WOLD & VALE
TREE CONSULTANCY

Arboricultural Survey, Impact Assessment, Method Statement and Tree Protection Plan.

The Folly,
Park House,
High Street
Thornbury
BS35 2AQ

December 2023

CONTENTS

1.0 INTRODUCTION

1.1 Brief

This report is prepared by Laurence Wood of Wold & Vale Tree Consultancy for Mr Peter Nicholls.

Laurence Wood	Telephone:	07383 978 830
	Email :	info@wold-vale.co.uk
	Website :	www.wold-vale.co.uk

The report sets out the arboricultural survey findings and tree protection measures for the proposed construction of an extension to The Folly building at Park House, Thornbury.

This report is designed to assess the arboricultural value of the trees on site and discusses their implications in terms of constraints of development and protection measures. As such this survey, report and tree protection plan is intended to meet the requirements of BS5837:2012.
The site is located within the municipality of South Gloucestershire Council.

Details of the trees are given in the Tree Schedule at Appendix 1. Appendix 2 Site Plans illustrate:

- Positions of the individual trees on site.
- A quality and value category for each tree indicating the remaining contribution to the site in accordance with BS 5837:2012.
- The canopy spread of individual trees in Category A, B or C, U at the four cardinal points of the compass.
- Root protection areas (RPAs) of individual trees in Category A, B or C, calculated in accordance with BS 5837:2012.

*Copies of the site plans are supplied with this report in .pdf and .dwg format for larger scale and reference.

1.2 Limitations

This is an assessment relevant to planning and development. Observations have been made solely from a site visit and from plans provided for assessment. The positions of the trees shown on the Tree Locations Plan have been taken from the plans provided. Positions of trees not originally plotted on the plans are indicative only.

The recommendations contained within this report (Appendix 1 - Tree Schedule) are valid for a period of one year only. Any significant alteration to the site that may affect the trees or have a bearing on the planning implications (including level changes, hydrological changes, extreme climatic events or other site works) will necessitate a re-assessment of the tree and the site.

It should be noted that this survey is not a tree safety inspection; it has been carried out in order to inform the planning process. Where clear and obvious hazards have been observed, these have been addressed in the preliminary recommendations (Appendix 1 - Tree Schedule). A full assessment of the levels of risk posed by trees would be informed by considering site use together with hazards present within a tree. Changes in site use are likely to occur during and result from any proposed development. In the light of these factors, regular tree risk assessments are advised.

This report does not consider the potential for future tree-related building subsidence or heave. If shrinkable clay soils are present on site, the guidance given in the National House Building Council (NHBC) Standards, Building Near Trees, Chapter 4.2 should be used to avert the risk of future risk of buildings near trees.

No detailed assessment of the potential conflict between future site use and the shade cast by trees has been undertaken within this report.

1.3 Documents Provided to inform the report.

- Topographical survey
- Proposed site plans

2.0 SURVEY AND SITE DETAILS

2.1 Site Description

The site is located near the centre of Thornbury and is set back from the town's High Street within the grounds of Park House. The site comprises of a seculed walled area containing a small folly, stone alcove and shrub beds, with a number of mature trees distributed throughout. Access through the grounds of Park House can be gained from the High Street to the east.

2.2 Survey Method

A survey of the site was conducted on 24th October 2023 using the Visual Tree Assessment method. The tree survey comprised of a visual inspection conducted at ground level.

Trees are living organisms subject to seasonal growth and varying environmental conditions. The site survey was limited to observations made on a single occasion at a particular time of year and stage in the trees' life cycle and features such as the fruiting bodies of wood-decaying fungi, foliar diseases or insect infestations that might have affected the value and quality assessment may not have been apparent.

2.3 Data Collected

2.3.1 In all six individual trees have been recorded. Trees surveyed were assigned an individual number and their location has been plotted on tree location plans, Appendix 2.

2.3.2 The height, diameter at breast height (DBH) and crown spread of the individual trees were recorded. They have also been categorised using the BS 5837:2012 value and quality assessment.

2.3.3 The age and the physiological and structural condition of the individual trees were assessed and any necessary comments on their condition or situation and recommendations for work were recorded.

2.3.4 The nominal Root Protection Area of each individual tree was calculated from the DBH in accordance with the formula given in Table 2 of BS5837:2012 and plotted to trees on the Tree Constraints Plan.

2.4 Value and Quality Assessment

2.4.1 Each tree/group has assigned one of four categories 'A', 'B', 'C' or 'U' according to its value and quality, and thus its suitability for retention. In descending order of value, the description of each category (based on Table 1 of BS5837: 2012) is as follows.

'A' Trees of particularly good form, amenity and condition that make a substantial contribution to the landscape and are likely to continue to do so for at least the next 40 years. These trees present a significant constraint to development.

'B' Moderate-quality trees not achieving the highest category by dint of impaired condition or form, but that nevertheless make a significant contribution to the landscape and are likely to do so for at least the next 20 years. These trees present a significant constraint to development.

'C' Trees in adequate condition that make no particular contribution to the landscape, but that could remain until new planting could be established; or young trees of a diameter of less than 150 mm at breast height.

'U' Trees that should be removed regardless of any development proposals, either because they are dead, dying or dangerous or because their condition renders them unsuitable for long-term retention (more than 10 years).

