



Arboricultural Report

Impact assessment
and method
statement

5 The Green
Uley
GL11 5SN

12th January 2024

Compiled for:

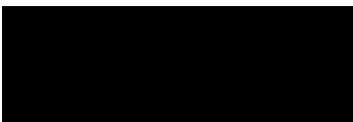
Mr and Mrs Lewis

By



Status: FINAL

Wotton Tree Consultancy
24 Haw Street
Wotton-under-Edge
Gloucestershire



Validation statement for LPA registration

This report is submitted to Stroud District Council to accompany a planning application. The report contains tree information relating to the proposal for new access and parking.

For local planning authority (LPA) validation purposes, this report contains the following:

- A full tree survey compliant to the requirements of BS5837:2012 'Trees in relation to design, demolition and construction – recommendations' undertaken by a competent and qualified arboriculturist.
- A suitably scaled plan with a north point showing the site boundaries and the tree survey information.
- An assessment of the impacts of the proposed development on the existing trees. This includes recommendations of which trees should be removed/retained and the proposed protection measures.
- An arboricultural method statement outlining appropriate methods of tree protection and any specific technical construction methods needed to implement the design proposals with minimal detriment to retained trees.

Summary

A new access driveway is proposed through a small paddock and into the rear garden of Uley House. All trees will be retained, and a combination of temporary fencing and no-dig construction will be used to ensure minimal root disruption.

With works being carried out in accordance with this tree report the overall impact on the trees is considered to be very low.

NOTE

This report is the property of Wotton Tree Consultancy Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without the written consent of Wotton Tree Consultancy Ltd.

© Wotton Tree Consultancy Ltd 2024

Contents

Validation statement for LPA registration.....	2
Summary.....	2
1.0 INTRODUCTION.....	5
1.1 Instruction:	5
1.2 Documents provided:	5
1.4 Limitations:	6
1.5 Ecological Constraints:.....	6
1.6 Tree preservation orders and/or conservation area protection:.....	6
2.0 SITE VISIT AND DATA COLLECTION	7
2.1 Site Visit:	7
2.2 Site Description:.....	7
2.3 Data collection:	7
2.4 Interpretation of data:.....	9
3.0 ARBORICULTURAL OVERVIEW	9
4.0 ARBORICULTURAL IMPACT ASSESSMENT	11
4.1 Below ground constraints	11
4.2 Above ground constraints	11
4.3 ARBORICULTURAL IMPACT CASCADE CHART	12
4.4 Trees to be retained	14
4.5 Trees to be removed	14
5.0 ARBORICULTURAL METHOD STATEMENT	15
5.2 Tree works prior to construction.....	15
5.3 Protective fencing.....	15
5.4 Site access.....	15
5.5 Contractors car parking	15
5.6 Site huts and storage	16
5.7 Service installation	16
5.8 Ground level changes	16



5.9	Foundations within Root Protection Areas	16
5.10	Hard surfaces within Root Protection Areas	16
5.11	Soft landscaping within exclusion zones	18
5.12	Responsibilities	18
5.13	Arboricultural supervision	19
APPENDIX 1: Tree schedule		22
APPENDIX 2: Tree constraints plan.....		24
APPENDIX 3: Tree protection plan.....		25
APPENDIX 4: Tree protection fencing (source: BS5837:2012)		26
APPENDIX 5: Tree protection fencing signs.....		26
APPENDIX 6: Outline specification for installation of Cellweb®		28
References		31

1.0 INTRODUCTION

1.1 Instruction: I am instructed by [REDACTED] to inspect the trees that could affect or be affected by the development proposal at the land known as 5 The Green. This report, in compliance with BS5837:2012 'Trees in relation to design, demolition and construction - recommendations' is required to accompany the submission of a planning application for the proposal for new access and parking. My instruction is to prepare the following information:

- A schedule of the relevant trees including tree data and condition assessment.
- A tree constraints plan.
- An arboricultural impact appraisal.
- An arboricultural method statement.
- A tree protection plan.

1.2 Documents provided: Drawings WTC_1238.02 (tree constraints plan) and WTC_1238.04 (tree protection plan) are derived from the following drawings which were supplied to me by Stephen Lewis:

- F&GS drawing – *Proposed New Drive and Parking Area as Existing and proposed* – Dwg No. 2223 – dated 17.02.203

1.3

A large black rectangular redaction box covers the entire content of section 1.3.

1.4 Limitations:

1.4.1 My survey was a preliminary assessment undertaken from ground level and observations have been made solely from visual inspections for the purposes of assessment in terms relevant to planning and development. Only binoculars, mallet and a probe have been used to aid tree assessment. No invasive or non-invasive internal decay detection devices have been used in assessing tree condition.

1.4.2 The recommendations and conclusions in this report relate only to the conditions found on this site at the time of the site visit and inspection. The recommendations contained within this report are valid for a period of 12 months from the date of this report. Any significant alteration to the site that may affect the trees that are present or have planning implications (level changes, additional tree works, post extreme weather events, hydrological changes) and will necessitate a re-assessment of the trees and the site.

1.4.3 The tree survey that forms part of this report is not a tree safety inspection. The survey has been carried out in order to inform the planning process. Where obvious risks have been observed, they have been addressed in the 'preliminary management recommendations' (see Appendix 1 – Tree Schedule). Potential hazards and levels of risk are likely to change as the site usage changes during and post development.

1.5 Ecological Constraints: The Wildlife and Countryside Act 1981 and amendments made within and subsequent to the Countryside and Rights of Way act 2000 provides statutory protection to bats, birds and other species that inhabit or use trees. The protection afforded to these species could impose significant constraints on the use of a particular site as well as significantly restrict the timing of any works that may be necessary. Any restrictions are in addition to the tree restriction highlighted in this report. Whilst I have some working knowledge of these potential issues they are outside my area of expertise and you must seek advice from a qualified ecologist to ascertain if any further restrictions apply.

1.6 Tree preservation orders and/or conservation area protection:

Having consulted Stroud District Council's online planning map (<http://map.n-somerset.gov.uk/dande.html>) [accessed 12th January 2024] I am informed that the site does not sit within a Conservation Area, nor are any trees on site subject to a Tree Preservation Order. Due to occasional inaccuracies with web-based records it is advisable to check directly with Stroud District Council before undertaking tree works.

2.0 SITE VISIT AND DATA COLLECTION

2.1 Site Visit: I visited the site on 4th January 2024. All observations were made from ground level (aided by the Visual Tree Assessment method – Mattheck and Breloer, 1994) and all measurements except stem diameter were estimated unless otherwise stated in the tree schedules. The weather at the time of the visit was cool and overcast; these conditions in no way hindered my ability to view the trees.

2.2 Site Description:

The site consists of land adjoining the gardens of 5 The Green, sloping away to a lane to the southwest.

