

Tree Survey Report for Abbotsford House, 34 Bridge Street, Kenilworth, CV8 1BP



Cotswold Wildlife Surveys

20th June 2021

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SUMMARY

At Abbotsford House in Kenilworth, Warwickshire, planning permission is being sought for the construction of a carport to cover an existing parking area.

On 20th June 2021, Andy Warren from Cotswold Wildlife Surveys undertook a tree survey of the site.

All trees within impacting distance of the proposed construction zone were surveyed, and are considered within this report.

The aim of the report, which has been produced in accordance with British Standard 5837:2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*', is to systematically assess the arboricultural implications arising as a result of the proposed scheme, and to provide suitable recommendations regarding the potential effect on trees.

The arboricultural implications can be summarised as follows:

- Three mature Copper Beech *Fagus sylvatica purpurea* trees within potential impacting distance of the proposed works were examined;
- The root protection areas (RPA) of the trees were calculated;
- The RPA's of the three trees will be incurred by varying amounts;
- Construction will be using point foundations that will be hand dug to avoid damage to significant roots;
- Gaseous exchange with the roots will be unaffected;
- Water permeation to the roots will be unaffected, as captured rainwater will be reintroduced via an aqua-drain;
- Protective Barrier Fencing (PBF) will be erected to protect the trees during the construction phase;
- The RPAs of the other trees will not be incurred.

1.0 INTRODUCTION

This report has been prepared to accompany a planning submission by Morten Illum Esq. (hereafter – client) relating to the proposed construction of a new carport at Abbotsford House in Kenilworth (hereafter – site). It has been produced in accordance with British Standard 5837: 2012 ‘*Trees in relation to Design, Demolition and Construction – Recommendations*’, (hereafter – BS5837).

The scope of BS5837 is to provide guidance on how trees and other vegetation can be suitably integrated into construction and development schemes. The overall aim is to ensure the protection of amenity and landscape through appropriate retention of trees.

This report has been produced in accordance with BS5837, and is intended to demonstrate how trees have been properly considered in relation to the proposed scheme. The objective is to provide recommendations for tree protection (where applicable) relating to the scheme’s potential impact on trees and vice versa.

Following instruction, the consultant visited the site on 20th June 2021. Pursuant to the agreed brief, a site assessment and a BS5837 tree survey were carried out. All trees within impacting distance of the proposed construction activities were surveyed.

1.1 Proposed works

The proposed works will include the construction of a carport.

1.2 Survey area

The site comprised an area of paved parking adjacent to a building.

Three mature trees were present at the site; all were Copper Beech (Figs. 1-3).



Figs. 1 & 2 Survey site

The site is sensitive from an arboricultural perspective, due to the presence of the trees across the site.

The objective assessment resulted in BS5837 categories of ‘B1 being attributed to the trees.



Fig. 3 Survey area

The trees provide both an individual and collective contribution to the site, and overall their physiological and structural condition is fair to good.