2.5 Quality and Value of Trees

2.5.1 Individual Trees

Following the value and quality assessment (Table 1 of BS5837: 2012 - See paragraph 2.4 above) of the six individual trees surveyed on site, four were assessed as Category B trees and two as Category C trees. Details of individual trees together with British Standard classification can be found in the tree schedule (Appendix 1).

Table 1 – Trees in each Quality Assessment Category

Category A Trees/Groups	Category B Trees/Groups	Category C Trees/Groups	Category U Trees/Groups
	T01- T03, T05	**T04, T06**	
		Total Trees	**6**

3. CONSTRAINTS

3.1 Statutory Constraints

3.1.1 Tree Preservation Orders/Conservation Areas

South Gloucestershire Council's online interactive plan indicates that the site is located within the Thornbury Conservation Area.

Tree Preservation Order information is not available from the plan. The client is advised to obtain written confirmation from South Gloucestershire Council to establish the legal status of the trees prior to any works being undertaken outside the remit of an approved planning permission.

3.2 Arboricultural Constraints

The constraints imposed by trees, both above and below ground have informed the site layout design and tree protection measures, although it is recognised that the competing needs of development mean that trees are only one factor requiring consideration.

As trees can affect and be affected by many aspects of site operations. The project arboriculturalist must be involved in any further ongoing review of layout, architectural, engineering and landscape drawings. All members of the design team are to be made aware of the requirements for the successful retention of the retained trees and should make provision for these throughout the duration of the project.

3.2.1 Shade

The principal shadow pattern throughout the day travels from north west to due east and there will be levels of shading throughout the daytime hours. Considering the setting and proposed use of the building, the level of shading is not considered to be overbearing.

3.2.2 Root Protection Areas (RPA's)

Root protection areas for each individual tree and each tree group have been recorded and can be seen on plans in Appendix 2. RPA's establish the area of ground that are suitably protected around the trees selected for retention. Protection during development are set to the standards laid out in BS5837:2012 and the calculated root protection areas have informed method of foundation construction and tree protection measures that are required and are set out in this report.

3.2.3 Service runs/drainage/sewer/septic tank

Any underground services and drainage are positioned to avoid impact to the root protection areas of retained trees. Any proposed alterations to position of services must be sanctioned by a qualified and experienced arboriculturalist and agreed with the local planning authority.

3.3 Wildlife Considerations

3.3.1 Bats

No attempt was made during the arboricultural survey to ascertain the presence or otherwise of bats or bat roosts. This must be considered should any remedial arboricultural works or tree removals be carried out, as bats are afforded protection under Schedules 1 and 5 of the *Wildlife and Countryside Act 1981* (as amended) and under Schedule 2 of the *Conservation of Habitats and Species Regulations 2017 (as amended)*

3.3.2 Nesting birds

No attempt was made during the survey to ascertain the presence or otherwise of nesting birds. Prior to any arboricultural works or tree removals being carried out during the nesting season (February to August), trees should be thoroughly checked for nesting birds. Birds and their nests and young are protected under Section 1 of the *Wildlife and Countryside Act 1981* (as amended).

4.0 PLANNING POLICY

South Gloucestershire Core Strategy policy PSP3 – Trees and Woodland.

'Development proposals should minimise the loss of existing vegetation on a site that is of importance in terms of ecological, recreational, historical or landscape value. Development proposals which would result in the loss of, or damage (directly or indirectly) to, existing mature or ancient woodland, veteran trees, ancient or species-rich hedgerows will only be acceptable where the need for, and benefits of, the development in that location clearly outweigh the loss or damage. Development proposals should, where appropriate, include:

- the protection of trees;
- and replacement trees, of an appropriate size and species, where tree loss or damage is essential to allow for development;
- and additional tree planting, in accordance with Core Strategy Policy CS1 and the Landscape Character Assessment SPD's, including, but not limited to, planting along arterial roads, in car parks and in the public realm;
- new planting schemes that retain and integrate healthy, mature trees and hedgerows, and include native species.'

5.0 ARBORICULTURAL IMPACT ASSESSMENT

5.1 Trees for Retention/Removal.

All trees surveyed are proposed for retention.

5.2 Impact from Development

The proposed garden structure comprises of a single storey timber building supported on six individual pad foundations, with a glazed link to the existing folly. The construction will follow a modular low impact approach. Ground protection measures will be installed prior to the onset of development and protective fencing will also be used to segregate the retained trees from the development site.

The calculated root protection area of T03 extends into the proposed footprint area and foundations will be formed using pad and supporting beam. Six individual concrete pads will be installed by hand excavation only. Please see method statement below.

A shallow service trench is required to accommodate the necessary services. The trench will not exceed 200mm depth and will be installed by hand excavation only. Please see method statement 6.2 below.

Providing that all of the prescribed protection measures are employed and the sequence of operations is adhered to, the development can be achieved with little impact to the retained trees.

6.0 ARBORICULTURAL METHOD STATEMENT

6.1 SPECIFICATION FOR EFFECTIVE TREE PROTECTION.

It is essential that the site manager and all construction staff should be made aware of the tree protection requirements at the site and to be fully conversant with timings and methods within this method statement to ensure suitable work practices and protection measures are executed.

Fencing must be fit for the purpose of excluding construction activity (the construction exclusion zone) and appropriate to the degree and proximity of work taking place around the retained trees.

