

Puesdown Inn Compton Abdale

ARBORICULTURAL IMPACT ASSESSMENT
AND METHOD STATEMENT

Instructing Client:

The Sailspire Partnership Ltd

33 Rissington Road
Bourton on the Water
Gloucestershire
GL54 2AY

Date of report:

26th April
2021



Disclaimer

Copyright Greenwood Surveys. All rights reserved.

No part of this report may be copied or reproduced by any means without prior written consent from Greenwood Surveys. If you have received this report in error please destroy all copies in your possession or control and notify Greenwood Surveys.

This report has been commissioned for the exclusive use of the commissioning party unless otherwise agreed in writing by Greenwood Surveys; no other party may use, make use of or rely on the contents of the report. No liability is accepted by Greenwood Surveys for any of this report, other than for the purposes for which it was originally prepared and provided.

Opinions and information provided in this report are on basis of Greenwood Surveys using due skill, care and diligence in the preparation of this report and no explicit warranty is provided as to its accuracy. It should be noted that no independent verification of any of the documents supplied to Greenwood Surveys has been made.

Version Control

<u>Version</u>	<u>Date</u>	<u>Rationale</u>
Initial Report	23/04/2021	Initial Report
A	26/04/2021	Updated in response to architects comments

Table of Contents

1.	Summary	5
2.	Introduction	6
2.1	Scope of the report	6
2.2	Limitations	6
2.3	Legal Constraints.....	7
3.	Tree survey methodology	8
3.1	Wildlife Constraints	8
3.2	Tree ID Number	8
3.3	Species.....	8
3.4	Height.....	8
3.5	Stem Diameter.....	8
3.6	Branch Spread	9
3.7	Existing Height Above Ground Level	9
3.8	Life Stage	9
3.9	General Observations	10
3.10	Preliminary Management Recommendations	10
3.11	Estimated Remaining Contribution.....	10
3.12	Tree Category Grading.....	10
3.13	Root Protection Area (RPA)	11
4.	Site description	12
5.	Arboricultural Impact Assessment	15
5.1	Tree Quality Assessment Summary	15
5.2	Proposed Tree Works	15
5.2.1	Trees to be Removed	15
5.2.2	Facilitation Pruning	15
5.2.3	List of tree works	16
5.2.4	Mitigation Planting	16
5.3	Works taking place within RPA of retained trees	16
6.	Methodology	17
6.1.1	Building construction	17
6.1.2	Removal of existing hard surfacing	18
6.1.3	Installation of new hard surfacing (footpaths and patios).....	18
6.1.4	Installation of new hard surfacing (driveway)	19
6.1.5	Installation of fence lines.....	20
6.1.6	Demolition of garden walls and sheds	20
6.1.7	Level changes	21
6.1.8	Landscaping proposals.....	21
6.2	Methodology for Installation of Tree Protection	22
6.2.1	Tree Protection Fencing.....	22

6.2.2	Ground Protection.....	24
6.3	Other considerations.....	25
6.3.1	Storage of Materials.....	25
6.3.2	Fuels and Chemicals.....	25
6.3.3	Construction vehicle access.....	25
6.3.4	Utilities.....	26
6.3.5	Site monitoring.....	26
7.	Contact Details for Relevant Parties.....	26

1. Summary

In line with the requirements of *BS5837: Trees in Relation to Design, Demolition and Construction (2012)*, Portus + Whitton Landscape Architects, on behalf of The Sailspire Partnership Ltd, has commissioned Greenwood Surveys to provide an arboricultural impact assessment and method statement in relation to a proposed residential development at Puesdown Inn, Compton Abdale. A full arboricultural survey of the site was conducted on 15th April 2021.

The current proposals include conversion and extension of the existing building, construction of garages, converting much of the existing driveway to residential gardens, and other landscaping works. For the purpose of this report, reference to ‘the site’ will be referring to land encompassed by the red site boundary shown on the Site Location Plan contained in **Appendix A**.

The tree survey identified a total of 23 tree features including 21 individual trees and two groups of trees which have the potential to be impacted by the development proposals. Each tree was awarded a quality rating from A – U in accordance with the recommendations contained within Table 1 of *BS5837: Trees in Relation to Design, Demolition and Construction (2012)*. Two trees were categorised as high quality A grade trees (T6, T12), eight trees were categorised as moderate B grade (T1, T2, T3, T4, T10, T11, T14, T17), and 12 tree features were categorised as low C grade. One tree was categorised as a very low quality U grade tree (T9) and should be removed for reasons of sound arboricultural management irrespective of any development proposals.

One moderate quality B grade tree (T14), four low quality C grade trees (T15, T16, T19, T20) and one C grade group (G2) will be removed to accommodate the extension and improvements to site landscaping. Mitigation planting is recommended in order to replace the arboricultural value that will be lost as a result of these tree removals. T14, T15, T16 and T19 already have consent for removal through planning (reference 18/02438/FUL).

Cotswold District Council confirmed by telephone on 23rd April 2021 that trees surveyed are not protected by Tree Preservation Order (TPO) and the site is not within a Conservation Area (CA). The site is within the Cotswolds Area of Outstanding Natural Beauty (AONB).

2. Introduction

This report has been prepared by Greenwood Surveys on instruction from Portus + Whitton Landscape Architects, on behalf of The Sailspire Partnership Ltd, to provide an arboricultural impact assessment and method statement in accordance with *BS5837: Trees in Relation to Design, Demolition and Construction (2012)*.

Information contained within this report is intended to represent arboricultural information for the proposed works at Puesdown Inn, Compton Abdale. The purpose of this report is to clearly identify the significant trees and hedges that may be impacted by the development, the quality and value of the vegetation, the effect that the stages of the development could have on existing vegetation, and to define appropriate construction and tree protection methods to be adopted in order to mitigate any potentially negative impacts on retained trees and hedges.

The survey was carried out on 15th April 2021 and the results are shown in **Appendix B**.

2.1 Scope of the report

This report is only concerned with trees in relation to design, demolition and construction. It includes an assessment based on the site visit and documents provided, namely the topographical survey (drawing ref: 21475cv-01) and the Landscape General Arrangement plan (drawing ref: 1701 L 2). This report is not a full hazard or risk assessment of trees, and should not be used as such.