2.3 Data collection: Each tree or group was inspected and allocated an identification number as indicated in the tree schedule (appendix 1) and tree survey plan. For each tree the following information was collected:

- species
- height (m)
- stem diameter (mm)
- average radius of crown to 4 cardinal points (m)
- height and orientation of first significant branch
- average height of canopy clearance
- life stage
- observations regarding condition
- preliminary management recommendations
- safe useful life expectancy

As encouraged in BS5837:2012, each tree or group was allocated to one of four categories (A,B,C or U), which reflects its suitability for retention in context of the development. Please see table 1 for explanation of the criteria for tree categorisation.

Table 1: cascade chart for tree assessment, adapted from Table 1 of BS5837:2012

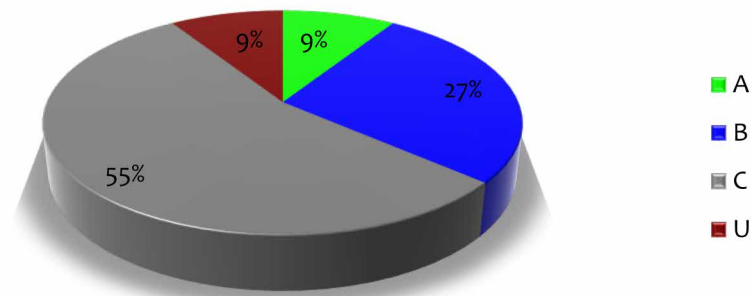
Category & definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Trees in such a condition that they cannot realistically be retained as living trees in the context of current land use for >10 yrs	<ul style="list-style-type: none"> 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 Trees that are dead or showing signs of significant, immediate and irreversible decline Trees infected with significant pathogens affecting health or safety, or very low quality trees suppressing trees of better quality <p><i>NOTE: these trees can have existing or potential conservation value making retention desirable</i></p>			DARK RED
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values incl conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of >40 yrs	Particularly good examples of their species, esp if rare or unusual. Those that are essential components of groups or formal or semi-formal arboricultural features	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	LIGHT GREEN
Category B Trees of moderate quality with an estimated remaining life expectancy of >20 yrs	Trees that might be included in category A but are downgraded because of impaired condition such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit 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. Trees occurring as collectives but situated so as to make little visual contribution to the area.	Trees with material conservation or other cultural value	MID BLUE
Category C Trees of low quality with an estimated remaining life expectancy of >10 years, or young trees with a stem diameter <150mm	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 landscape benefits.	Trees with no material conservation or other cultural value.	GREY

2.4 Interpretation of data: Section 4.6 of BS5837:2012 recommends that the trunk diameter measurement is used to calculate the RPA which can then be interpreted to identify the design constraints of a particular site. Once the design principal has been established the construction exclusion zone and location of protective measures can be identified.

3.0 ARBORICULTURAL OVERVIEW

3.1.1 A total of 11 items were surveyed within and adjacent to the development site. These items comprised 9 individual trees and 2 groups. The chart below shows the ratio of tree retention categories on the site.

Tree retention category ratios



3.1.2 The new access will be via a field gate. T1 is a C category laurel. It will be necessary to undertake some minor excavation within the margins of its RPA. A method statement for this is provided in section 5 of this report.



Plate 1: T1 – Laurel to the left of the field gate



3.1.3 T4 and T5 are mature oak trees. T4 is a 'U' category tree in decline. T5 is a B category tree. Both will be retained, and the proposed driveway passes through their RPAs. For this reason, a cellular confinement system will be used to ensure that root disruption is minimised.



Plate 2: T4 (left) and T5 – U and B category oaks respectively

4.0 ARBORICULTURAL IMPACT ASSESSMENT

4.1 Below ground constraints

4.1.1 Below ground constraints refer to tree roots. These are easily overlooked during construction operations as they are unseen and often little is understood about their importance. It is essential to ensure that roots are not damaged during building operations as they are the life blood of each tree, providing structural stability by anchoring the tree to the ground and providing transportation of water and nutrients from the soil to the foliage.

4.1.2 In reality the spread of roots for trees in an urban environment will rarely be distributed in a perfect circle as the environment below ground level is highly variable. The presence of structural foundations, pipes, impermeable surface coverings and differing soil conditions mean that tree roots will extend in to areas that offer a preferential environment; where water is most available and the soil is least compacted.

4.1.3 Root protection areas (RPAs) are shown as a circle centred on the base of the stem unless site conditions such as nearby structures indicate that the shape of the rooting area deviates from this format.

4.1.4 T3, T4 and T5 have RPA conflicts and so a cellular confinement system is proposed to negate the need for excavation and to avoid compaction within their rooting areas. This is detailed further in section 5.

4.2 Above ground constraints

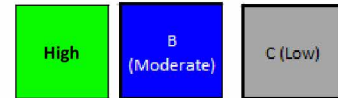
4.2.1 Trees in close proximity to buildings can provide some constraints, both actual and perceived. Actual constraints may be where low branches conflict with new elevations either at the time of building or in the future. Future growth of young trees should be accommodated in building design. Other constraints include shade, leaf litter and damage from falling branches.

4.2.2 Large tree canopies close to buildings can also cause 'post-development pressure' by way of requests for tree removal or pruning as a result of resident anxiety.

4.2.3 Due to the nature of the build, shading or leaf fall are not significant considerations.

4.3 ARBORICULTURAL IMPACT CASCADE CHART

4.3.1 Tree **Values** are taken from BS: 5837 and comprise of the following:



4.3.2 The **Impacts** comprise of 6 elements:



4.3.3 Causes of impacts comprise of 6 factors: **'None'**, **'To facilitate development'**, **'Due to poor condition'**, **'Direct disturbance to roots'**, **'Pruning required'** and **'Possible future pruning pressure due to shade and other factors'**.

4.3.4 Comments are also included providing more information where necessary.

	REMOVAL	PARTIAL REMOVAL	HIGH	MODERATE	LOW
TO FACILITATE DEVELOPMENT	Tree / group requires removal.	Partial removal of group is required. I.e., 'a section of hedge may require removal to allow a new access road'.	N/A	N/A	N/A
DUE TO POOR CONDITION	Tree or group require removal due to poor structural and / or physiological condition.	Part of group require removal due to poor structural and / or physiological condition.	N/A	N/A	N/A
DIRECT DISTURBANCE TO ROOTS	N/A	N/A	In many case this will result in the loss of tree/s - refer to 'TO FACILITATE DEVELOPMENT' . In rare cases a Tree/s may be retained but damage will occur to the roots. Up to 30% of total RPA area affected.	Disturbance will be caused to roots of a tree/s that are likely to result in some physiological and structural dysfunction. The extent of damage does not require trees to be felled. Remedial actions may be taken in some cases that would help mitigate against damage but site topography, tree age, condition and species condition may result in disturbance being considered MODERATE as opposed to LOW . Up to 20% of total RPA area affected.	Activity will occur within the root protection area of trees which will have a low impact, or can be mitigated by special measures. Up to 10% of total RPA area affected.
PRUNING REQUIRED	N/A	N/A	Pruning that may retain a tree but will have a potential impact on the tree condition and visual appearance	Pruning is required that is acceptable within recommendations within BS3008:2010, but would require a material alteration to the tree/group affected.	Pruning is required that will have little impact to the structural, physiological and visual amenity of a tree or group.
POSSIBLE FUTURE PRUNING PRESSURE DUE TO SHADE OR OTHER FACTORS	Removal of tree/s required as retention is unsustainable and/or undesirable within the context of development. i.e. fast growing tree in small garden.	Partial removal of tree/s required as retention is unsustainable and/or undesirable within the context of development. i.e. fast growing tree in small garden.	Tree/s likely to cause significant shading. i.e. small garden areas with dense mature trees to south.	Some level of shade or other inconvenience will occur. Not highly oppressive, but some residents may seek management of trees in long term.	Some level of shading / overhang will occur.