Appendix 2, Plan 3 specifies where tree protection fencing is to be located. Detail of recommended protective barrier specification (BS5837 - Fig 2 & 3) can be found at Appendix 3. Information posters (Appendix 3) to be printed to A3 size, laminated and attached at eye level to protective fencing at 10m intervals.

Prior to construction work commencing, approved protective fencing is to be erected in the locations specified and is to be retained from the start of the project, throughout the construction process. It protects the *construction exclusion zone* and should not be removed until the completion of the project.

The following restrictions apply to the Construction Exclusion Zone (area protected by fencing) :

1. No excavation or raising of soil levels is permitted near the trees without written permission from the project arboriculturalist.
2. No materials of any kind are to be stored, dumped or discharged within the construction exclusion zone.
3. No utility trenches are to be routed near the trees or within the construction exclusion zone without written permission from the project arboriculturalist.

4. Any on site cement and concrete mixing must take place away from retained trees over a suitable hard surface to prevent soil contamination from spillage or washing out. All 'slops' from washing out to be deposited responsibly more that 10 metres away from retained trees or taken off site.
5. Potential contaminants such as diesel oil, cement and bitumen must be stored/contained away from any retained tree.
6. No fires.
7. If any roots over 25mm in diameter are encountered or damaged during excavation outside the construction exclusion zone they are to be cut cleanly back to sound wood.

6.2 ARBORICULTURAL SUPERVISION

There are two stages of works that are identified as being particularly sensitive in regard to the protection of the surrounding trees. These are:

1. Hand excavation to accommodate services (method statement 6.3 below).
2. Pad installation within the calculated root protection area of T3 (method statement 6.5 below).

These works will be supervised by a suitably qualified arboriculturalist to minimum Qualification Level 3 to ensure that suitable precaution in method is executed as specified.

6.3 SERVICES INSTALLATION - SUPERVISED BY QUALIFIED ARBORICULTURALIST

Location of services can be found on Plan 4, Appendix 2.

3. Shallow trench not exceeding 200mm depth and 200mm width to be excavated by hand using hand tools only.
4. If any roots under 25mm in diameter are encountered during hand excavation they are to be cut cleanly back to sound wood.
5. If any roots over 25mm in diameter are encountered during hand excavation they are to be retained by minor flexible relocation if necessary, covering with a sheath of sharp sand and accomodated within the construction.

6. Trench to accommodate foul pipe, armoured power cable, water and broadband. All services to be positioned around any roots exceeding 25mm diameter.
7. Location of mini pump station located outside of calculated root protection areas.
8. Infiltration piping from water butt to be installed at 50mm depth.

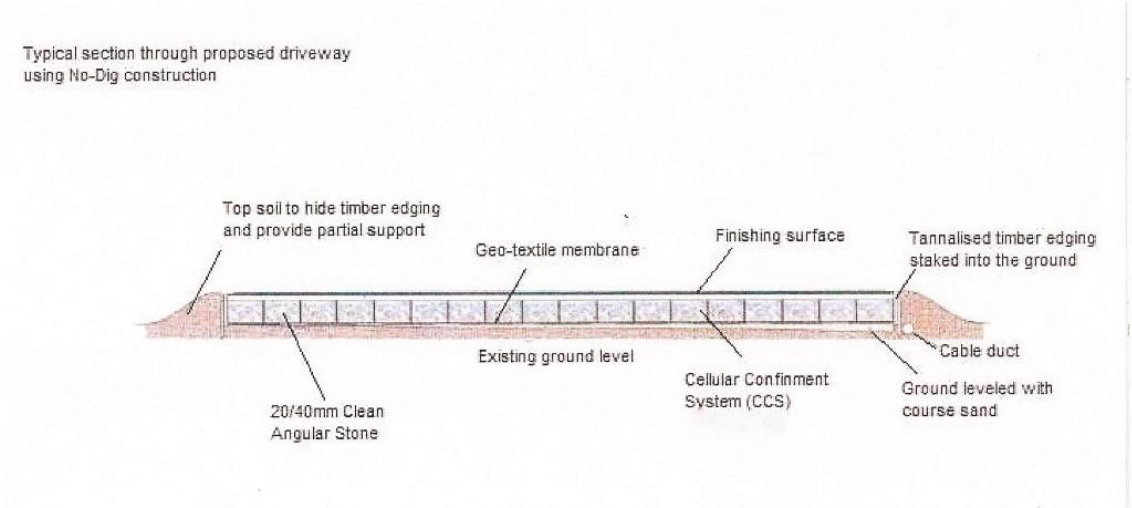
6.4 METHOD STATEMENT FOR THE APPLICATION OF CELLULAR CONFINEMENT SYSTEM, NEW PATHWAY AREA

The area where the cellular confinement system will be installed is indicated with **turquoise hatching** on the Tree Protection Plan (Appendix 2, Plan 3). The use of this system avoids the requirment for digging into the soil and causing unnessary soil compaction within the root protection area of adjacent trees.

It also provides ground protection for a 2m wide working area around the perimeter of the proposed extension.

1. Prepare the surface BY HAND by removing any existing excessive lumps/bumps. Any major protrusions such as rocks should be carefully removed. The absolute minimum of soil disturbance should be maintained during this operation whilst strictly avoiding soil compaction and tree root damage.
2. Ensure that the prepared surface is reasonably even and fill any localised depressions with sharp sand to achieve an even surface profile. Do not roll or consolidate the area.
3. Install tanalised timber edging boards or other approved edge retention to the perimeter of the driveway where required appropriate to the total layer profile thickness. Secure with stakes at 1m centres with a graded batter of topsoil on outside where necessary. Conventional kerb edging set in concrete is NOT to be used.
4. Install a layer of porous membrane such as *Terram T1000 geotextile* across the area to be occupied by the no dig construction area over lapping adjacent rolls by a minimum of 150mm. Lightly pin the geotextile in place until the overlying layers are installed as required.