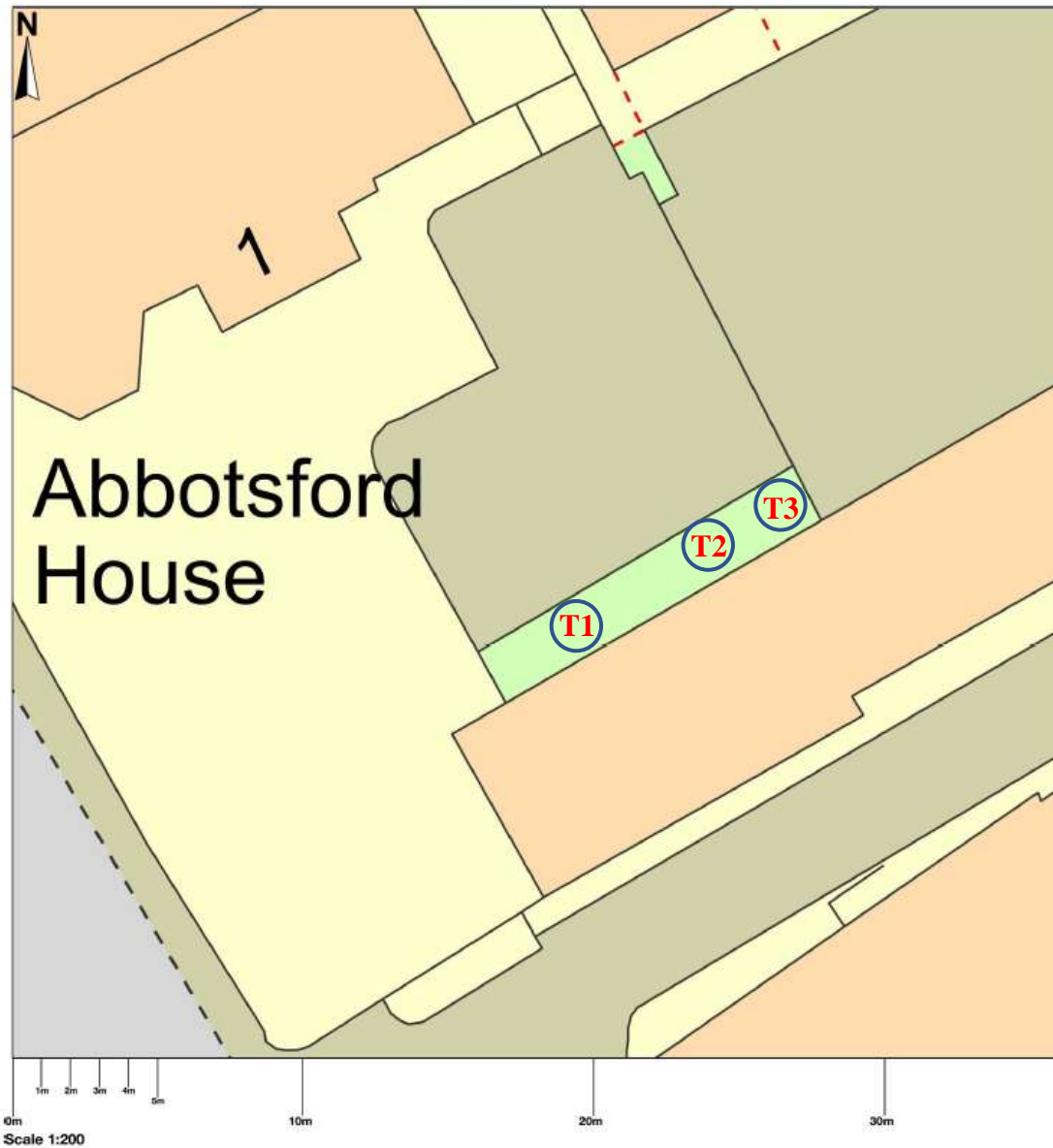
There are also existing impermeable and permeable surface treatments and underground services in close proximity to the trees within their RPAs.

The survey data and site observations have been used to illustrate the site's arboricultural restrictions in the form of a Tree Quality Assessment and Tree Constraints Plan at Appendix II and III respectively.

A Tree Protection Plan is shown in Appendix IV.

2.0 TREE SURVEY

The survey focussed on three trees across the site. The locations of the trees are shown on the proposed site plan below. Other trees were too far away to be impacted upon by the proposed works.



Plan 1 Tree survey and site plan

The detailed tree survey schedule is shown in Appendix I.

3.0 TREE CATEGORISATION

Tree No.	Species	Category
T1	Copper Beech	B1
T2	Copper Beech	B1
T3	Copper Beech	B1

B1: Trees that might be included in the high category but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage).

The tree quality assessment is shown in Appendix II.

4.0 ARBORICULTURAL IMPLICATIONS ASSESSMENT

The following information, as with the prior contents of this report, should be read in conjunction with the tree data table and the TCP (Appendix III).

4.1 Below ground constraints

The topography of the site comprises a flat, paved parking area.

Irrespective of the proposed development, none of the trees were identified as requiring removal (BS5837 category 'U') for reasons of sound arboricultural practice.

The construction of the new car port will be in conjunction with the installation of protective barrier fencing (PBF).

The PBF will be of an appropriate specification and will be installed to exclude construction activities from the RPAs of retained trees. At the point of PBF being installed, the enclosed RPA sections become construction exclusion zones (CEZ). This is to protect the RPAs of good quality retained trees during construction. The construction restrictions, phased processes and specification for the PBF form part of the AMS.