Table and cascade chart courtesy of [redacted] (2021)

Arboricultural Impact Table						
Ref No.	Species	Value	Impact	Impact Cause	Management Options / Comments	Other
T1	Portugal laurel	C (Low)	Low	To facilitate development	Proposed access drive within RPA of tree. Method statement provide to minimise root disruption.	Tree protection fencing required. See tree protection plan - WTC_1238.04
T2	Holly	C (Low)	None	None	Tree not affected by the proposals	No tree protection required
G1	Holly and elder	C (Low)	None	None	Tree protection required. See Tree Protection Plan - WTC_1238.04	n/a
T3	Hazel	C (Low)	Low	Direct disturbance to roots	Proposed access drive marginally within RPA of tree. No dig surfacing to be used	Tree protection fencing required. See tree protection plan - WTC_1238.04
T4	English oak	U (Poor)	Low	Direct disturbance to roots	Proposed access drive within RPA of tree. No dig surfacing to be used	Tree protection fencing required. See tree protection plan - WTC_1238.04
T5	English oak	B (Moderate)	Low	Direct disturbance to roots	Proposed access drive within RPA of tree. No dig surfacing to be used	Tree protection fencing required. See tree protection plan - WTC_1238.04
T6	Sorbus spp	C (Low)	None	None	Tree protection required. See Tree Protection Plan - WTC_1238.04	n/a
T7	Hazel	B (Moderate)	None	None	Tree protection required. See Tree Protection Plan - WTC_1238.04	n/a
G2	1 x Persian ironwood, 1 x hazel	B (Moderate)	None	None	Tree protection required. See Tree Protection Plan - WTC_1238.04	n/a
T8	Alder	C (Low)	None	None	Tree protection required. See Tree Protection Plan - WTC_1238.04	n/a
T9	Robinia	A (High)	None	None	Tree protection required. See Tree Protection Plan - WTC_1238.04	n/a

4.4 Trees to be retained

Of the 9 trees and 2 groups surveyed, all are proposed to be retained.

- 4.4.1 Tree protection on development sites is of paramount importance if trees are to be retained successfully. The inevitable stress caused by development near an existing tree can, if provision for adequate protection is not made, be a strain that can severely damage the trees or even result in their death. Although the trees appear healthy during and on completion of the development, the full effects may not come apparent for up to five or more years after works have finished.

4.5 Trees to be removed

- 4.5.1 No trees are proposed for removal as a result of this development.

5.0 ARBORICULTURAL METHOD STATEMENT

5.1.1 Control measures for construction works in or near to the root protection zone are detailed in this chapter. This will form the method statement of works and will be the exact principle/methodology utilized during construction periods.

5.2 Tree works prior to construction

5.2.1 No tree works are required to facilitate the build.

5.3 Protective fencing

5.3.1 Before the commencement of any works on site protective fencing shall be erected to the dimensions shown on the accompanying drawing 'tree protection plan'. Individual root protection areas at the measured m² will be erected for the duration of the development around retained trees. Although these protection measures will be in place for the duration of the development on site monitoring will allow for the successful retention of the subject trees.

5.3.2 Tree protection fencing will be constructed to the specification as set out in Appendix 4 of this report. It is imperative that the fencing is constructed in such a way that it cannot be easily moved or opened during construction work.

5.3.3 Signs will be affixed to the fencing to inform on-site contractors of the importance of the fencing barriers (Appendix 5).

5.3.4 The construction exclusion zones (CEZs) are to be treated as sacrosanct and the following guidelines must be followed:

- NO mechanised excavations
- NO movement of construction traffic or parking of vehicles
- NO storage of building materials
- NO storage of chemicals or fuels
- NO fires to be lit in close proximity to trees

5.3.5 Fences must only be removed following a site visit from the Local Authority officer to confirm on-site construction activity has been completed.

5.4 Site access

5.4.1 The site shall be accessed via the track to the southwest of 3 The Green.

5.5 Contractors car parking

5.5.1 No vehicles shall be parked on un-surfaced ground within the RPA of retained trees.

5.6 Site huts and storage

- 5.6.1 Any storage required for materials, spoil, plant or welfare facilities shall be positioned outside the RPA of retained trees. Mixing of cement shall be in a designated area where runoff will not enter the RPAs of retained trees. Ground protection in the form of a geotextile membrane will ensure no leaching of mixings enters the soil and kick boards around the perimeter will ensure that runoff is contained.

5.7 Service installation

- 5.7.1 No services are required.

5.8 Ground level changes

- 5.8.1 There shall be no changes in ground levels within the RPAs of retained trees during the construction.

5.9 Foundations within Root Protection Areas

- 5.9.1 There shall be no foundations within RPAs of retained trees.

5.10 Hard surfaces within Root Protection Areas

- 5.10.1 A proposed section of road encroaches into the RPA of T1. A cellular confinement system is not possible in this area and so the following methods of work shall be observed:

- 5.10.2 Excavation within the RPAs will be undertaken using hand tools only where the ground is soft.

- 5.10.3 Where hard standing or compacted ground requires removal, a small digger with a toothless digging bucket will be used with a spotter to look out for any roots.

- 5.10.4 If roots are encountered, these should be carefully pruned back to the face of excavation, using bypass secateurs or a root pruning saw, and immediately covered with parent soil, ensuring the pruning wound is tightly packed to avoid desiccation.

- 5.10.5 Specialised driveway construction will be required for the driveway within the RPAs of trees T3, T4 and T5.