5. Open out the geocell/cell web confinement layer (75mm) and pin in place using steel fixing pins or similar approved between the edging boards. The pins hold the cells in an open and fully expanded position during the filling process. Pin spacing will vary according to the site conditions, generally 1m –2m centers on flat surfaces around the perimeter and where panels join. Drive the pins in so that they are just touching the top of the cells but do not compress the fabric. Cut the geocell/cell web to suit using a sharp knife/scissors or alternatively fold up against the edgings. Staple adjacent panels together if necessary.



6. Fill the geocell/cell web with a clean, open graded angular aggregate (5mm - 45mm) working from the entrance towards the boundaries of the site using the filled geocell/cell web as a platform. Grade levels between conventional construction and no dig construction. Single sized, rounded aggregate or DoT Type 1 should not be used. Do not roll the surface, a light vibratory compaction plate may be permitted to settle the stone into the cells. Do not contaminate the filled cells with site debris, soil, or mud.
7. Install the permeable gravel surface layer on top of the Geocell/Cellweb according to the manufacturer's recommendations and grade front edges into existing area. Grade into existing garden area where necessary using a topsoil batter against gravel board. Please refer to specific manufacturers' guidance for other surfacing materials.

Cellular confinement system providers include Cellweb (Tel: 01455 617139); Terram (Tel: 01495 757722) and Ground Trax (Tel: 03456 800008)

The purpose of using this technology is to avoid root loss and damaging the soil structure through compaction. Soil damage of this nature may disrupt the effective exchange of water and gasses in and out of the soil and inhibit root growth. Soil compaction is commonly caused by vehicular traffic or by pedestrians repeatedly walking over the same area of soil surface.

6.5 PAD FOUNDATION INSTALLATION - SUPERVISED BY QUALIFIED ARBORICULTURALIST

1. Location of excavations to accommodate concrete pads as indicated on tree protection plan, Appendix 2 Plan 3, are to be carried out by hand using hand tools only.
2. If any roots under 25mm in diameter are encountered during hand excavation they are to be cut cleanly back to sound wood.
3. If any roots over 25mm in diameter are encountered during hand excavation they are to be retained by minor flexible relocation if necessary, covering with a sheath of sharp sand and accomodated within the construction.
4. Construct shuttering where necessary for concrete pad and line with damp proof membrane (DPM) to prevent leaching of cement into surrounding soil.
5. Building / foundation to be subject to the design and specification of an architect / structural engineer and shall comply with the latest edition of the relevant British Standards.

7.0 SEQUENCE OF OPERATIONS

The following is the sequence of operations to be followed prior to, during and on completion of the development. They are listed chronologically and are supplemented by the attached plans (Appendix 2). The following sequence of operations and method must be adopted by the main contractor, developer, sub-contractors and site agent.

1. **Prior to commencement of any construction activities on site, project manager and all site operatives to be briefed on the contents of the arboricultural report, method statement and tree protection measures.**
2. **Prior to commencement of any construction activities on site** - Installation of tree protecting fencing (Appendix 2, Plan 3).
3. Installment of service run. **By hand, supervised by qualified arboriculturalist** - See method statement paragraph 6.3
4. **Prior to commencement of any further construction activities on site** - Construction of no- dig cellular confinement pathway, turquoise hatching - Tree Protection Plan, Appendix 2, Plan 3. Method Statement paragraph 6.4
5. Excavation to accommodate 6 x pad foundation. **By hand, supervised by qualified arboriculturalist** – See Method Statement paragraph 6.5
6. Main construction phase
7. Completion of development and removal of plant, tools, materials.
8. Removal of tree protective fencing.

Appendix 1

Tree Schedule

Tree Number	Tree Species	Tree Height (m)	Number of Stems	Stem Diameter (mm)	RPA Radius (m)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Physiological Condition	ULE (Years)	Tree Structural Condition and Site Notes	Recommended Management	BS Category
T01	Yew	9	1	720	8.6	5	5	5	5	1	Mature	Fair	20+ Years			B2
T02	Holly	9	1	380	4.6	4	4	4	4	2	Mature	Good				B2
T03	Hornbeam	11	1	780	9.4	5	5	5	5	4	Mature	Fair	20+ Years			B2
T04	Holly	9	2	392	4.7	4	3	4	4	1	Mature	Good	20+ Years			C2
T05	Lime	17	1	860	10.3	6	6	6	5	1	Mature	Fair	20+ Years	Epicormic growth at base		B2
T06	Lime	8	1	350	4.2	5	2	4	3		Early Mature	Fair	10+ Years	Sucker from adjacent parent tree		C2