Aerial tree inspection, invasive procedures, sub-soil investigations and detailed soil analysis are outside the scope of this report.

All trees directly affected by the development have been considered, even where they are situated outside of the development boundary.

2.2 Limitations

No reliance shall be placed on any comment(s) the surveyor may have made in respect of the structural integrity of any main structure or drainage system located on the premises to which this survey and report relates. You are advised that where manmade structures are involved you may need to obtain structural engineering and/or geotechnical advice.

The Tree Protection Plan (TPP) contained in **Appendix C** has been developed from the tree survey information and the tree locations marked on the topographical survey. Greenwood Surveys have not verified the accuracy of this data.

The recommendations made in this report are only relevant to the layout shown on the TPP. This layout was taken from the Landscape General Arrangement plan provided by Portus + Whitton Landscape Architects in .dwg format.

Trees are living organisms and as such their condition will vary over time. This report and recommendations are limited to observations made on the date of inspection. Therefore this report is only valid for a maximum period of two years from the date of the initial site inspection.

2.3 Legal Constraints

Local Planning Authorities (LPAs) have the power to preserve selected trees and woodlands through the making of Tree Preservation Orders (TPOs). Similarly, special provision is given to trees located within Conservation Areas (CAs) which are not the subject of a TPO. The LPAs powers to do this are provided by the following Act of Parliament and its associated regulations:

- Town and Country Planning Act 1990
- Town and Country Planning (Determination of Appeals by Appointed Persons) (Prescribed Classes) (Amendment) (England) Regulations 2008
- Town and Country Planning (Tree Preservation)(England) Regulations 2012

The principle effect of a TPO is to prohibit the cutting down, uprooting, topping, lopping, willful damage or willful destruction of trees without first obtaining the consent of the relevant Local Authority.

Where works to trees within a CA are proposed, six weeks notification must first be given to the relevant Local Authority.

Unauthorized works to trees either protected by a TPO or those that are located within a CA, could result in a fine of up to £20,000 per tree in cases heard in a Magistrates Court, or unlimited fines in cases taken to Crown Court.

Cotswold District Council confirmed by telephone on 23rd April 2021 that trees surveyed are not protected by Tree Preservation Order (TPO) and the site is not within a Conservation Area (CA).

3. Tree survey methodology

3.1 Wildlife Constraints

Various habitats and species of plant, bird and animal in England and Wales are afforded legal protection by the following pieces of legislation:

- Wildlife and Countryside Act 1981 (as amended)
- Natural Environment and Rural Communities Act 2006 (NERC Act)
- Conservation of Habitats and Species Regulations 2010 (as amended)
- Protection of Badgers Act 1992
- The Hedgerows Regulations 1997

Protected animal species include, but are not limited to Great Crested Newt, reptiles (all species), wild birds (all species), bats (all species), Red Squirrel, Hazel Dormouse, Water Vole, Badger and Otter.

For birds it is an offence to take or harm them, their nests (whilst in use or being built) or their eggs.

**Protected species must be considered prior to any tree or development works being carried out.
Tree work and the timing of tree work should be carefully considered.**

3.2 Tree ID Number

Tree identification number relevant to plans and drawings included in this report.

3.3 Species

Species of tree as identified on site. The English common name is used, accompanied by the scientific species name where this is deemed necessary for clarification. In some cases it can be difficult to identify the exact species. The abbreviation 'sp.' is used where only the genus is known.

3.4 Height

Total height of tree measured to the nearest metre (or half metre for trees below 10m height) using a laser measurer or estimated where necessary.

3.5 Stem Diameter

Diameter of tree at breast height (1.5m) for single-stemmed trees. For multi-stemmed trees with 2-5 stems, each stem is measured at 1.5m above ground level and recorded, whilst for trees with 6 or more

stems, an average stem diameter is recorded. Measured in mm, this figure allows calculation of the root protection area (RPA) as described in section 3.13 of this report. Off-site or otherwise inaccessible trees where accurate measurements cannot be obtained have been given estimated diameters, and these are clearly labelled within the tree schedule.

3.6 Branch Spread

Measured at 4 points (N, E, S, W) to determine shape of canopy. Measurements are rounded up to the nearest metre or half metre as appropriate. Canopy dimensions may impact on site layout or recommended routes for site vehicles and are therefore accurately represented on the accompanying plans.

3.7 Existing Height Above Ground Level

- (1). Height in metres of the first significant branch, and the direction of growth.
- (2). Height in metres of lowest part of crown.

3.8 Life Stage

Life stage is an estimation based on outward physical appearance. It has relevance to calculating safe useful life expectancy and current ecological or amenity value.

Young (Y)

Young trees typically within the first 10 years of growth that can be easily transplanted, but as yet of limited significance in the landscape.

Semi-mature (SM)

Well established trees with significant growth but not yet mature. Trees in this category will typically have reached less than 1/3 of their life expectancy.

Early-mature (EM)

Trees in the early stages of maturity with high growth potential. These trees will typically have reached 1/3 - 2/3 of their life expectancy.

Mature (M)

Trees likely to have reached, or almost reached the maximum height and spread for the species and growing conditions. Growth rates for mature trees are generally much lower than those of younger trees.

Over-mature (OM)

Trees that have passed maturity and are either in or liable to decline. Growth is slower or crown retrenchment may be occurring. Trees in this category may have high environmental or cultural value.

3.9 General Observations

Any relevant observations are recorded, with particular reference to structural and/or physiological condition.

3.10 Preliminary Management Recommendations

Recommendations are made where management work is required for reasons of health and safety or sound arboricultural management.

3.11 Estimated Remaining Contribution

This is determined by expected lifespan of the species, current life stage, structural and physiological condition. The information is used for tree categorisation and quality assessment and is recorded in bands of either <10 years, 10+ years, 20+ years or 40+ years.

3.12 Tree Category Grading

The assessment conforms to *BS5837: Trees in Relation to Design, Demolition and Construction (2012)* guidance as outlined below. Trees are also subcategorised as having mainly arboricultural value (1), landscape value (2), or cultural or conservation value (3).

Tree categorisation is based on tree condition at the time of assessment and does not consider future management proposals.

Category A

Trees of high quality and value. In such condition as to be able to make a substantial contribution to the site for a minimum of 40 years, or those with high cultural or conservation value.