Specified product - Cellweb Tree Root Protection System www.geosyn.co.uk
or equivalent

- 5.10.6 The aforementioned driveway will be constructed using a no dig cellular confinement system such as that shown in Appendix 10.
- 5.10.7 Prior to installation all existing vegetation within the areas of the new driveways will be sprayed using a suitable herbicide in accordance with the manufacturers' recommendations.
- 5.10.8 The area will then be left for the specified period to allow the vegetation to die off completely. Once the vegetation has completely died off the area will be raked to remove any loose debris and to achieve a clear level base.
- 5.10.9 If time constraints prevent using herbicide, the turf layer within the areas of the new driveways will be scraped using hand tools or a turf-cutter.
- 5.10.10 Fill any hollows in the exposed ground with sharp sand or 4/20mm or 40/20mm clean angular stone.
- 5.10.11 A geotextile membrane will then be laid over the area and the cellular system placed onto this as prescribed below.
- 5.10.12 Lay a geotextile membrane (Treetex T-300, Permatex 300 or similar approved) over the ground, between pegged timber edging if used, and overlapping membrane joints by a minimum 300mm. Keep the membrane in place temporarily using stakes or weights.
- 5.10.13 Place the collapsed panel on the geotextile and insert staking pins provided through three cells across the width of the panel end at the start of the driveway.
- 5.10.14 Expand the panel to its full length to ensure the cells have been expanded to their full dimension and pin across the opposite panel end using staking pins provided.
- 5.10.15 Pin along the length of the panel with two pins on each side using staking pins provided.
- 5.10.16 Staple any adjacent panels together using the provided stapler and staples.
- 5.10.17 If full panels are not being used then ensure the cells have been expanded to their full dimension.
- 5.10.18 Cut panels with a heavy duty Stanley knife to shape, or remove excess sections, if required.

- 5.10.19 Use a mini digger under the supervision of a qualified and competent arboriculturist to infill the panels. The mini digger can travel over infilled panels, but it must not be used or parked on open ground within RPAs.
- 5.10.20 Infill each cell with 4-20mm or 40-20mm clean angular stone to BS EN 13242 and 12620 (depending on cell depth being used).
- 5.10.21 Allow for any settlement of the stone in the cells and top up if necessary.
- 5.10.22 Add extra stone up to 50mm depth over the panels if the area is to be trafficked immediately.
- 5.10.23 When the area is complete the agreed finishing surface can be applied.

5.11 Soft landscaping within exclusion zones

- 5.11.1 Soft landscaping must respect the rooting areas of retained trees. Removal of spoil and the import of materials must be outside the specified RPAs.
- 5.11.2 No level changes or disturbance to the soil will take place within RPAs of retained trees. This includes in particular any rotavating of the ground. Should the soils require cultivating, the use of an airspade can be employed under an arboricultural watching brief.

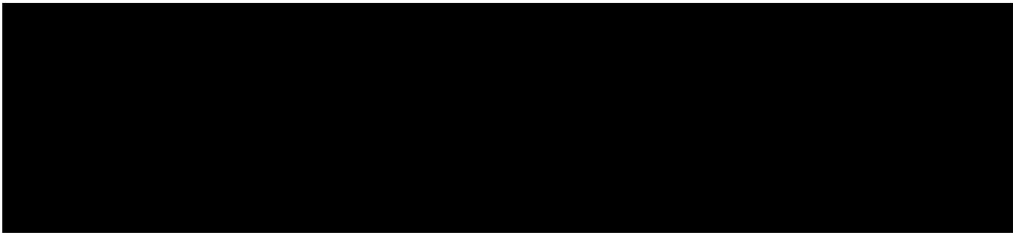
5.12 Responsibilities

- 5.12.1 It will be the responsibility of the main contractor to ensure that any planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site.
- 5.12.2 The main contractor will be responsible for contacting the Local Planning Authority at any time issues are raised related to the trees on site.
- 5.12.3 If at any time pruning works are required permission must be sought from the Local Planning Authority first and then carried out in accordance with BS 3998 Recommendations for Tree Works 2010.
- 5.12.4 The main contractor will ensure the build sequence is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of ALL construction works on the site.
- 5.12.5 The fencing and signs must be maintained in position at all times and checked on a regular basis by an onsite person designated that responsibility.

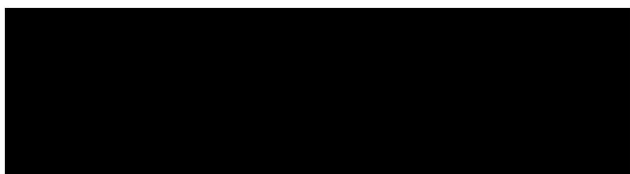
5.13 Arboricultural supervision

5.13.1 It is recommended a number of short inspections of the subject trees should be undertaken by the project arboriculturist familiar with BS5837:2012 operations during the extent of the project to ensure that methods of works are in accordance with this method statement.


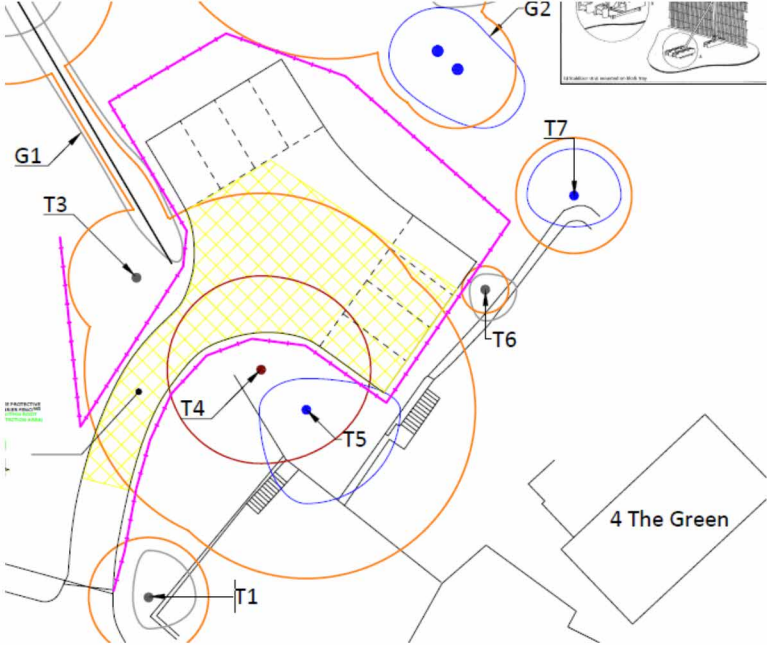
5.13.2 Any works required within the RPA of retained trees that is not covered in this document can only be done so with the written permission of the Local Planning Authority, in accordance with a detailed arboricultural method statement and under an arboricultural watching brief.