Tree Schedule – KEY

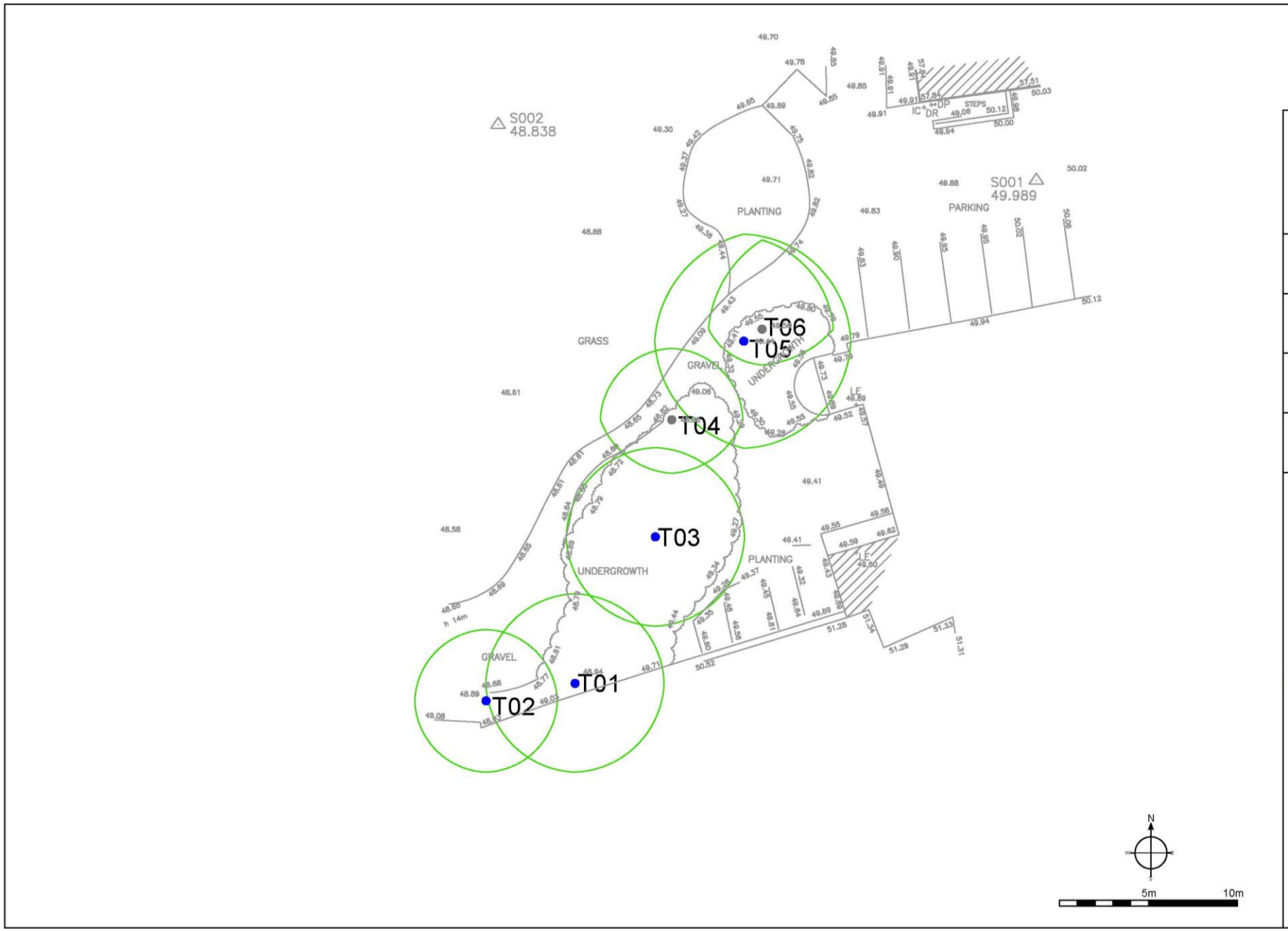
Tree Number **Tree numbers relate to those marked on the Tree Constraints Plan and Tree Protection Plan.** **Where relevant 'G' prefixes have been used to identify groups of trees & 'H' prefixes have been used to identify hedgerows.** **Tree Species** **Species are listed by their common name, both in the schedule and in the report text.** **Tree Height** **Tree heights are estimated in metres (m).** **Number of Stems** **The number of stems – either 1, 2, 3, 4, 5 or MS (Multi stemmed)**	**Stem Diameter** **The stem diameter of single stemmed trees is taken at 1.5m above ground level and given in millimetres (mm). The diameter measurement of multi-stemmed trees is measured in accordance with B.S.5837:2012. Measurements in bold are estimates if access to tree trunk is restricted.** **RPA Radius** **The calculated root protection area radius measured in metres and calculated from the measured stem diameter.** **Crown Spread** **Radial crown spread is given in metres and is listed for each of the four cardinal points N, S, E and W. The canopy shape for individually surveyed trees is depicted on the accompanying plans.**	**Age Class** **(Y) Young, (SM) Semi Mature, (EM) Early Mature, (M) Mature, (OM) Over mature,** **(V) Veteran** **Physiological Condition** **(G) Good, (F) Fair, (P) Poor, (D) Dead.** **U.L.E (Years)** **Useful Life Expectancy. Anticipated future contribution to amenity in years.**	**Tree Structural Condition and site notes** **Observations on form, condition and structural integrity.** **Site notes record growth conditions or root constraints where necessary.** **Management Recommendations** **Recommended works to be carried out prior to construction and to B.S 3998 standard.** **B.S. Category** **As defined within British Standard 5837:2012.** **Categories A (high quality) B (moderate quality), C (low quality) are trees that should be considered for retention. Category U trees are unsuitable for retention.**

Appendix 2

Plans*

1. Tree Constraints Plan - Location, Canopy Area and British Standard Category
2. Tree Constraints Plan - Location, Calculated Root Protection Areas and British Standard Category
3. Tree Protection Plan
4. Service Plan

*All plans are also available in .pdf and .dwg format.