The construction of the new carport will require sensitive positioning and construction method to minimise the impacts on retained trees.

As such, applying BS5837 the root protection areas of retained trees were calculated. These are shown on the TCP in Appendix III.

As expected, all three trees will be affected to some extent. Approximately 15% of the RPA of T1 will be incurred, with < 10% RPA incursion of T2 and < 5% incursion of T3.

The new carport will therefore be using point foundations only under each corner. The carport will not be permeable, though the existing paving is permeable, using concrete paviours. Gaseous exchange will therefore remain unchanged. Water permeation will also be unaffected, since although the car port is to have a solid roof, collected rainwater will be re-introduced to the soil below via an aqua-drain along the west side of the structure.

There will be no additional compaction of the existing soil above the roots.

The RPAs of other trees are well outside the proposed footprint of the new development and will not be affected. These are not shown.

There will be no services associated with the new carport.

The point foundations to be installed within the RPAs will take account of the trees' roots and their growing environment.

As such, excavations may have to be carried out manually with the use of hand operated machinery and an air spade.

Due to the installation of PBF for the duration of the proposed construction phase, it is not anticipated that RPA incursion will occur on any trees outside the construction zone.

However, where this need arises, it may be necessary to protect the tree roots and their growing environment. If so, the advice of the consultant should be sought and the written permission of the Local Authority may also be required.

4.2 Above ground constraints

Overall there will be no effect of the proposed development on the landscape when viewed from locations outside the site, as all of the trees are to be retained.

Protective barrier fencing will be provided to protect retained trees during construction works.

The position of the fence is to be agreed following approval of the proposed site layout by the local planning authority. However, suggestions are given as to where the fence should be erected (Appendix IV).

4.3 Replacement Planting

No specific tree planting has been proposed, and none is required as there will be no loss of tree cover.

4.4 Conclusions

The objective assessment above has resulted in the following:

- Three mature Copper Beech trees within potential impacting distance of the proposed works were examined;
- The root protection areas (RPA) of the trees were calculated;
- The RPA's of the three trees will be incurred by varying amounts;
- Construction will be using point foundations that will be hand dug to avoid damage to significant roots;
- Gaseous exchange with the roots will be unaffected;
- Water permeation to the roots will be unaffected, as captured rainwater will be reintroduced via an aqua-drain;
- Protective Barrier Fencing (PBF) will be erected to protect the trees during the construction phase;
- The RPAs of the other trees will not be incurred.
- Construction traffic and materials storage areas will be contained on existing hardstanding or ground away from retained trees;
- This Arboricultural Implications Assessment (AIA) is supported by an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP).

5. ARBORICULTURAL METHOD STATEMENT

5.1 Construction Restrictions

The following restrictions are to be employed to ensure the suitable protection of retained trees:

- i. Tree works are to be completed prior to commencement of any and all construction processes;
- ii. No tree works not specified below are permitted;
- iii. PBF is to be installed prior to the construction works commencing;
- iv. No fires are to be lit and no machinery, plant or vehicles are to be washed down within 10.0 m of a tree's canopy;
- v. During construction activities, RPAs may not be breached, i.e. no surfacing works, no chemicals/materials to be transported or stored or used or mixed, without the prior advice of the consultant and the consent of the Local Authority;
- vi. No mechanical digging or scraping is permitted within a RPA;
- vii. Only following completion of construction can any hard surfacing used for construction traffic be removed;
- viii. Only following construction can the PBF be removed and the soft landscaping/tree planting works (if required) be undertaken.

5.2 Tree Works Specification

Tree works must only be undertaken with the full and written permission of the Local Authority and/or in accordance with detailed planning permission and to BS:3998 by a tree surgeon who is suitably qualified, experienced and insured.

The tree works listed below are the result of the AIA's recommendations.