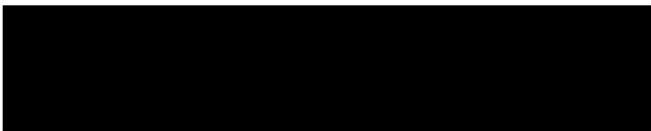


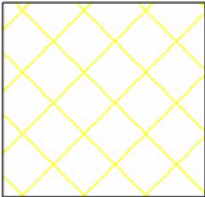
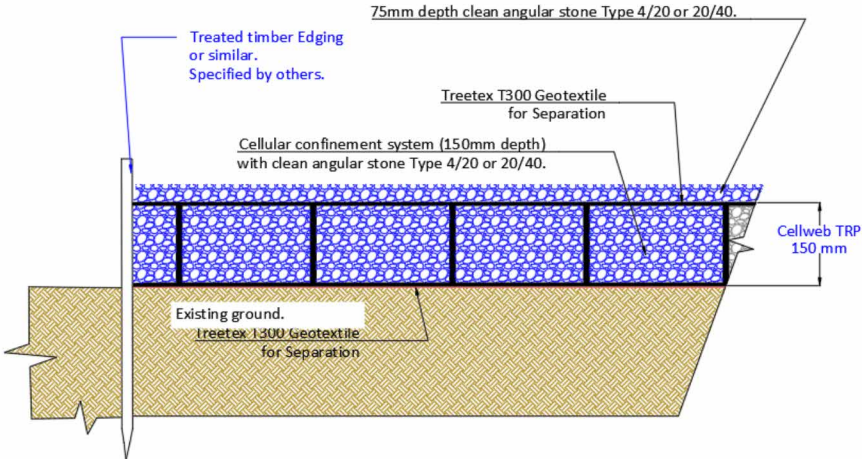
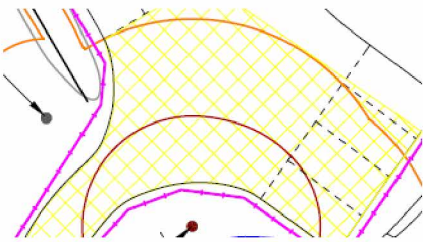
12th January 2024

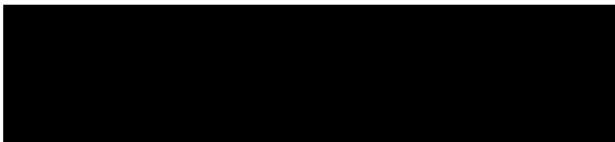


Phasing of arboricultural works

Phase	Requirements	Method
<p>1 Prior to any construction works on site</p>	<p>Erection of protective fencing:</p> 	<p>Protective fencing is to be erected in accordance with 4.2 of this report.</p> <p>The fencing must comply with the positions shown in the Tree Protection Plan and agreed at the pre-commencement site meeting.</p> <p>No works, no storage of materials, no access, or any ground disturbance is to take place within the Tree Protection Barrier Fencing. Fenced areas are to be treated as Construction Exclusion Zones.</p> <p>Warning signs to be placed on all protective fencing. For large sections of fencing the signs must be placed at 15m intervals.</p> <p>Signs must be laminated and securely attached at all corners. Two signs are to be placed side by side; copies of which are attached within Appendix 5.</p> 
<p>2 Start of development</p>	<p>Commencement of development</p>	<p>Protective fencing to remain in situ during development phase.</p>



Phase	Requirements	Method
<p>3 Installation of geotextile cellular confinement systems</p>	<p>Installation of three dimensional cellular confinement system.</p> 	<p>Installation of non-dig driveway and parking surfaces:</p> <p>A three dimensional cellular confinement system is to be utilised (Cellweb).</p> <p>Guidance for the installation of the Cellweb is attached within Appendix 7. Cross section details are to be provided (in conjunction with engineer and Cellweb recommendations). Technical specifications required, as well as cross section details relevant to the site can be provided by Cellweb suppliers, Geosynthetic (01455 617139). Email Sales@geosyn.co.uk.</p> <p>The installation is to be carried out under Arboricultural Supervision. The ground layer in which Cellweb is to be installed is to be subject only to removal of existing turf layer.</p> <p>Adjoining levels <u>must</u> marry with the required depth of the Cellweb, not vice versa.</p> <p>Once Cellweb is installed the protective fencing is to be relocated immediately adjacent the intalled areas of Cellweb.</p>  
<p>4 Completion of main construction and undertaking of landscaping</p>	<p>Landscaping and Dismantling of tree barrier protective fencing.</p>	<p>It is essential that ground levels within the root protection areas are not altered, either by raising or lowering soil levels; even at the landscaping stage.</p> <p>Landscaping operations must be undertaken in a manner that will not impact trees.</p> <p>Landscaping within the root protection area of trees must be undertaken using hand tools only in line with any approved Landscaping management plans</p>



APPENDIX 1: Tree schedule

Tree ID	Species	Ht (m)	Stem Dia. (mm)	Spread (m)				Avg. Canopy Height (m)	Life Stage	Health & vitality	Struct. cond.	General Observations	Preliminary Recommendations	Estimated safe useful life expectancy (Years)	BS5837: 2012 Category	RPA Radius (m)	RPA m ²
				N	E	S	W										
T1	Portugal laurel	4	320	3	3	2	1	0	Mature	Fair	Fair	-	-	10+	C2	3.8	46
T2	Holly	10	590	1	4	4	4	2	Mature	Fair	Fair	Component of wider group of trees extending to the northwest. Dense ivy.	-	10+	C3	7.1	157
G1	Holly and elder	4	70	-	-	-	-	0	Semi-mature	Good	Fair	-	-	20+	C3	0.8	2
T3	Hazel	0	360	0	0	0	0	0	Mature	Fair	Fair	Recently coppiced to ground level	-	10+	C2	4.3	59
T4	English oak	16	940	6	7	6	6	6	Mature	Poor	Poor	Poor tree surgery undertaken on behalf of The Diocese of Gloucester 3 years ago. This included ivy severance resulting in chainsaw cuts into the bark of the tree and subsequent large area of bark and cambium death with extends foot the majority of the tree's circumference. Large lower limbs removed leaving jagged stump. Dieback in canopy with some epicormic growth present. Old remnants of mushrooms at base. Suspected honey fungus.	Re-assess when in full leaf to inform future management, possibly as a habitat feature.	<10	U	11.3	400