Site layout should be designed to incorporate trees in this category, ensuring sufficient space is given to provide minimal conflict during construction and final development use.

Category B

Trees of moderate quality and value. In such condition as to make a significant contribution to the site, normally for a minimum of 20 years. It is highly recommended that trees in this category are retained.

Category C

Trees of low quality and value but in adequate condition to provide contribution to the site for more than 10 years. Includes young trees with a stem diameter below 150mm.

It is preferable but not essential to retain trees in this category. Young trees should be transplanted to suit site layout where practical.

Category U

Trees with serious structural defects, dead, dying, seriously diseased or in very poor condition with a likely remaining life span of less than 10 years.

Trees in this category should be removed for reasons of sound arboricultural management.

3.13 Root Protection Area (RPA)

The RPA is the minimum area in m² which must be left undisturbed around each tree in order to avoid significant damage to the root system and ensure its survival. For ease, the equivalent radius, which should be measured from the centre of the tree, is provided.

RPAs are capped at 707 m² which is equivalent to a circle with a radius of 15m in accordance with *BS5837: Trees in Relation to Design, Demolition and Construction (2012)*.

For single stem trees, the RPA is calculated as an area equivalent to a circle with a radius 12 times the stem diameter.

For trees with 2-5 stems the combined stem diameter is calculated as follows:

$$\sqrt{(\text{stem diameter 1})^2 + (\text{stem diameter 2})^2 \dots + (\text{stem diameter 5})^2}$$

For trees with 6 or more stems the combined stem diameter is calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area is produced. Any modifications to the shape of RPAs are highlighted in accompanying reports and plans.

The full tree survey is included as **Appendix B**.

4. Site description

The Puesdown Inn is a historic coaching inn located on the north side of the A40 Burford to Cheltenham Road, between Compton Abdale and Hazelton. The existing building has elements dating back to 1832, and several extensions have been added over time. The site is accessed from the A40 via a large parking area which is wider than the coaching inn itself. On the north side of the building is a lawn containing trees and shrubs. The site is remotely located, surrounded to three sides with open farmland.

There is a small landscaped area adjacent to the A40 containing low value small conifers and two semi-mature trees of moderate value (see Figure 1). There are mature trees to the north, east and south of the building (see Figures 2-4). Some of these are limited in value due to their condition. The site is not within a Conservation Area, however it is within the Cotswolds Area of Outstanding Natural Beauty.



Figure 1: View of car park from the northwest looking southeast. Showing T17 to centre, T18 and T19 on the right, T12-T14 on the left.



Figure 2: View from south looking north with T12 on the left, T15-T17 to centre, T13 and T14 left of building. T1 can be seen in the distance on far right



Figure 3: View of lawn from the car park looking northeast. T1 is on the left with T2 behind. T6 is on the right



Figure 4: View of trees on south side of lawn. Showing T6 on the left, T7 and T8 in the middle, G2 on the right, and T10 in the distance far right

5. Arboricultural Impact Assessment

5.1 Tree Quality Assessment Summary

Two trees were recorded as high A category (T6, T12). Their retention should be considered imperative to the design of the development.

Eight trees were recorded as moderate B category (T1, T2, T3, T4, T10, T11, T14, T17). Reasonable effort should be made to retain these trees where possible.

Ten individual trees (T5, T7, T8, T13, T15, T16, T18, T19, T20, T21) and two groups of trees (G1, G2) were recorded as low C category. Where retention of these trees would cause undue restraint to the development, it would be reasonable to remove them as part of the development proposals.

One tree was recorded as very low U category (T9). This tree should be removed due to its limited life expectancy and for reasons of sound arboricultural management.

5.2 Proposed Tree Works

5.2.1 Trees to be Removed

One moderate B category tree (T14), four low value C category trees (T15, T16, T19, T20) and one C category group (G2) will be removed to accommodate the extension and improvements to site landscaping. All except one of these trees are of low arboricultural value. Mitigation planting is recommended in order to replace the arboricultural value that will be lost as a result of these proposed removals. One very low quality U grade tree (T9) will be removed for reasons of sound arboricultural management. T14, T15, T16 and T19 already have consent for removal through planning (reference 18/02438/FUL).

All tree work and felling operations will be carried out in accordance with *BS3998: Recommendations for Tree Work (2010)*; current industry guidelines; best practice; and all relevant health and safety standards. Tree work is a specialist task that requires operatives to be appropriately skilled, qualified, and insured.

5.2.2 Facilitation Pruning

No pruning is required in order to facilitate the development proposals.

5.2.3 List of tree works

Some tree works are recommended in order to improve the condition of retained trees. A full list of tree works included those to be removed is contained in Table 1 below.

Table 1: List of proposed tree works

Tree Number	BS5837 category	Species	Proposed Works
T1	B2	Broadleaved lime	Remove major deadwood and reduce canopy to 7m width on all sides (to reduce quantity and area of potential damage from falling deadwood)
T2	B2	Broadleaved lime	Remove major deadwood and reduce canopy to 7m width on all sides (to reduce quantity and area of potential damage from falling deadwood)
T9	U	Wild plum	Fell to ground level
T14	B2	Sycamore	Fell to ground level
T15	C1	Lawson cypress	Fell to ground level
T16	C1	Lawson cypress	Fell to ground level
T19	C1	Lawson cypress	Fell to ground level
T20	C1	Thuja	Fell to ground level
G2	C1	Bay	Fell to ground level

5.2.4 Mitigation Planting

A program of replacement planting is proposed, to include mixed broadleaf and coniferous woodland species on the west side of the development alongside the A40. It is considered that this will sufficiently replace the arboricultural value of trees to be removed. Any proposals for replacement planting should consider the space available to allow trees to grow to their maximum mature height and spread without competing with existing trees or other new tree planting.

5.3 Works taking place within RPA of retained trees

A summary of works taking place within RPAs is provided in Table 2 below.