TREE WORK SUMMARY

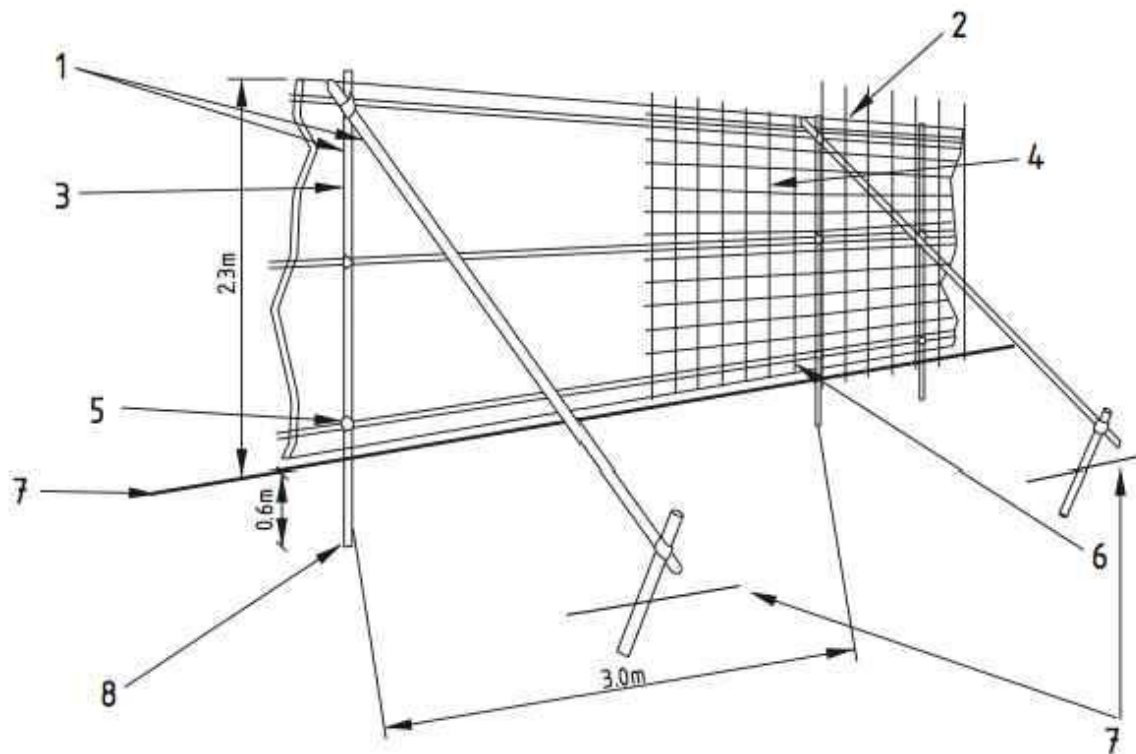
Tree Number	Remedial works
T1-T3	Retain and protect

Protective Barrier Fencing (PBF) Specification

Following the completion of any tree works, PBF is to be installed as illustrated on the TPP, and is to remain in situ for the entire duration of the construction phases unless otherwise agreed in writing by the Local Authority.

The PBF, due to the degree and proximity of work taking place around the trees, is to consist of *“a vertical and horizontal (scaffold) framework, well braced to resist impacts, with the vertical tubes spaced at a maximum of 3m. Onto this, weld mesh panels should be securely fixed with wire or scaffold clamps. Weldmesh panels on rubber or concrete feet are not resistant to impact and should not be used unless securely fixed to the ground.*

The type of fence to be used is shown in Fig. 4 below.



- | | |
|--|--|
| Standard scaffold poles | 5 Standard clamps |
| Uprights to be driven into the ground | 6 Wire twisted and secured on inside face of fencing to avoid easy dismantling |
| Panels secured to uprights with wire ties and where necessary standard scaffold clamps | 7 Ground level |
| Weldmesh wired to the uprights and horizontals | 8 Approx. 0.6 m driven into the ground |

Fig. 4 Protective Barrier Fencing

Tree protection signage denoting the words “*TREE PROTECTION ZONE – KEEP OUT*” is to be fixed onto every other panel of the PBF (Fig. 5).



Fig. 5 Example of signage

Sensitive RPA Excavations

Where works are proposed within a RPA, special excavation techniques are required to ensure the rooting volume, and the existing conditions for growth, are protected during both the excavations and the duration of the works. The following measures are to be implemented where said situation is present.

- Protect the soil from compaction or soil shearing (i.e. direct contact with open soil);
- Retain the soils aerobic conditions and facilitate the vertical and lateral exchange of water and air;
- Undertake the excavation works whilst complying with the construction process restrictions

The excavation of soil within an RPA is to be conducted manually with the use of manually operated (hand held) machinery such a pneumatic drill. If required thereafter, an air spade with soil suction should be used as a non-invasive means of excavation to ultimate depth.