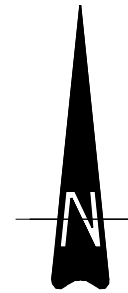
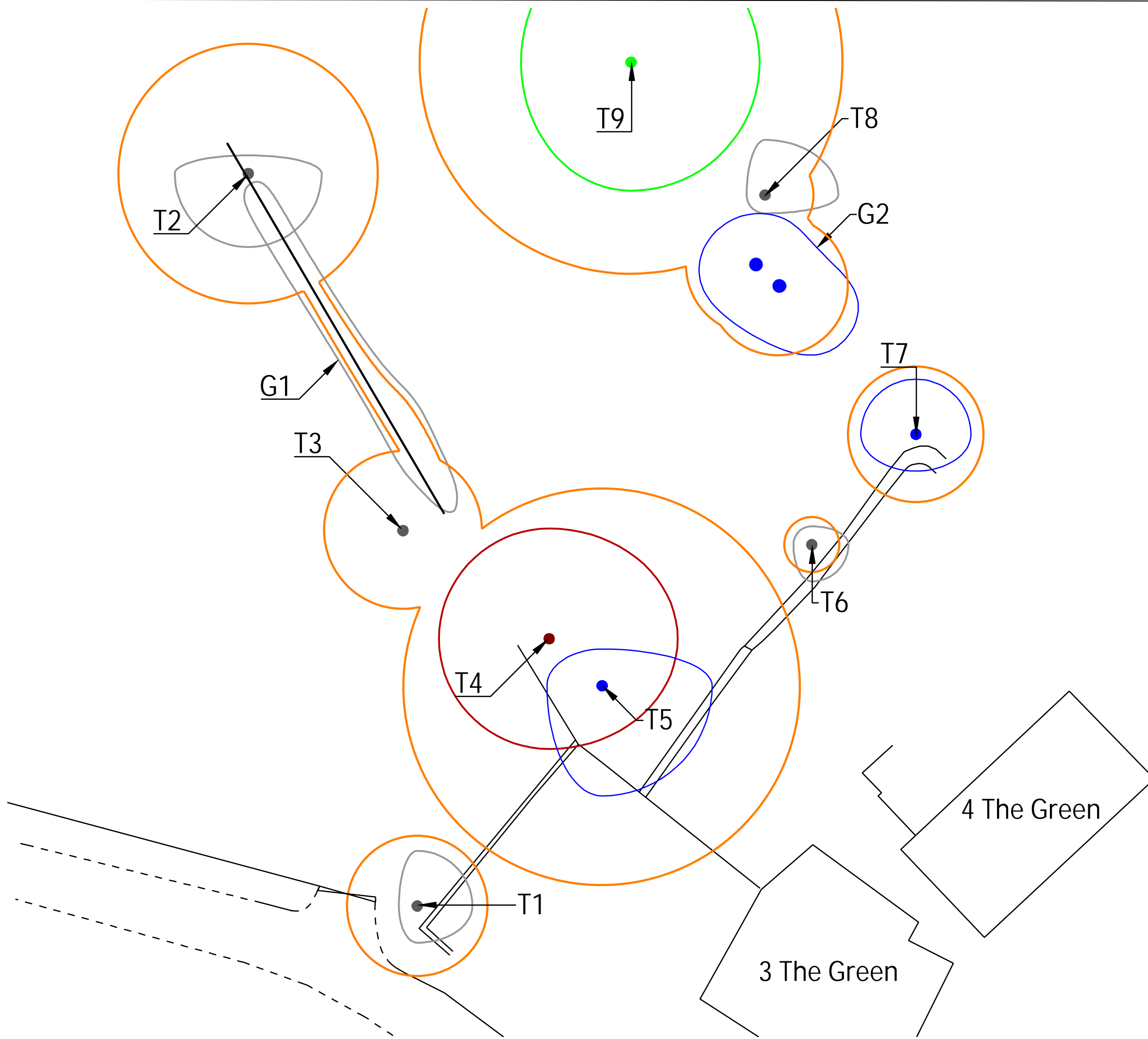


Tree ID	Species	Ht (m)	Stem Dia. (mm)	Spread (m)				Avg. Canopy Height (m)	Life Stage	Health & vitality	Struct. cond.	General Observations	Preliminary Recommendations	Estimated safe useful life expectancy (Years)	BS5837: 2012 Category	RPA Radius (m)	RPA m ²
				N	E	S	W										
T5	English oak	14	900	2	6	6	3	3	Mature	Fair	Fair	Poor tree surgery undertaken on behalf of The Diocese of Gloucester 3 years ago to reduce the canopy. Large seam of cambial dysfunction from base to 4.5m on south side with good reaction wood present. Healthy bud distribution throughout with epicormics developing.	-	20+	B2/3	10.8	366
T6	Sorbus spp	6	120	1	2	2	1	2	Semi-mature	Fair	Fair	-	-	10+	C2	1.5	7
T7	Hazel	7	310	3	3	2	3	2	Mature	Fair	Fair	-	-	20+	B2	3.7	43
G2	1 x Persian ironwood, 1 x hazel	6	320	-	-	-	-	0	Mature	Good	Good	-	-	20+	B2	3.8	46
T8	Alder	10	220	3	4	1	1	2	Semi-mature	Fair	Fair	-	-	10+	C2	2.6	22
T9	Robinia	18	960	7	7	7	6	2	Mature	Good	Good	-	-	40+	A2	11.5	417

APPENDIX 2: Tree constraints plan

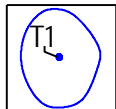
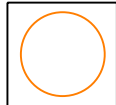
WTC_1238.02





This drawing is solely for planning purposes. Do not scale from this drawing. Please check all dimensions on site and notify us of any discrepancies. Wotton Tree Consultancy Ltd (WTC) cannot be held responsible for any discrepancies or inaccuracies in the topographical plan upon which this drawing is based. © Wotton Tree Consultancy Ltd 2024. This drawing is copyright and cannot be used or altered without the express permission of WTC Ltd. This drawing is designed to reflect only the principles of layout and/or design insofar as these relate to the protection of trees to be retained and should NOT be read as a definitive engineering or construction method statement. Reference should be made to the architect or engineer as appropriate over any matters of construction detail or specification or any engineering standards or regulatory requirements relating to proposed structures, hard surfaces or underground structures.

Key

-  Tree/group canopy
-  Root Protection Area

Retention Categories

- A High quality
- B Moderate quality
- C Low quality
- U Unsuitable for retention