Table 2: Details of impacts within RPAs

Impact	Tree Quality Assessment Category Grading*				Totals
	A	B	C	U	
Building construction	T12	T1	None	None	2
Removal of existing hard surfacing	T12	T17	T13, T18	None	4
Installation of new hard surfacing and footpaths	T12	T1, T17	T13	None	4
Installation of fence lines	T6	T2, T3, T4, T17	T7, T8, G1	None	8
Demolition of garden walls and sheds	None	T10, T11	None	None	2
Level changes	T12	None	None	None	1
Landscaping	T6	T2, T3, T4, T17	T7, T8, G1	None	8
Access required for site vehicles	None	T1	T12	None	2

6. Methodology

6.1.1 Building construction

Under the current proposals, new garages will be constructed within the RPA of A grade tree T12 and B grade tree T1. In order to minimise damage to the roots of this tree, recommendations for foundation design contained in section 7.5 of BS5837:2012 and as outlined below will be followed:

- Foundations will be designed to require minimal excavations. Strip foundations will not be used however pile / pad and above ground beam may be acceptable. The beam will need to be situated entirely above ground.

- Any piles / pads will be kept as small as possible and will be located to avoid significant roots. Where possible trial excavations to a depth of 1.5m will be undertaken under the supervision of the appointed Arboricultural Consultant in the locations of the piles / pads. If significant roots are exposed the position of the pile / pad will be altered to avoid these roots.
- If concrete or any other phyto-toxic material is to be used for the foundations a sheath / protective barrier will be used to prevent leaching into the soil.
- Any machinery used, including piling rigs, will be as small as possible and will work from adequate ground protection or outside the RPA of retained trees. Where the work is below the crowns of retained trees, consideration will also be given to required working space for any machine.

6.1.2 Removal of existing hard surfacing

The existing driveway will be removed within the RPA of A grade tree T12, B grade tree T16, and C grade trees T13 and T18. Within the RPA of these trees the following methodology will be used.

The existing hard surface may be broken up by hand or by using plant mounted machinery where the hard surface is pulled backwards away from the tree. The existing sub-base may also be removed using this technique. Under no circumstances will excavations continue beyond the existing soil level (formation level).

Any machinery used will be lightweight and shall only work either from areas of undamaged existing hard surfacing, on adequate ground protection, or outside the RPA of retained trees.

If there is a delay, for whatever reason, and the area that was previously protected by hard surfacing is left exposed awaiting a new surface, a temporary surface must be implemented using ground protection, and/or Hessian sacking must be placed over any exposed roots

6.1.3 Installation of new hard surfacing (footpaths and patios)

New footpaths or patios will be installed within the RPA of B grade trees T1 and T17. These surfaces will be constructed using no-dig techniques and will have a permeable surface.

For pedestrian areas a compression-resistant layer of sharp sand (100mm depth) on a geotextile membrane should provide an adequate permeable sub-base capable of withstanding expected loading when placed beneath permeable pavements, cobbles or similar.

Within the RPA of T17 the new footpath will be within the footprint of the existing driveway. In this location the existing sub-base may be retained and the new footpath constructed on top of this.

6.1.4 Installation of new hard surfacing (driveway)

The existing tarmac driveway will be replaced with a gravel driveway within the RPA of A grade tree T12 and C grade tree T13. The new permeable surface will allow better exchange of oxygen and moisture with the soil below, and will therefore improve the rooting conditions of these trees over time. The existing sub-base may be retained and the new driveway constructed on top of this. Alternatively, if the existing sub-base is removed, a cellular confinement system such as the one outlined in **Appendix D** must be used.

To allow installation of the cellular confinement system, the prepared surface must be reasonably even. If ground levels must be raised within the RPA of retained trees to accommodate dips and changes in the existing ground levels, this should be achieved by the use of a granular material which does not inhibit vertical gaseous diffusion. Examples of suitable granular materials include, no-fines gravel, washed aggregate, or cobbles. Localised depressions may be filled with sharp sand. The area must not be rolled or consolidated.

A layer of geotextile fabric will be installed across the area. It may be necessary to lightly pin the geotextile in place until the overlying layers are installed.

The cellular confinement system should then be placed over the geotextile fabric layer and fixed in place using steel pins. During this process tree root damage and soil compaction must be avoided. In order to adequately support domestic traffic such as cars and vans up to a 6t gross weight, the cellular confinement system should be a minimum of 100mm height. For delivery or construction vehicles up to 60t gross weight, the cellular confinement system must be increased to 200mm height. The cellular confinement system may be layered in order to obtain the desired levels.

The cells must be filled with clean, open graded angular aggregate, normally in the particle size range of 5mm - 45mm. Single sized or rounded aggregate must not be used. The project engineer may determine alternative fill materials such as clean 4/20 or 4/40 stone or a reduced-fines DoT Type 1X sub-base. It is

not acceptable to use a standard DoT Type 1 Sub-base within the cells for tree root protection due to small particle content (<5mm). The surface must not be rolled and the filled cells must not be contaminated with site debris, soil or mud.

Where edging supports are required, these will be installed around the perimeter of the surface at an appropriate height for the total layer profile of the finished surfacing. Edging will be installed above ground in order to avoid excavation and damage to tree roots. Suitable edge supports include peg and board edging, sleepers pinned to the ground, gabions, and other proprietary structures. Fixing posts and pegs should be placed where they will avoid damage to tree roots.

Once the cellular confinement system is installed as above, a permeable surface layer of gravel will be installed.

6.1.5 Installation of fence lines

New 1.2m high post and netting boundary fences will be installed within the RPA of high quality A grade tree T6, moderate quality B grade trees T2, T3, T4, T17, and low quality C grade tree features T7, T8, G1.

Within the RPA of affected trees the following precautions must be followed. Excavations required for installation of posts and footings must be carried out using hand tools such as spades or forks. All hand digging within RPAs must be undertaken with great care, requiring closer supervision than normal operations to enable the identification and protection of structural roots (roots with diameters equal to or greater than 25mm). These roots must not be severed at any time without first consulting the appointed Arboricultural Consultant or Local Authority Tree Officer. Any non-structural roots (roots with diameters below 25mm) may be pruned back if required, to a lateral root where possible, using a pruning saw or secateurs, leaving a clean-cut surface.

If concrete or any other phyto-toxic material is to be used to secure below ground posts or footings, a protective barrier shall be used to prevent leaching into the soil.

6.1.6 Demolition of garden walls and sheds

Garden walls and sheds will be demolished within the RPA of B grade trees T10 and T11. In order to avoid damage to these trees during demolition, walls and sheds will be dismantled using a 'top down, pull back' system where walls are pulled away from nearby tree stems. Any machinery used during this

process will operate either outside the RPAs of retained trees or from ground protection as described in section 6.2.2 of this report.