Where rooting volume is encountered greater than 25 mm in diameter, for the duration of exposure, the roots should be wrapped in dry, clean hessian sacking. In certain circumstances roots smaller than 25 mm can be pruned back. However, pruning of roots greater than 25 mm in diameter will require the advice of the consultant and written permission from the Local Authority.

Prior to backfilling, any hessian wrapping should be removed and roots should be surrounded/packed with sharp sand (not building sand).

Special Engineering Solutions

Where replacement hard surfacing is to be installed within an RPA, special measures will be required to ensure the rooting volume, and the existing conditions for growth, are protected.

At Abbotsford House this will not be necessary for the construction of the new carport, as the site is already paved. Nevertheless, the methodology is shown here for completeness.

The preparation and installation of a load bearing surface solution is to be installed within an RPA that is to:

- Be a no dig solution for the installation of hard surfacing within the RPAs of retained trees;
- Retain the soils aerobic conditions and facilitate the vertical and lateral exchange of water and air;
- Install the surface treatment whilst complying with any construction process restrictions.

A geotextile is to be laid onto the prepared ground and a cellular confinement system fixed on top and 'charged' with a washed no fines aggregate.

This is to be 'dressed' using traditional gravel. This will require the installation of a thin layer of gravel bedding and a filled DuoBlock-type system with the surface material on top.

The illustration below shows this load bearing surfacing (Fig. 6).

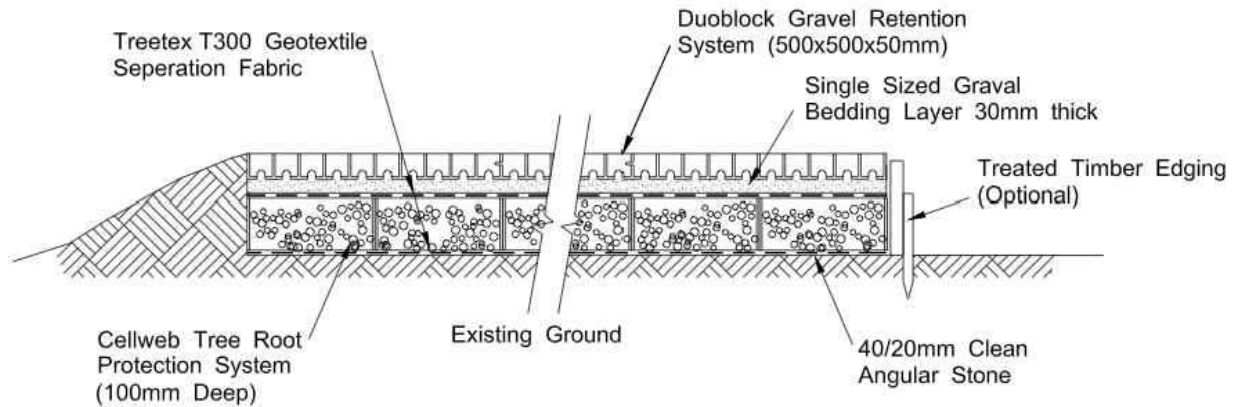


Fig. 6 Example of load bearing surfacing for use in RPAs

The installation of this system will minimise the impacts of the construction traffic and activities on the RPAs of retained trees, and will protect the RPAs for all future use of the site's users. As such it is not anticipated that any additional mitigation measures will be required.

Ground protection measures may also be needed. Where applicable, this will consist of scaffold boards placed on top of a 50 mm layer of bark chippings (or sand or graded aggregate) spread on top of porous geotextile membrane (Fig. 7).

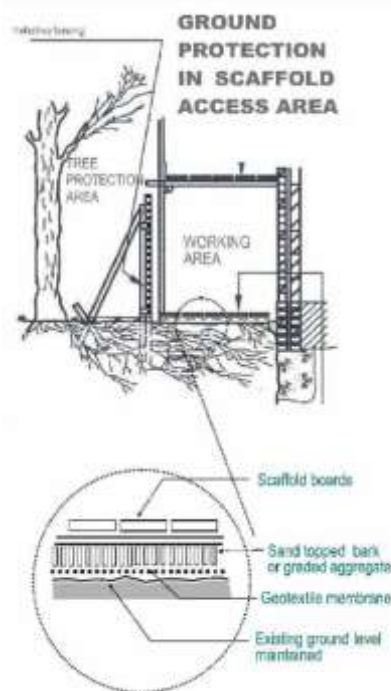


Fig. 7 Ground protection measures

5.3 Replacement Planting Specification

If any trees are to be planted, the selection of healthy specimens of a suitable species will be carried out appropriately in order to promote and enhance biodiversity, continuity of tree cover and suit the spatial constraints of the site.