Project

5 The Green
Uley
GL11 5SN

Title

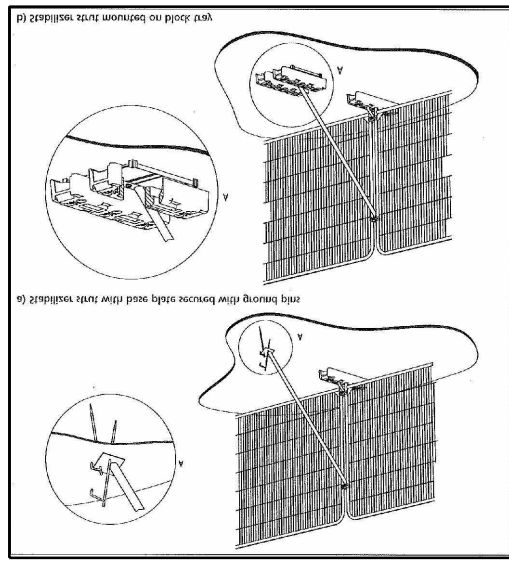
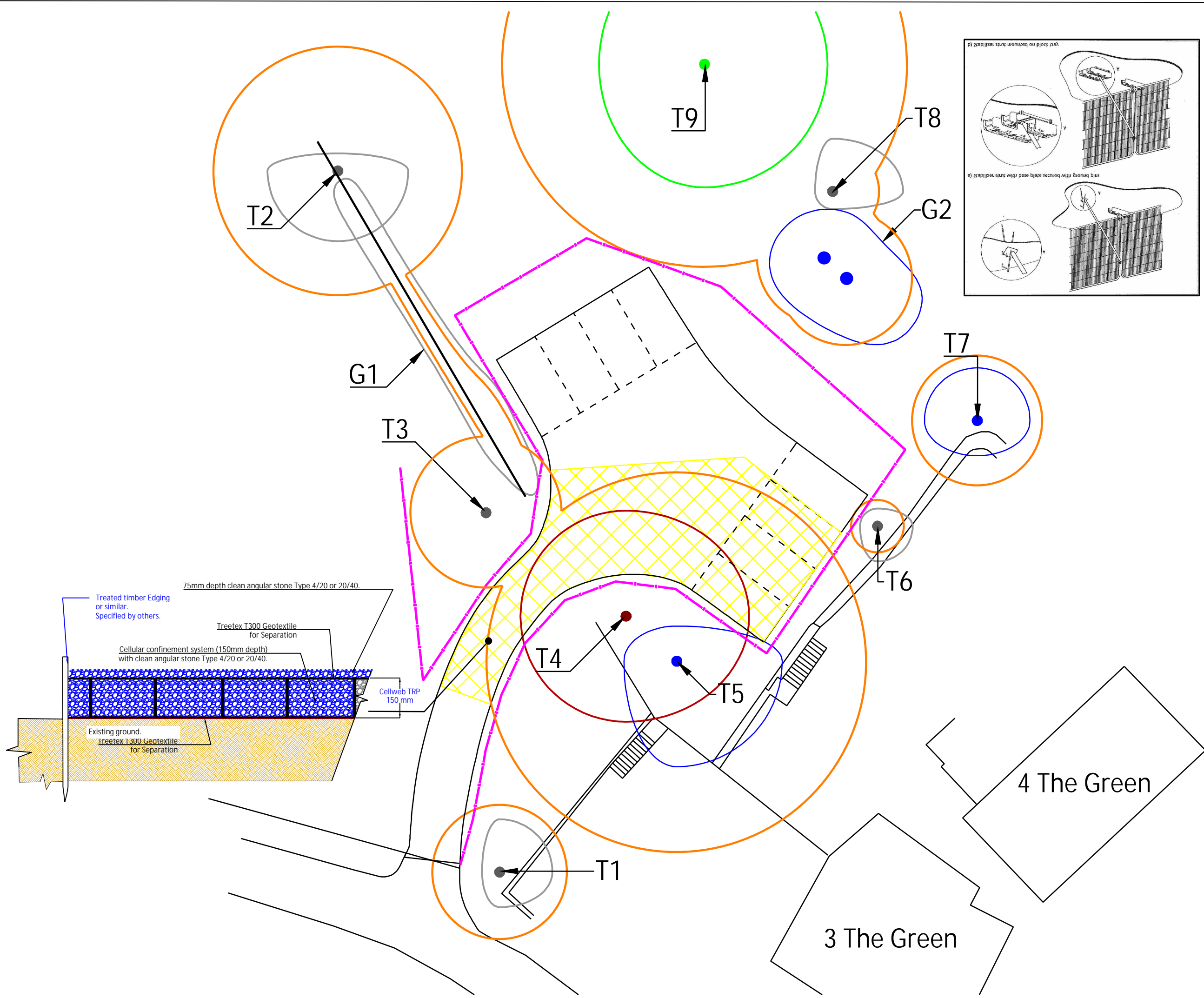
Tree Constraints
Plan

		Rev	Rev date
Drg No	WTC_1238.02		
Scale @A3	1:200	Drn by	PD
Date	Jan 2024	App	

APPENDIX 3: Tree protection plan

WTC_1238.04





This drawing is solely for planning purposes. Do not scale from this drawing. Please check all dimensions on site and notify us of any discrepancies. Wotton Tree Consultancy Ltd (WTC) cannot be held responsible for any discrepancies or inaccuracies in the topographical plan upon which this drawing is based. © Wotton Tree Consultancy Ltd 2024. This drawing is copyright and cannot be used or altered without the express permission of WTC Ltd. This drawing is designed to reflect only the principles of layout and/or design insofar as these relate to the protection of trees to be retained and should NOT be read as a definitive engineering or construction method statement. Reference should be made to the architect or engineer as appropriate over any matters of construction detail or specification or any engineering standards or regulatory requirements relating to proposed structures, hard surfaces or underground structures.

- Key**
- Tree/group canopy
 - Root Protection Area
 - Protective fencing
 - Cellular confinement system

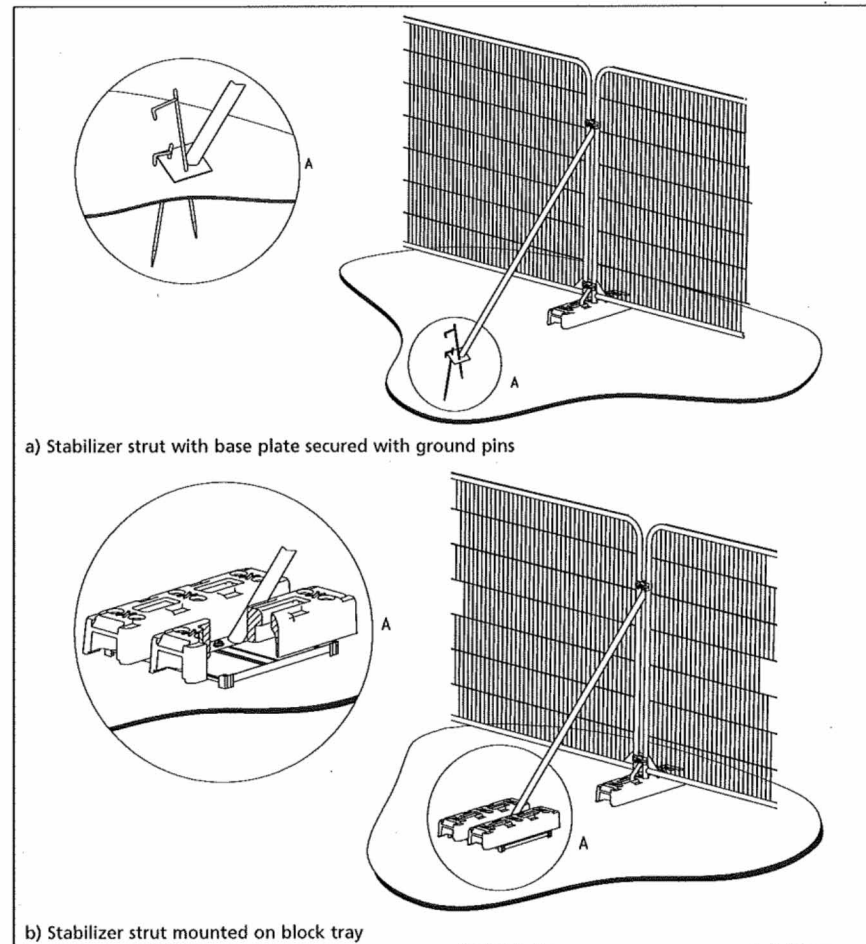
- Retention Categories**
- A High quality
 - B Moderate quality
 - C Low quality
 - U Unsuitable for retention