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Site:
The Folly, Thornbury

Drawing Title:
Tree Canopy
and BS Category Plan

Scale:
1:200 @ A3

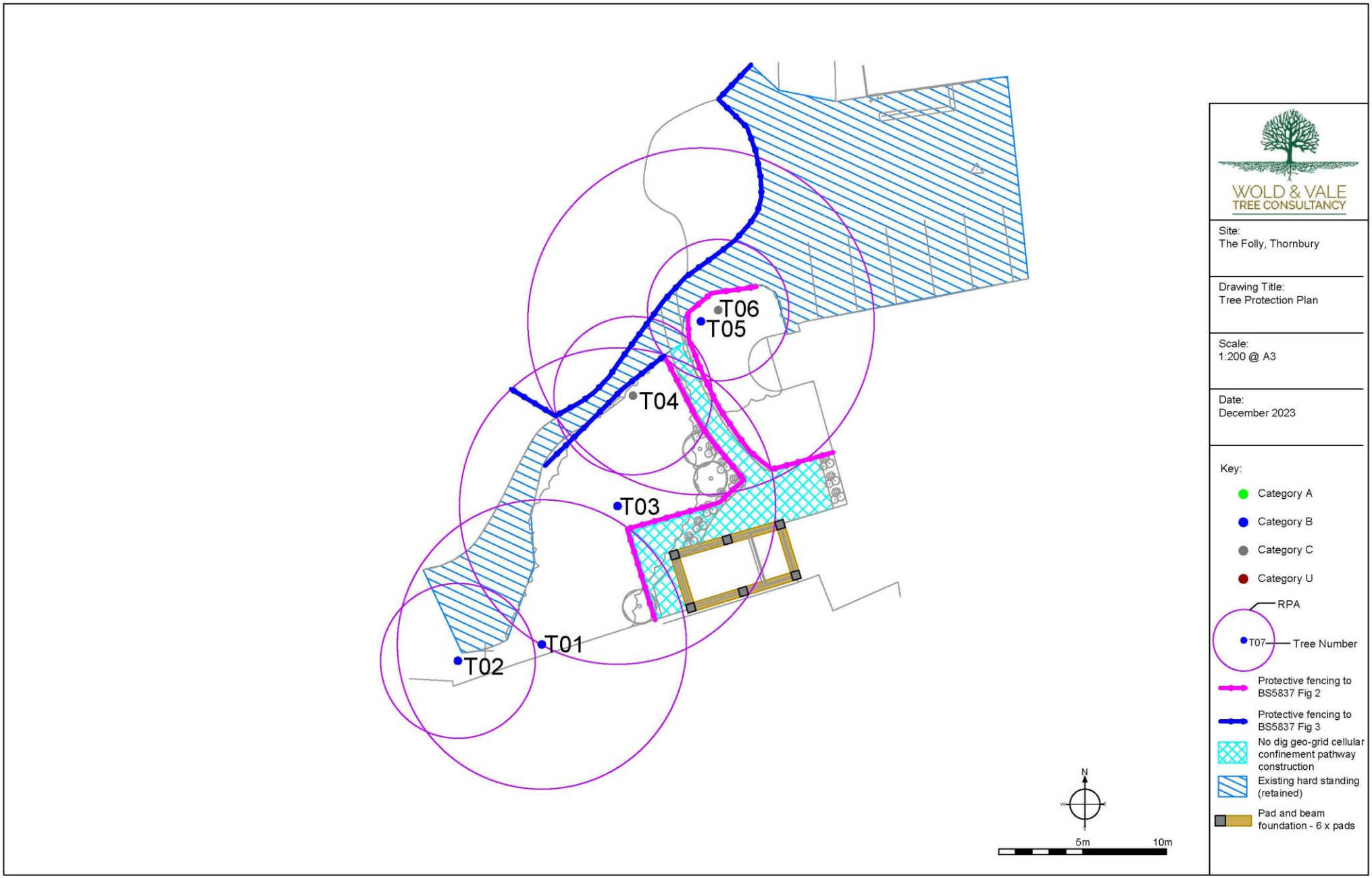
Date:
November 2023

Key:

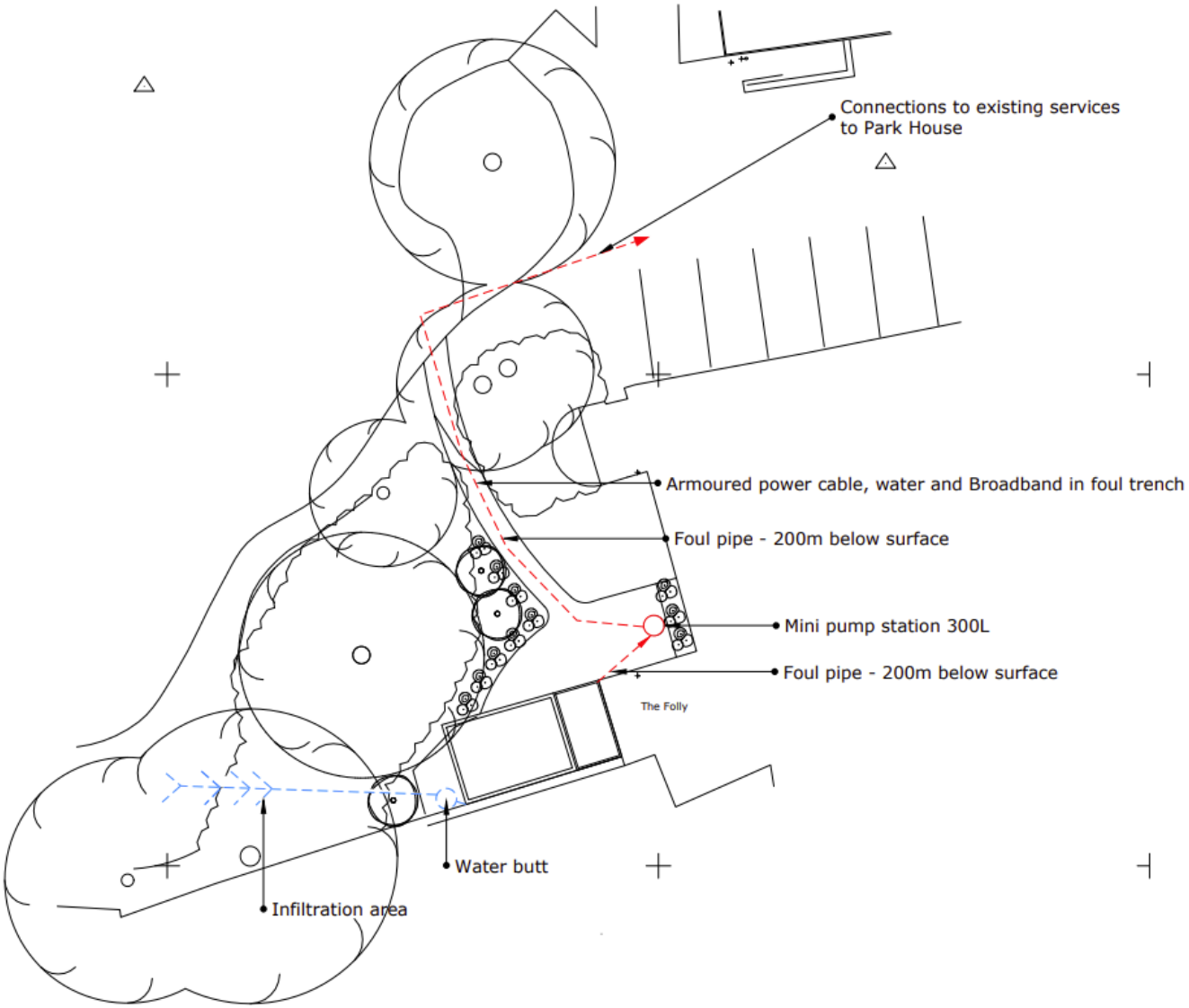
- Category A
- Category B
- Category C
- Category U

T07 — Tree Number
Crown Spread


S002
48.838
S001
49.989
PLANTING
PARKING
GRASS
GRAVEL
UNDERGROWTH
PLANTING
GRAVEL
UNDERGROWTH
T01
T02
T03
T04
T05
T06
WOLD & VALE
TREE CONSULTANCY
Site:
The Folly, Thornbury
Drawing Title:
RPA
and BS Category Plan
Scale:
1:200 @ A3
Date:
November 2023
Key:
Category A
Category B
Category C
Category U
T07
Tree Number
Root Protection Area
N
5m
10m


T06
T05
T04
T03
T01
T02
N
5m
10m
WOLD & VALE
TREE CONSULTANCY
Site:
The Folly, Thornbury
Drawing Title:
Tree Protection Plan
Scale:
1:200 @ A3
Date:
December 2023
Key:
Category A
Category B
Category C
Category U
RPA
T07
Tree Number
Protective fencing to BS5837 Fig 2
Protective fencing to BS5837 Fig 3
No dig geo-grid cellular confinement pathway construction
Existing hard standing (retained)
Pad and beam foundation - 6 x pads