Each new tree's location should be properly prepared with adequate drainage and room for future development. For larger specimens:

- The planting pit is to be excavated to a sufficient width and depth to accommodate the root-ball, allowing a minimum of 1.0 m clearance, with the additional breaking up of the planting pit's sides and base;
- The tree is to be planted to the same depth as existing, i.e. not above the root collar, and it should be back-filled with high grade soil and firmed in;
- The tree is to have a non-intrusive and adjustable supportive system installed in the form of either staking or above/underground guying;
- A bark/wood-chip mulch is to be applied around the base of the planted tree to at least a 2.0 m radius and < 5cm depth;
- A suitable maintenance programme, i.e. additional watering, fertilizing, weed control and mulching, is essential to ensure the tree establishes successfully.

6. RECOMMENDATIONS

This report is released to the client for him to distribute at his discretion. The consultant is available via telecom and/or email (via the methods on the back page) for any queries relating to this report and/or any other matter relating to arboriculture (which will form part of a separate contract).

The arboricultural supervision/monitoring is therefore recommended thus:

- On-site observation/guidance at the time of tree work operations;
- Induction of site team members regarding general and site specific arboricultural considerations and the assignment of key personnel (site manager) responsible for the AMS;
- Production of statement of delegated powers (if applicable);
- Production of written instructions for dealing with variations and/or incidents (if applicable);
- On completion of the development, sign off the site as having correctly adhered to this AMS.

Terms and Definitions

“*Arboriculturist*” - person who has, through relevant education, training and experience, gained recognized qualifications and expertise in the field of trees in relation to construction.

“*Land survey*” - an accurately measured land survey (also known as a topographical survey) should be undertaken showing all relevant existing site features.

“*Tree survey*” - should be undertaken by an arboriculturist and should record the information about trees on a site independently of and prior to and specific design for development. The results of a tree survey should be included in the preparation of a tree constraints plan, which should be used to assist with the site design.

“*Tree categorization method*” - should be applied by an arboriculturist and is to identify the quality and value of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained should development occur.

“*Tree constraints plan (TCP)*” - an accordingly scaled plan prepared by an arboriculturist for the purposes of layout design showing the tree stem, crown spread, root protection area and unique identification number.

“*Root protection area (RPA)*” - layout design tool indicating the area surrounding a tree that contains sufficient rooting to ensure the survival of the tree, shown on the TCP in m². The radius is calculated as a function of the tree stem diameter; x12 at 1.5m from ground level for single trees and up to five stems. For trees with more than five stems, the combined stem diameter should be calculated as the square root of the (mean stem diameter)² × number of stems. An arboriculturist may change the shape of an RPA but not reduce its area.

“*Arboricultural implications assessment (AIA)*” - study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

“*Arboricultural method statement (AMS)*” - methodology for the implementation of any aspect of development that has the potential to result in loss of or damage to a tree.

“*Tree protection plan (TPP)*” - an accordingly scaled plan prepared by an arboriculturist showing the finalised layout proposals detailed within the AMS, which can be shown graphically.

Appendix I - Tree survey schedule

Tree reference number	Species	Height m	Stem diameter mm	Branch spread m	Height of crown clearance m	Age class	Physiological condition	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	Category grading
1	Copper Beech <i>Fagus sylvatica purpurea</i>	28.4	766	N 5 S 5 E 4 W 5	5	Mature	Good	Fair – co-dominant stem	Retain and protect	40+	B1
2	Copper Beech <i>Fagus sylvatica purpurea</i>	28	672	N 5 S 5 E 4 W 4	5	Mature	Good	Fair	Retain and protect	40+	B1
3	Copper Beech <i>Fagus sylvatica purpurea</i>	28	621	N 5 S 5 E 5 W 5	4	Mature	Good	Fair	Retain and protect	40+	B1