6.1.7 Level changes

Level changes will take place within the RPA of high quality A grade tree T12. The level changes are required to enable construction of a bank for landscaping purposes adjacent to the A40.

Level increases up to 200mm depth will have negligible impact on the health of retained trees. Should level increases greater than 200mm be required, these will be achieved through the layering of a cellular confinement system similar to the example shown in **Appendix D**.

The cells must be filled with clean, open graded angular aggregate, normally in the particle size range of 5mm - 45mm. Single sized or rounded aggregate must not be used. The project engineer may determine alternative fill materials such as clean 4/20 or 4/40 stone or a reduced-fines DoT Type 1X sub-base. It is not acceptable to use a standard DoT Type 1 Sub-base within the cells for tree root protection due to small particle content (<5mm). The surface must not be rolled and the filled cells must not be contaminated with site debris, soil or mud.

Once the cellular confinement system is installed to the specification above and the required levels are achieved, a permeable membrane will be placed on top to prevent any fines filtering down into the cellular confinement system. The decking and lawns will then be installed on top of this, acting as a permeable surface layer.

6.1.8 Landscaping proposals

New hedgerows and grassed areas will be planted within the RPA of A grade tree T6, B grade trees T2, T3, T4, T17, and C grade tree features T7, T8, G1. The following methodology will apply to all landscaping works taking place within the RPA of retained trees.

Excavations for new planting should be as small as possible while being adequate to accommodate the roots of each plant. Excavations should be carried out using hand tools only. Structural roots (roots greater than 25mm diameter) must not be severed during planting or landscaping operations. Should structural roots be discovered within the location of proposed planting, the planting location should be altered to avoid such roots.

Any trees to be planted should be of an appropriate height, spread, form and habit in relation to the proposed dwelling.

Tree planting should be in accordance with BS 8545:2014 'Trees: from nursery to independence in the landscape: Recommendations' and should be in-keeping with the local landscape character. Consideration to the areas of tree planting should be given to ensure that all planted trees will be protected, or remediated if damaged during the construction phase.

Ground level decreases must not take place within the RPA of retained trees for landscaping purposes. Level increases up to 200mm depth will have negligible impact on the health of retained trees. Should level increases greater than 200mm be required, these will be achieved through the layering of a cellular confinement system filled with no-fines gravel, washed aggregate, or cobbles. A permeable membrane should be placed on top of this to prevent any fines filtering down into the cellular confinement system. Once the required levels are achieved, a permeable surface layer will be installed.

6.2 Methodology for Installation of Tree Protection

6.2.1 Tree Protection Fencing

Tree protection fencing will be positioned to exclude as much of the RPAs as possible from the construction area. Access is required within the RPA of T1 and T13 for construction vehicles and pedestrian traffic, therefore part of their RPAs will be protected by ground protection instead of tree protection fencing. Fencing is not proposed in areas of existing hard surfacing as the hard surface will act as adequate protection for tree roots while it is in place. Once tree protection fencing is constructed in the locations shown on the TPP in **Appendix C**, access will be required inside the barriers for landscaping works (T2, T3, T4, T6, T7, T8, G1), demolition works (T10, T11), and level changes (T12). It is recommended that these works are supervised by the appointed Arboricultural Consultant to ensure the methodology contained within this report is followed and fencing is correctly reinstated.

Fencing must be fit for the purpose of excluding construction activity and provide adequate protection to the trees. Fencing will consist of 2m tall welded mesh panels supported by upright poles driven into the ground. Each panel will be secured to its neighbour with a minimum of two anti-tamper couplers secured so that they can only be undone from inside the fencing. Where space allows, panels shall be supported on the inner side by stabilizer struts, which should be attached to a base plate secured with ground pins or mounted on a block tray. An example of this type of barrier is shown in Figure 5 below.

Inside the protective fencing there will be no excavations; no storage of machinery, building materials, fuels, chemicals, or spoil; no fires; no vehicular or pedestrian access; no alteration to existing ground levels. The barriers will not be moved or temporarily dismantled unless agreed with the appointed Arboricultural Consultant and Cotswold District Council.

To clearly identify the purpose of protective fencing on site, all-weather notices will be attached to the barriers similar to the example shown in Figure 6 below.

Tree protection fencing will be installed before any materials or machinery are brought onto site and before site works commence. It will be removed only once all site works are complete.

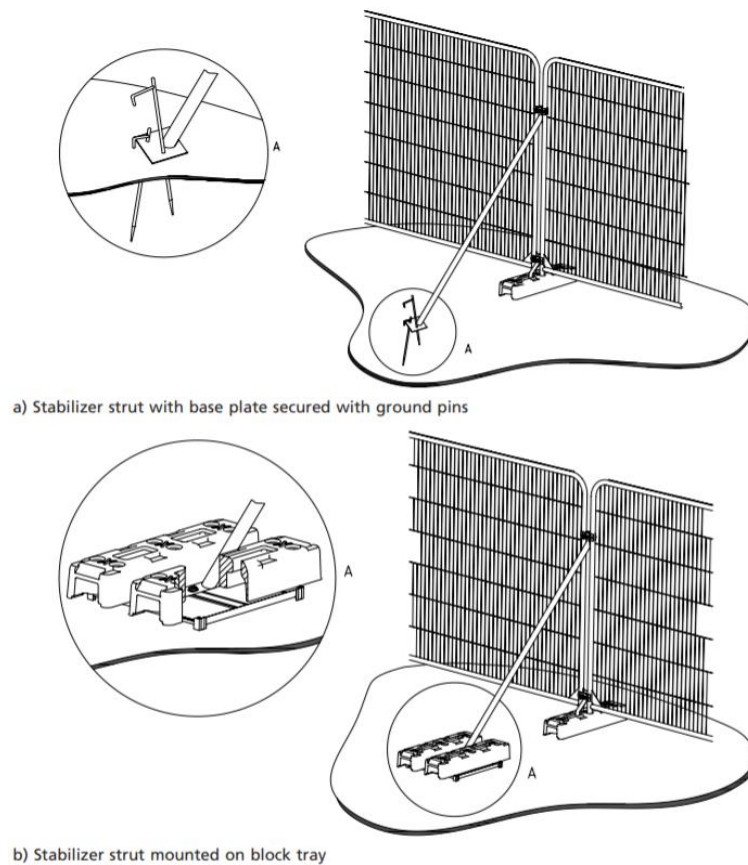


Figure 5: Tree protection fencing example



Figure 6: All-weather notice example

6.2.2 Ground Protection

Ground protection is proposed within the RPA of B grade tree T1 and C grade tree T13 to facilitate access for the movement of materials, pedestrians and light tracked vehicles used for construction.