Service Plan

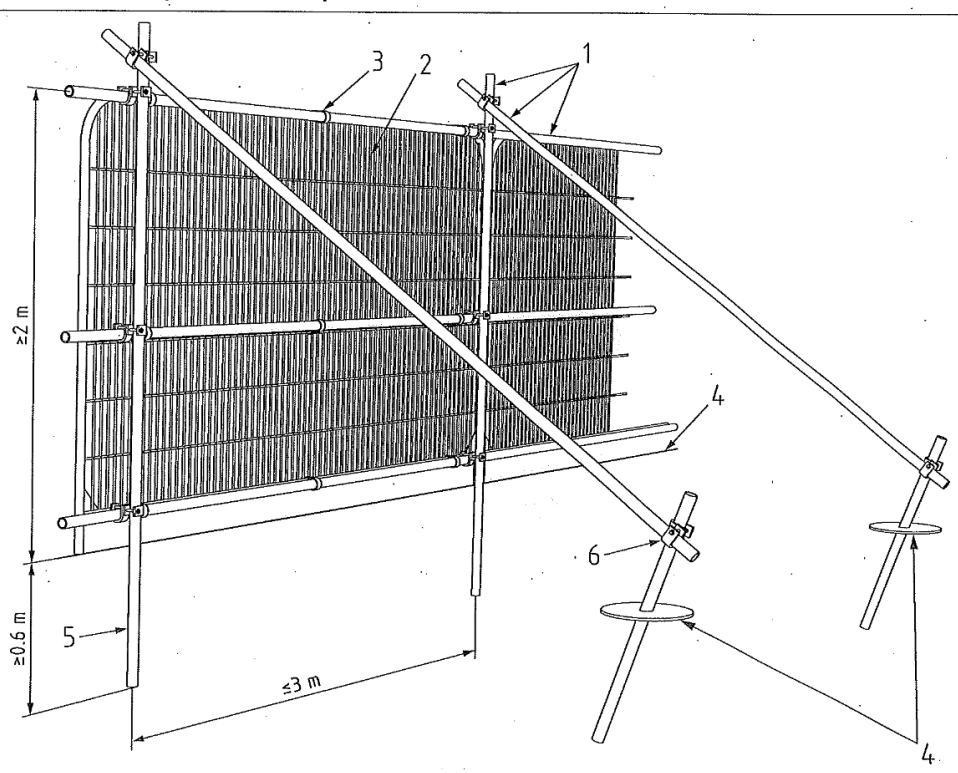


Appendix 3

Protective Barrier Specification

Figures 2 & 3 taken from BS5837:2012 Trees in Relation to Construction – Recommendations illustrating the system to be employed for ensuring an adequate Construction Exclusion Zone about retained trees.

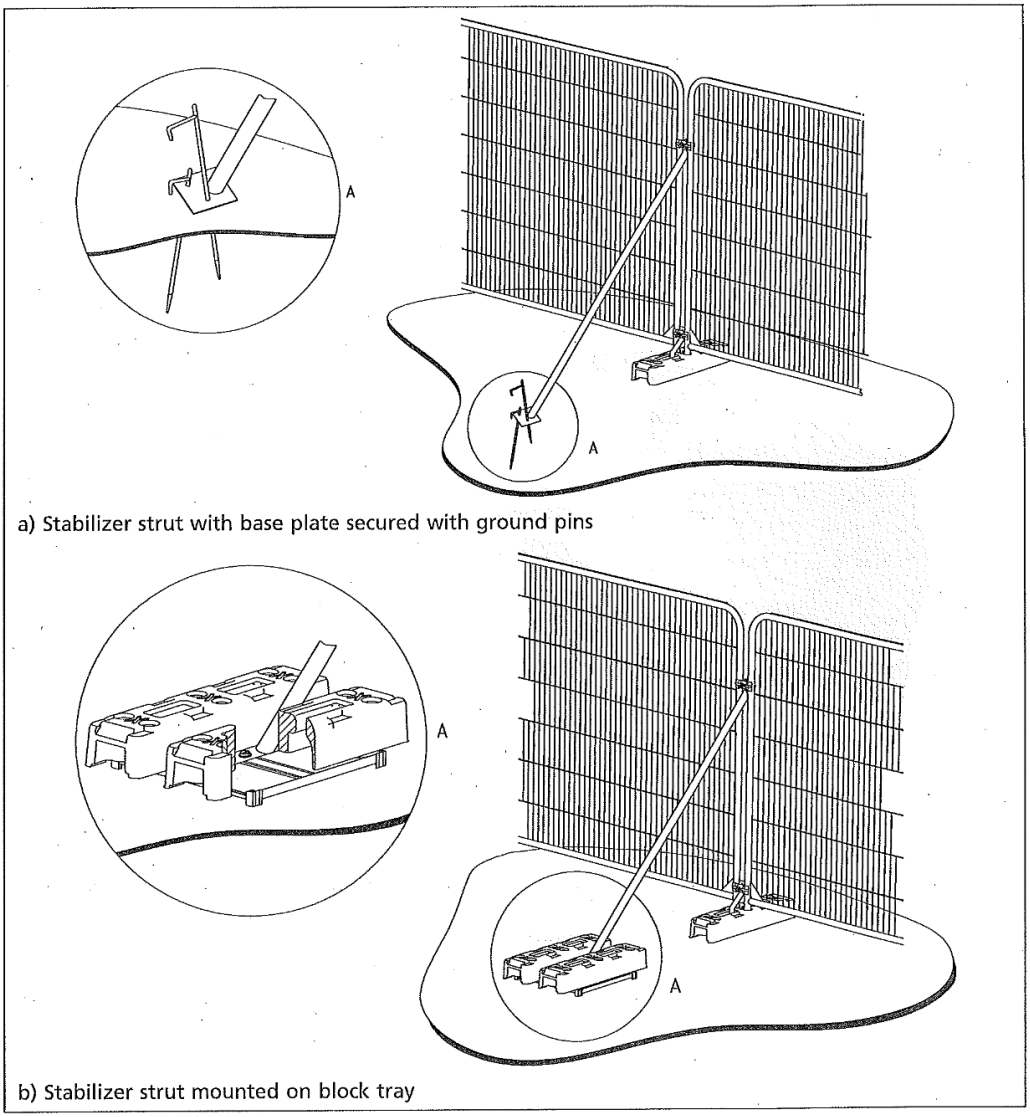
Figure 2 **Default specification for protective barrier**



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

Figure 3 **Examples of above-ground stabilizing systems**



Information Posters for Tree Protection Fencing

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

TREE PROTECTION AREA
KEEP OUT !

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

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