Appendix II – Tree quality assessment

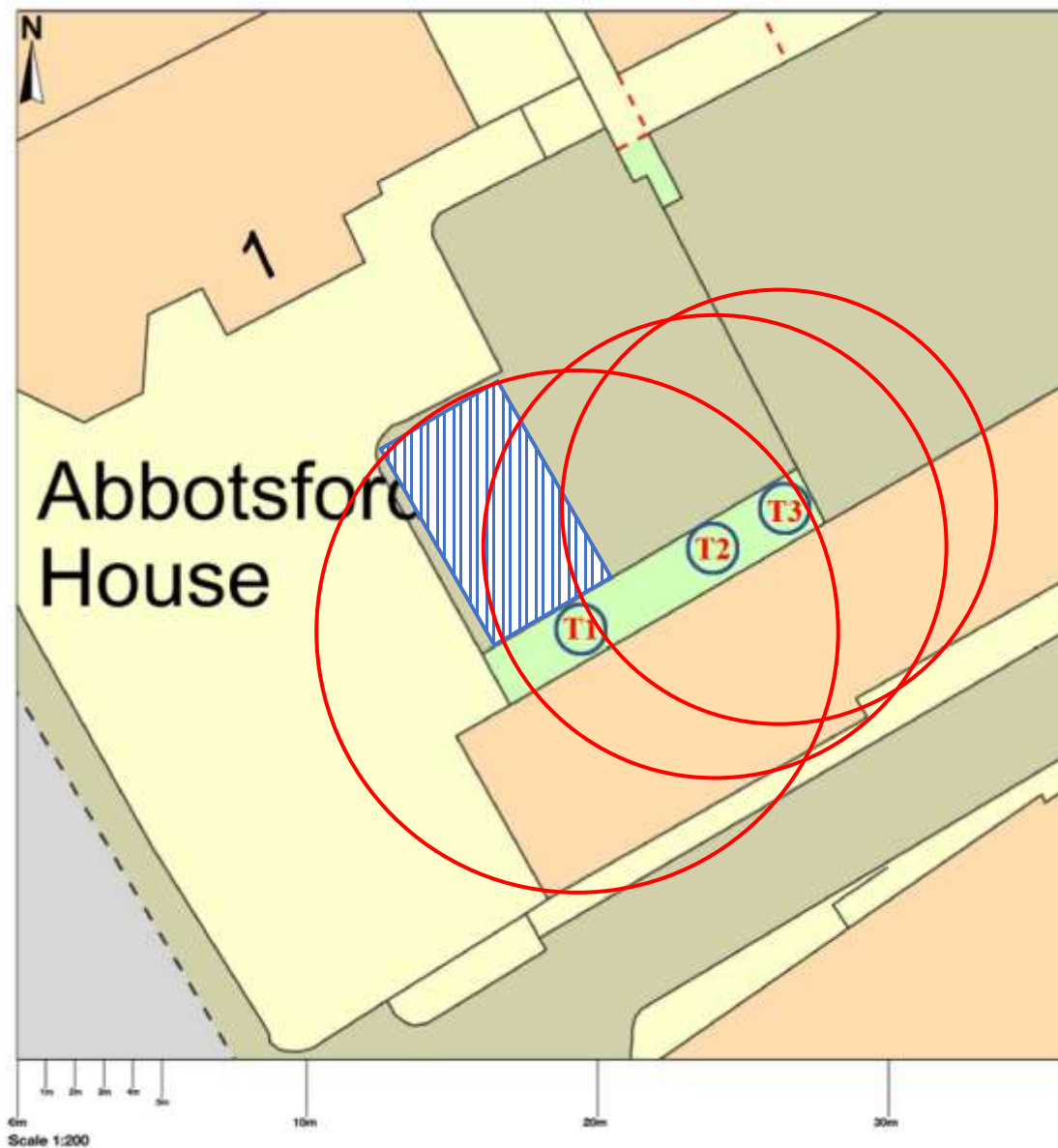


Plan 2 Tree Quality Assessment & crown spread (to scale)

- Category U – trees for removal
- Category A – high quality
- Category B – moderate quality
- Category C – low quality

NB. Other trees marked on the plan will not be impacted on by the proposed works, and as such they are not included in the tree quality assessment. Shrubs are not included either.