Ground protection is required in order to avoid compaction of the soil which can lead to root death or reduced soil permeability. In accordance with section 6.2.3 of BS5837:2012 ground protection will need to be capable of supporting any traffic entering the RPA without being distorted or causing compaction of the underlying soil.

For vehicular access up to a gross weight of 2 tonnes, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer such as 150mm depth of woodchip or sharp sand on a geotextile membrane should be adequate. Vehicles or machinery exceeding 2 tonnes will not be used within the RPA of retained trees. An example of a suitable arrangement for ground protection is included in Figure 7 below.

Ground protection will be installed before any materials or machinery are brought onto site and before site works commence. It will be removed immediately prior to works taking place within RPAs and only

in the precise location that works are required. It can be completely removed once all site works are complete.

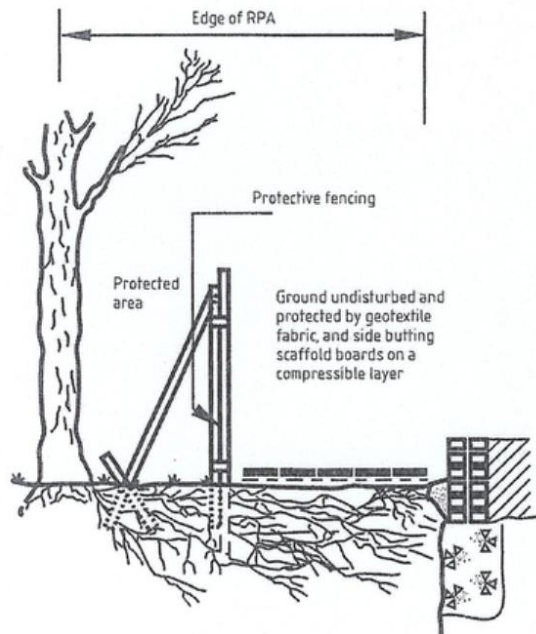


Figure 7: Example ground protection

6.3 Other considerations

6.3.1 Storage of Materials

Materials will be stored either outside the RPA of retained trees, on existing hard surfacing, or on areas of installed ground protection as specified in section 6.2.2 above.

6.3.2 Fuels and Chemicals

To reduce the risk of soil contamination and subsequent damage to tree roots, fuel and other harmful or toxic materials should be stored either off-site, in banded units, or on drip trays.

6.3.3 Construction vehicle access

Construction vehicles will not be driven onto unsurfaced areas of ground within the RPA of any retained trees. If access is required for construction vehicles on unsurfaced areas of ground within the RPA of retained trees, ground protection will be installed as described in section 6.2.2 above.

6.3.4 Utilities

Greenwood Surveys have not been made aware of the locations of any proposed underground utility connections. The following services should not be positioned within the RPA of any retained trees:

- *Foul and surface water drains, Land drains, Soakaways, Gas, Oil, Electricity, Telephone, Lighting, Signage*

If additional services must unavoidably be installed within the RPA's of retained trees, the locations of these should be chosen in consultation with the appointed Arboricultural Consultant and agreed in writing with Cotswold District Council. Underground services should be installed using trenchless techniques such as directional drilling, moling, laser guided boring and/or in accordance with advice contained within National Joint Utilities Group Volume 4 'Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees' (NJUG 4).

6.3.5 Site monitoring

BS5837: 2012 paragraph 6.3 states that wherever trees on or adjacent to a site have been identified as requiring protection from the impact of works, there should be an auditable system of arboricultural site monitoring. This should include arboricultural supervision whenever construction and development activity takes place within RPAs. Following each site visit an arboricultural site monitoring report should be issued to the project manager. Copies of these reports should be kept and made available to the Local Planning Authority upon request.

The extent of supervision required is at the discretion of Cotswold District Council. Greenwood Surveys recommend, as a minimum, that all work within RPAs which require temporary access within tree protection fencing are supervised by the appointed Arboricultural Consultant to ensure the methodology contained within this report is followed and tree protection fencing is correctly reinstated.

7. Contact Details for Relevant Parties

Key Contact	Name	Telephone	Email
Applicant	The Sailspire Partnership Ltd	01451 810485	Unknown
Arboricultural Consultant	Greenwood Surveys	07506 731992	info@greenwoodsveys.co.uk
Tree Officer	Cotswold District Council	01285 623000	planning.mail@cotswold.gov.uk
Architect	Portus + Whitton Landscape Architects	07973 698685	john.whitton@portusandwhitton.co.uk

