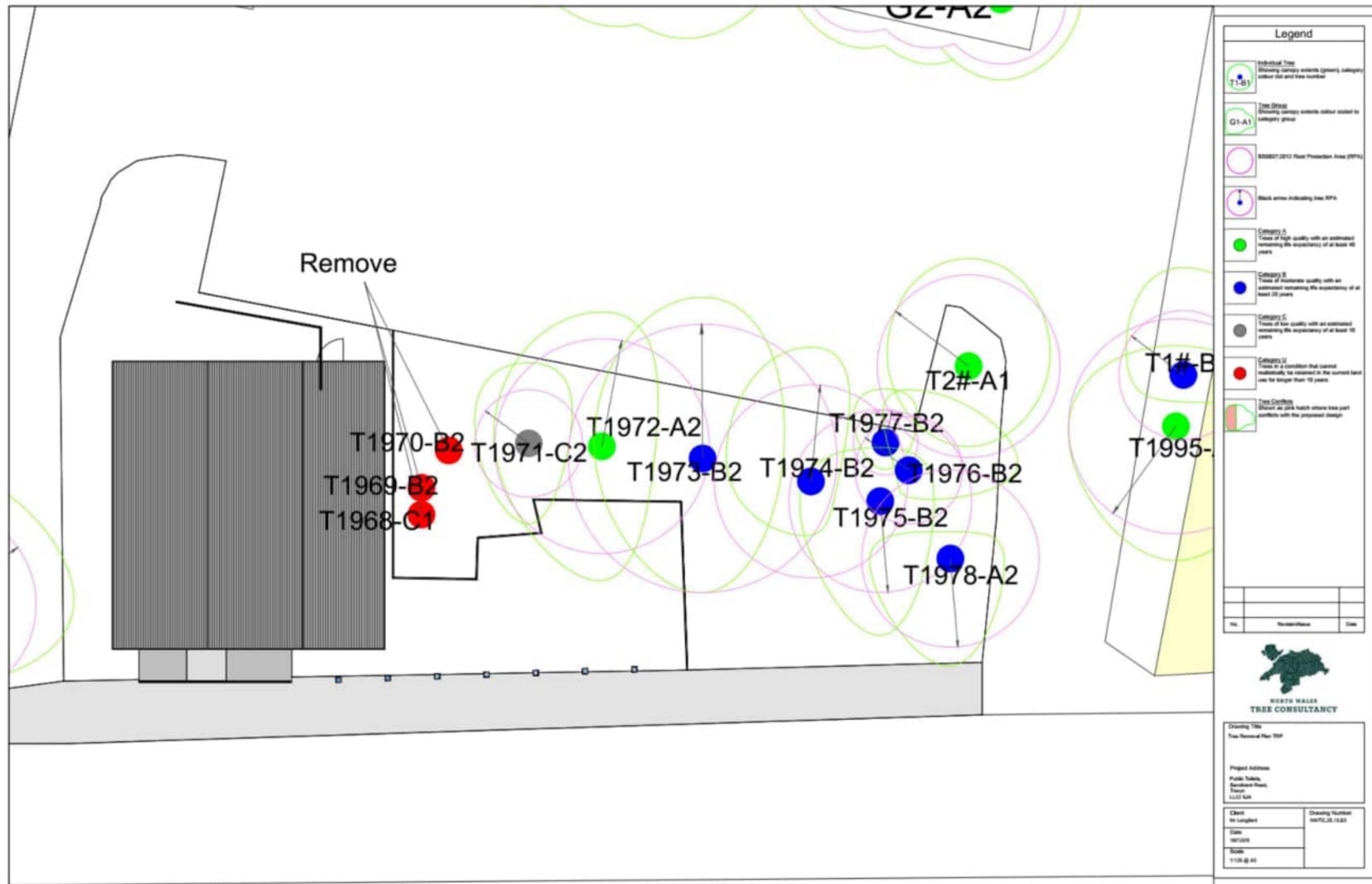
Figure 3 Examples of above-ground stabilizing systems