Appendix III – Tree Constraints Plan



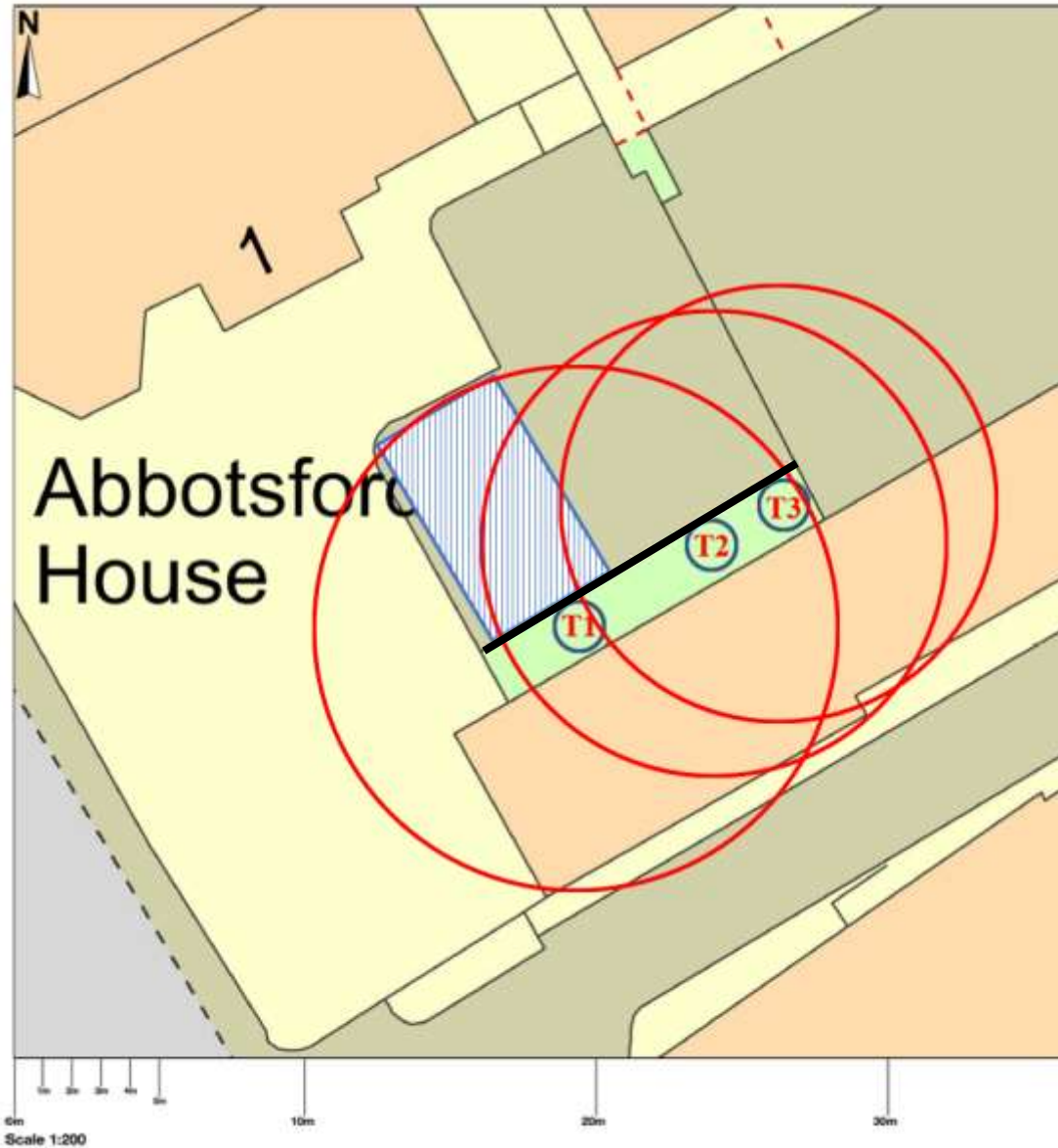
RPAs shown to scale (RPA radius in metres)

Tree No.	RPA radius (m)
T1	9.2
T2	8.0
T3	7.5



Proposed carport position

Appendix IV – Tree Protection Plan



Protective Barrier Fence **—————**

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