Project
 5 The Green
 Uley
 GL11 5SN

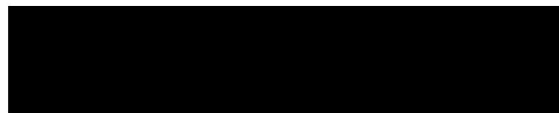
Title
 Tree Protection Plan

	Rev	Rev date
Drg No	WTC_1238.02	
Scale @A3	1:200	Drn by PD
Date	Jan 2024	App

APPENDIX 4: Tree protection fencing (source: BS5837:2012)



APPENDIX 5: Tree protection fencing signs




APPENDIX 6: Outline specification for installation of Cellweb®


PRODUCT DATA SHEET

Geosynthetics Limited Tel: 01485 617 139 Fax: 01485 617 140 Email: sales@geosyn.co.uk


Cellweb® TRP Installation Guide



Step 1: Prepare Surface



Step 2: Lay Treetex® T-300





Step 3: Layout Cellweb® TRP

- Cellweb® TRP is a NO DIG tree root protection measure and it is recommended that no excavation be performed without prior approval and guidance from the Local Authority Arboricultural Officer.
- Soil compaction from vehicles, machinery and materials is to be strictly prohibited during construction within Root Protection Areas (RPAs).
- Approval must be obtained from the Local Authority that the design and the method of construction is acceptable.
- Further information is available from the following two documents;
 - British Standard BS5837: 'Trees in Relation to Design, Demolition and Construction' (2012).
 - Arboricultural Advisory and Information Service: Practice note 12 – 'Through the Trees to Development' (APN12).

Installation Method

- 1. Prepare the Surface**
 - Remove the surface vegetation using appropriate hand held tools or herbicide (see Note 1).
 - Remove any surface rocks, debris and organic material.
 - Create a level surface by filling any hollows with clean angular stone or sharp sand.
 - Do not level off high spots or compact the soil through rolling.
- 2. Lay the Treetex® T-300 Non-Woven Geotextile**
 - Lay the Treetex® T-300 over the prepared area, overlaying the edges of the required area by 300mm.
 - Overlap any joins by 300mm minimum or more, depending on soil structure (see Note 2).
- 3. Lay the Cellweb® TRP Cellular Confinement System**
 - Lay the collapsed Cellweb® TRP on-top of the Treetex® T-300.
 - Place one of the supplied J pins into the centre cell at the end of the panel and secure into the ground.





DR:815/1/18.08.14 (Page 1 of 3)

Cellweb® TRP - Installation Guide



Step 3: Pinning Cellweb® TRP



Step 3: Stapling Cellweb® TRP

- Pull out the Cellweb® TRP to its full 8.1m length and secure its length with another J pin.



- Now measure its width to 2.56m and secure in each of the corners with the J pins.



- Use 10 pins per panel to create a panel measuring 8.1m x 2.56m. (3 pins at each end of the panel and 2 pins on each side)



- This will produce a cell size of 259mm x 224mm which is the required cell diameter. Each cell must be fully extended and under tension.
- Staple adjacent panels together at each cell (see Note 3).
- If a curved path or shape is required, this should be cut when the Cellweb® TRP panel is pinned out to 8.1 x 2.56m, ensuring complete cells remain. Do not try to curve or bend the Cellweb® TRP panels into place.
- All cells must be fully opened to the required diameter.



Cellweb® TRP - Installation Guide



Step 4: Clean Angular Stone



Step 5: Edge Restraints



Step 6: Surface Options

4. Infill the Clean Angular Stone

- The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm (see Note 4).
- Do not use M.O.T type 1 or crushed stone with fines for tree root protection.
- Infill the Cellweb® TRP cells with the clean angular stone, working towards the tree and using the infilled panels as a platform.
- No compaction is required of the infill. Do not use a whacker plate or other means of compaction.

5. Edge restraints

- Excavations for kerbs and edgings should be avoided within the RPAs.
- Where edging is required for footpath and light structures, a peg and treated timber board edging is acceptable
- Other options include wooden sleepers, kerb edging constructed on-top of the Cellweb® TRP system, plastic and metal edging etc.

6. Surface options

- Surfaces can include block paving, asphalt, loose gravel, grass and gravel retention systems (eg Golpla), resin bound gravel, concrete etc.
- For Root Protection Areas this surface must be porous.

NOTES

1. **Herbicide:** According to BS5837:2012 "The use of herbicides in the vicinity of existing trees should be appropriate for the type of vegetation to be killed, and all instructions, warnings and other relevant information from the manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained, species to be introduced, and existing sensitive habitats, particularly those associated with aquatic or drainage features."
2. **Geotextile:** We recommend the installation of a Non-Woven Geotextile ~~Cellweb® TRP~~ under the sub-base, if installed. The overlapping between adjacent rolls of Geotextile should be: CBR > 3%: 300mm minimum, CBR between 1% and 3%: 500mm minimum. CBR ≤ 1%: 750mm minimum.
3. **Staples:** Number of staples per join: 200mm: 5 staples. 150mm: 4 staples. 100mm: 3 staples. 75mm: 3 staples.
4. **Granular Fill:** Open graded sub-base, clean angular stone Type 4/20 or Type 20/40. Please refer to BS7533-13:2009 and to the Design Manual for Roads and Bridges (DMRB), Volume 4 Geotechnics and Drainage, Section 1 Earthworks, HA44/91, Volume 7 – IAN 73/06 Design Guidance for road pavement foundations and Manual of Contract Documents for Highway Works (MCHW), Volume 1 Specification for Highway Works for the construction and maintenance of the fill material.

This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentation. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge becomes available. Since we cannot anticipate all variations in actual end use conditions, Geosynthetics Limited makes no warranties and assumes no liabilities in connection with this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.
DR: 01/01/18.03.14 (Page 3 of 3)



References

BSI Standards Publication (2012) BS5837 *Trees in relation to design, demolition and construction – Recommendations* BSI: London

BSI Standards Publication (2010) BS3998 *Tree Works – Recommendations* BSI: London

Lonsdale, D (1999) *Principles of Tree Hazard Assessment and Management*, TSO: London

Matheny, N.P & Clark, J.R (1994) *Evaluation of Hazard Trees in Urban Areas* 2nd Ed ISA Illinois

Mattheck, C & Breloer, H (2003) *The Body language of Trees*, TSO: London

Read, H (2000) *Veteran Trees: A guide to good management*, English Nature: London

Strouts, R.G & Winter, T.G (2004) *Diagnosis of Ill-Health in Trees*, TSO: London