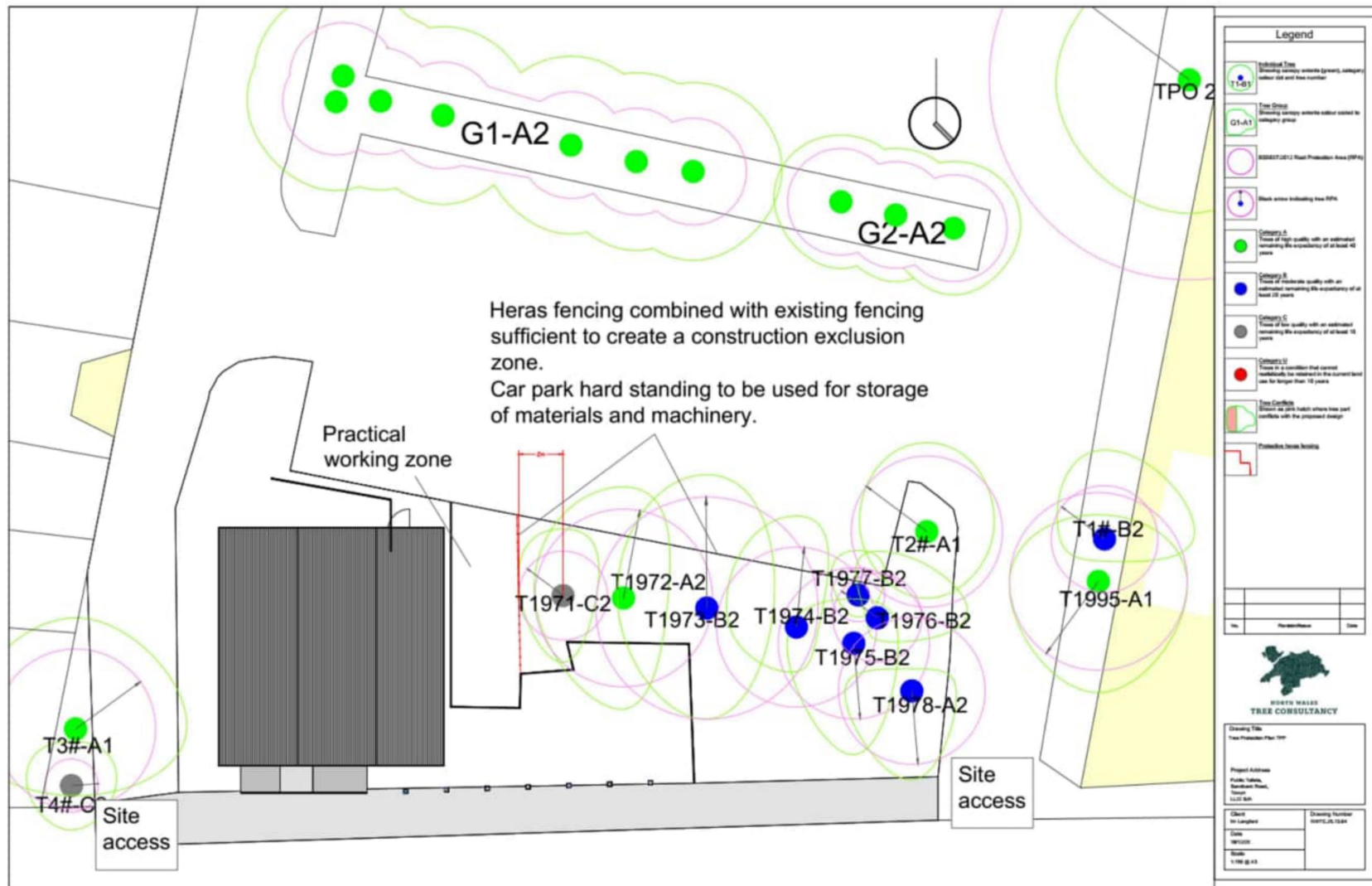


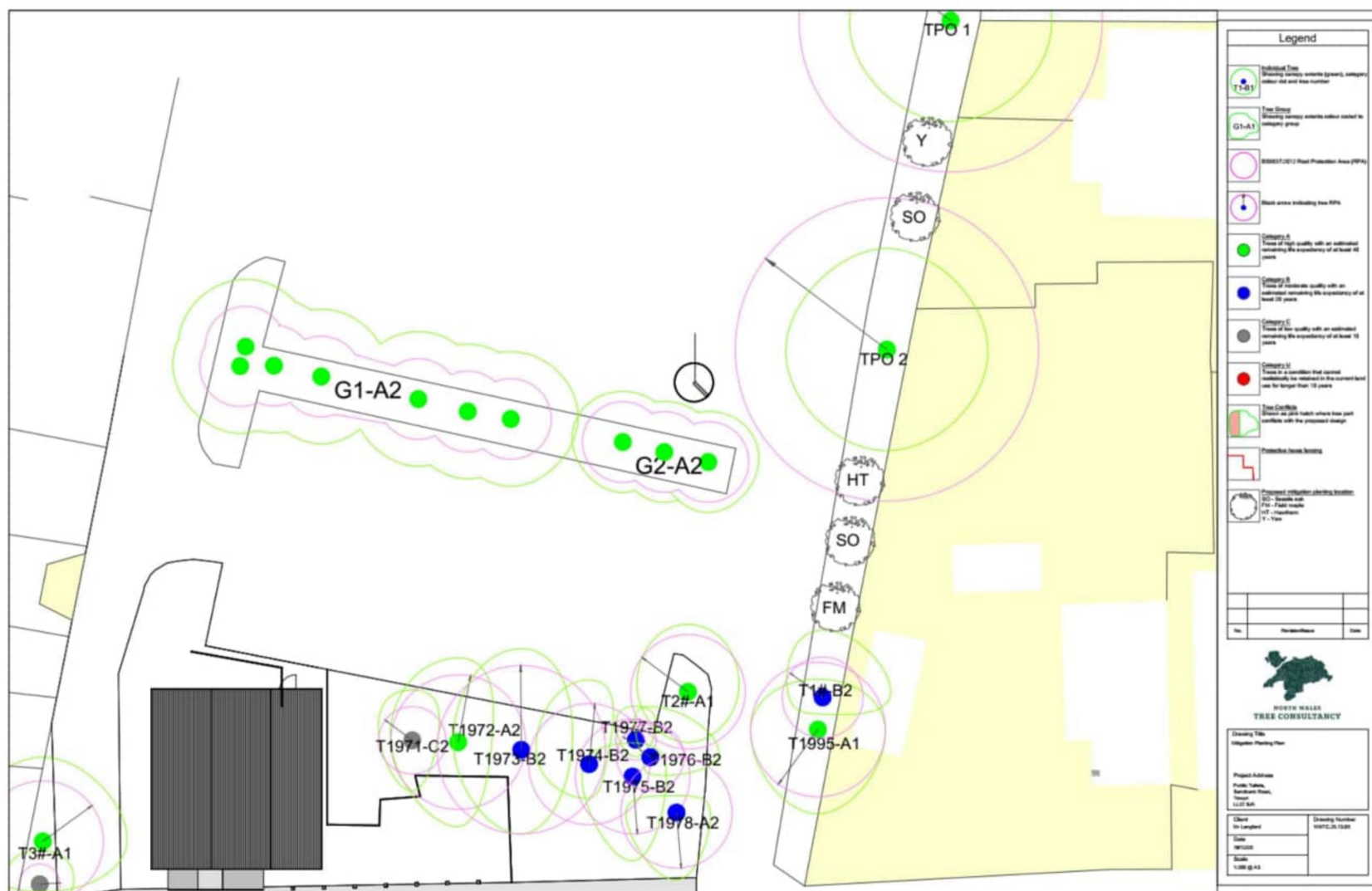
APPENDIX 4 TREE PLANS TCP1, TCP2, TRP, TPP, MPP (ATTACHED AS SEPARATE PDF DOCUMENTS)











References

John Roberts, N. J. (2018). *Tree Roots in the Built Environment*. Stonehouse: Arboricultural Association.

Lonsdale, D. (2020). *Principles of Tree Hazard Management*. Stone House: Arboricultural Association.

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