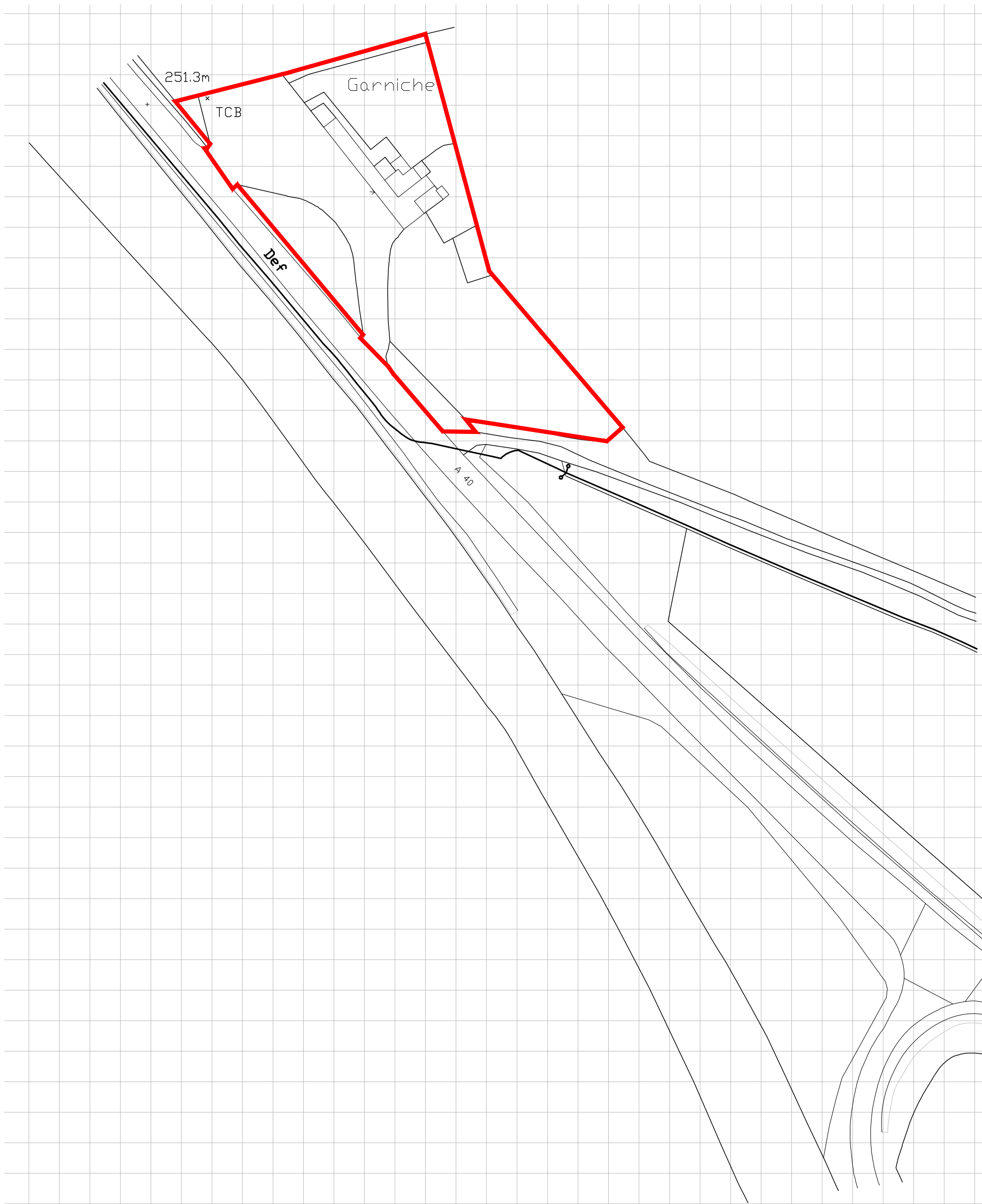
Appendix A
Site Location Plan

Planning

This drawing has been prepared for workstages up to planning application purposes only and is not intended "for construction". The 'scale bar' should only be used to check the drawing has been reproduced to the correct size. No responsibility can be accepted for errors made by others in "scaling" from this drawing.

Tyack Architects Ltd own copyright of the original design work in the drawings, documents and digital files which cannot be copied, loaned or disclosed without written agreement. Please refer to our Standard Terms of Business.

Scale 1 : 1250 50m



Ordnance Survey (c) Crown Copyright 2018. All rights reserved. Licence number 100022432



Tyack Architects Ltd
The Mann Institute
Oxford Street
Moreton-in-Marsh
Gloucestershire
GL56 0LA
t: 01608 650 490
f: 01608 651 863
e: mail@tyackarchitects.com
w: tyackarchitects.com

revision description date by

Planning
Location Plan
The Puesdown Inn, Compton Abdale
The Sailspire Partnership Ltd
Scale: 1: 1250@A3 **Date:** April 2021
Drawn/Checked: PS/DG **Drg No:** 2746-001 **Rev:**

Appendix B Tree Survey Results

#	Species	Single or Multiple Stem	Height (m)	Stem Diameter (mm)				Branch Spread (m)				Existing Height AGL (m)		Life Stage	General Observations (structural / physiological condition)	Preliminary Management Recommendations	Estimated Remaining Contribution (years)	Category Grading	Root Protection Area	
				S1	S2	S3	S4	N	E	S	W	(1)	(2)						(m ²)	(radius in m)
				(S or M)																
T1	Broadleaved lime	S	26	990				7	7	9.5	10	2.5n	2	M	Major deadwood throughout canopy. Large quantity of broken branches beneath canopy. Currently reasonable condition but appears to be in decline. Good landscape feature	Remove major deadwood and reduce canopy to 7m width on all sides (to reduce quantity and area of potential damage from falling deadwood)	20+	B2	443.4	11.9
T2	Broadleaved lime	S	23	910				10	7	10	8	2w	1	M	Similar condition to T1. Electricity wire running through north side of canopy. Major deadwood throughout canopy. Large quantity of broken branches beneath canopy. Currently reasonable condition but appears to be in decline. Good landscape feature	Remove major deadwood and reduce canopy to 7m width on all sides (to reduce quantity and area of potential damage from falling deadwood)	20+	B2	374.7	10.9
T3	English ash	M(a)	14	290	260			4.5	4	6	6.5	2.5w	2	SM	Multi-stemmed at 1.5m height. Minor deadwood in canopy. Reasonable condition	None	20+	B1	68.6	4.7
T4	English ash	M(a)	10	190	250	90		6	4.5	4.5	4.5	2s	1	SM	Growing south of drystone wall. Reasonable condition	None	20+	B1	48.3	3.9
T5	Sycamore	S	12	320				4	6	6	5	2.5e	2	SM	Stem in contact with adjacent drystone wall. Electricity cable running through south side of canopy	None	10+	C1	46.3	3.8
T6	European beech	S	24	1470				10	9	9	9	5w	0	OM	Very large impressive tree in good condition. Cavity in northern stem at approximately 7m height, visible from west side of tree	None	40+	A2	707.0	15.0
T7	Sycamore	M(a)	17	340	410			6	7	7	8	2w	2	M	Large wound where branch has torn out from northernmost stem. Removal of stem would leave tree unbalanced. Broken branches on ground around stem. Poor condition	None	10+	C1	128.4	6.4
T8	Sycamore	M(a)	14	240	230			1	4	6	6	1w	1	SM	Growing adjacent to drystone wall. Approximately 20 degree lean to south. Poor quality tree	None	10+	C1	50.0	4.0
T9	Wild plum	S	8	260				3	3	3	2	0.5e	0.5	SM	Multi-stemmed. All stems entwined and fused together, compressing one another, therefore measured as single stem. 45 degree lean to east. Low life expectancy	Remove tree	<10	U	30.6	3.1
T10	Sycamore	S	19	660				10	8	10	10	4s	2	M	Surveyed from afar. Diameter estimated. Sparse branches on north side of canopy. Otherwise appears to have good vitality	None	20+	B1	197.1	7.9
T11	Sycamore	S	19	870				9	8	9	8	3s	3	M	Multi-stemmed at ground level. Stems fused so measured as single stem. Brambles to west	None	20+	B1	342.5	10.4
T12	Sycamore	S	23	960				11	11	11	11	4e	2	M	Large mature tree. Good landscape value. Major deadwood over gate. Ivy covered	None	40+	A2	417.0	11.5

#	Species	Single or Multiple Stem	Height (m)	Stem Diameter (mm)				Branch Spread (m)				Existing Height AGL (m)		Life Stage	General Observations (structural / physiological condition)	Preliminary Management Recommendations	Estimated Remaining Contribution (years)	Category Grading	Root Protection Area	
				(S or M)	S1	S2	S3	S4	N	E	S	W	(1)						(2)	(m ²)
T13	Sycamore	M(a)	16	260	220	200	150	0.5	7	7	7	3n	2.5	SM	Growing adjacent to drystone wall. Reasonable condition. Multi-stemmed at ground level . Suppressed by T14	None	10+	C1	80.8	5.1
T14	Sycamore	M(b)	19	350	300	300	240	7	7	6	7	3s	4	M	Multi-stemmed at ground level. Branches on north side in contact with building. Consent for removal obtained through planning (reference 18/02438/FUL).	Prune to clear building by 2m	20+	B2	212.8	8.2
T15	Lawson cypress	S	5	250				3	3	3	3	0s	0	EM	Low value tree. Diameter estimated due to dense foliage. Consent for removal obtained through planning (reference 18/02438/FUL).	None	10+	C1	28.3	3.0
T16	Lawson cypress	S	5	250				3	3	3	3	0s	0	EM	Low value tree. Diameter estimated due to dense foliage. Consent for removal obtained through planning (reference 18/02438/FUL).	None	10+	C1	28.3	3.0
T17	Spruce	S	17.5	470				5	5	5	5	3w	0	SM	Good focal point but could be improved through replacement planting	None	20+	B2	99.9	5.6
T18	Laburnum	S	7.5	290				4	4	4	4	1n	0	SM	Reasonable condition. Low value	None	10+	C1	38.1	3.5
T19	Lawson cypress	S	4.5	250				3	3	3	3	0s	0	EM	Low value tree. Diameter estimated due to dense foliage. Consent for removal obtained through planning (reference 18/02438/FUL).	None	10+	C1	28.3	3.0
T20	Thuja	S	3.5	100				2	2	2	2	0s	0	Y	Young low value tree	None	10+	C1	4.5	1.2
T21	Hawthorn	S	4.5	90				2	2	2	2	0s	0	Y	Young low value tree	None	10+	C1	3.7	1.1
G1	Thuja	S	7.5	170				2	2	2	2	0s	0	EM	Linear group of trees	None	10+	C2	13.1	2.0
G2	Bay	S	5.5	150				2	2	2	2	0s	0	M	Mixed shrubs growing adjacent to building. Bay is most prominent	None	10+	C1	10.2	1.8

Appendix C
Tree Protection Plan



LEGEND

- T# Trees with estimated locations, not based on topographical survey. Their positions and extent of RPAs must be confirmed on site before works commence
- Category A
Trees of high quality with an estimated remaining life expectancy of at least 40 years. Groups/hedges/woodland are denoted with hatching
- Category B
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Groups/hedges/woodland are denoted with hatching
- Category C
Trees of low quality with an estimated remaining life expectancy of at least 10 years. Groups/hedges/woodland are denoted with hatching
- Category U
Trees of very low quality with an estimated remaining life expectancy of less than 10 years. Groups/hedges/woodland are denoted with hatching
- Recommended 'Root Protection Area' (RPA) of trees/hedges considered desirable for retention calculated using the method set out in section 4.6 of BS5837:2012
- Trees to be removed (G2, T9, T14, T15, T16, T19, T20)
- Tree Protection Fencing
- Ground protection
- Ground level increases achieved through use of cellular confinement system

Tree protection barriers should be positioned in accordance with the adjacent tree protection plan, and be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees. It is essential that the barriers are installed prior to any construction taking place, be maintained during construction, and only removed once all construction has been completed and associated equipment and materials have been removed from site.

Inside the barriers it is also essential that the following prohibitions are complied with:

- No excavations, including by hand; unless approved by the Local Planning Authority;
- No storage of machinery;
- No storage or handling of building materials, fuel, chemicals or spoil;
- No fires;
- No vehicular access;
- No pedestrian access; unless approved by the Local Planning Authority;
- No alteration, increase or decrease, to existing ground levels; unless approved by the Local Planning Authority;
- No excavation or installation of services; unless approved by the Local Planning Authority.

REV_A	Revision A	26/04/2021
FIRST_ISSUE	FIRST ISSUE	22/04/2021
Rev.	Issue Details.	Date.

Client:
The Sailspire Partnership Ltd

Project:
Puesdown Inn

Drawing Title:
TREE PROTECTION PLAN

Drawing No: GWS-2127-TPP

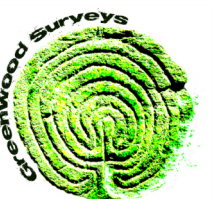
Scale: 1:500 @ A3

Date: 22/04/2021

Greenwood Surveys, 26 Lansdown Place,
Cheltenham, Gloucestershire GL50 2HX

Tel: 07506 731992
Email: info@greenwoods-surveys.co.uk
Website: www.greenwoods-surveys.co.uk

©Greenwood Surveys



Appendix D
Cellular Confinement System

Cellweb® TRP

Tree Root Protection

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a 'no dig' solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.



Cellweb® TRP Key Functions

Cellweb® is a 'no dig' solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

The Cellweb® TRP system comprises the following three components

Treetex™ Geotextile. Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

4-20mm Clean Angular Stone. The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

Which depth of Cellweb® TRP?

The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website www.geosyn.co.uk.

Indicative Cellweb with overfill

