

# **Tree Survey Report for Brook Farm Gardens, Myton Road, Warwick**



**Cotswold Wildlife Surveys**

5<sup>th</sup> February 2021

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## SUMMARY

At Brook Farm Gardens, Myton Road, Warwick, planning permission is being sought for the construction of three new dwellings.

The proposed works will include the provision of a new access drive, garages and parking.

On 5<sup>th</sup> February 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:

- Twenty-two trees within potential impacting distance of the proposed works were examined;
- The root protection areas (RPA) of the trees were calculated;
- The RPAs of T1-T15 will all be incurred by the construction of the new driveway, some by <5%, others by up to 40%;
- The driveway will therefore be constructed using a no-dig method, with a permeable, load-bearing surface which will ensure the long-term health of trees;
- The RPAs of T14 and T15 will also be incurred by less than 10% by the construction of plot 1. This is acceptable within the parameters of BS5837;
- 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).

## 1.0 INTRODUCTION

This report has been prepared to accompany a planning submission by Mr Paul Philips (hereafter – client) relating to the proposed construction of a new dwelling and access on land at Brook Farm Gardens, Myton Road, Warwick (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 5<sup>th</sup> February 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 three residential dwellings, including garaging, driveway and access.

### 1.2 Survey area

The site comprised the existing garden of Brook Farm House, this consisting of closely mown lawns, a large polytunnel, stoned areas and hardstanding.

Scattered trees were present throughout the site around the boundaries (Figs. 1, 2 and 3). These included Ash *Fraxinus excelsior*, Sycamore *Acer pseudoplatanus*, Alder *Alnus glutinosa*, Wild Cherry *Prunus avium*, Leyland Cypress *Chamaecyparis leylandii* and Walnut *Juglans regia*.



**Figs. 1 & 2 Survey site**



**Figs. 3 & 4 Survey area**

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 'B3, C1, C2 and C3' being attributed to the trees.

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

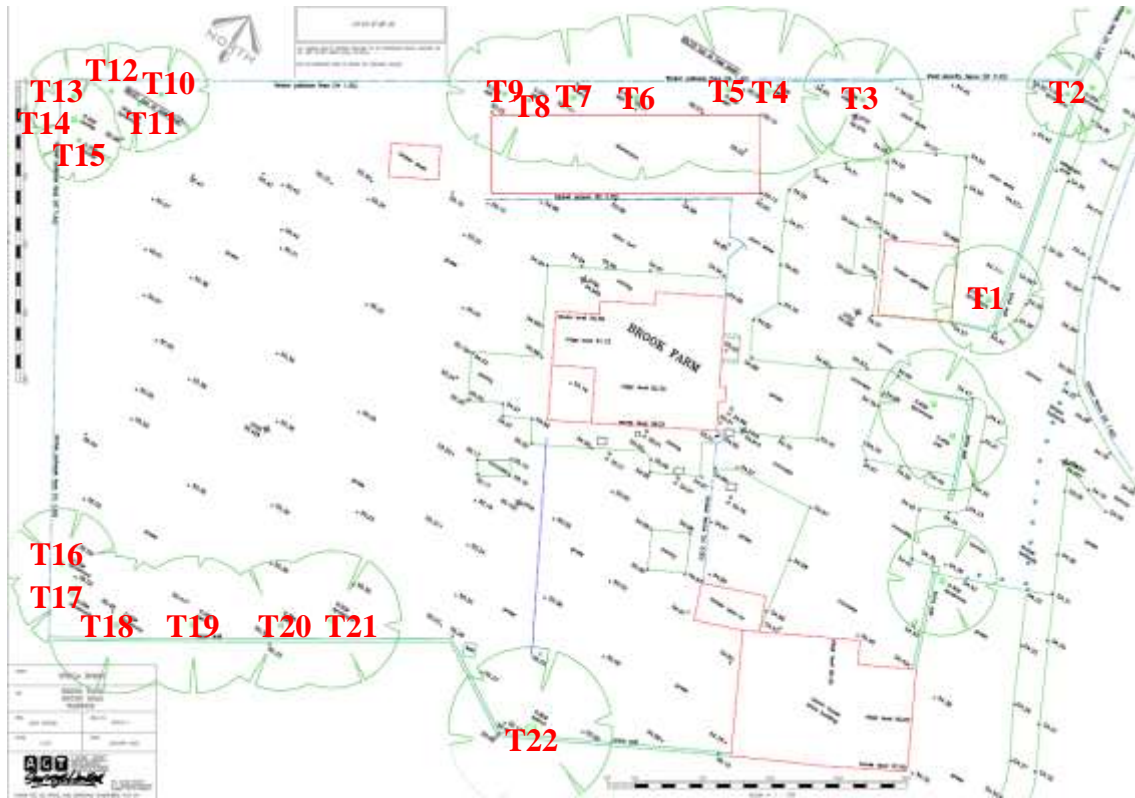
There are also existing permeable surface treatments and underground services in close proximity to the trees, possibly within some of their RPAs.

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 twenty-two trees across the site. The locations of the trees are shown on the existing 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	Sycamore	C1
T2	Sycamore	C1
T3	Alder	C1
T4	Ash	C1
T5	Ash	C1
T6	Ash	C1
T7	Cherry	C1
T8	Ash	C1
T9	Ash	C1
T10	Sycamore	C2
T11	Sycamore	C2
T12	Sycamore	C2
T13	Sycamore	C2
T14	Leyland Cypress	C3
T15	Leyland Cypress	C3
T16	Sycamore	C2
T17	Sycamore	C2
T18	Sycamore	C2
T19	Ash	C2
T20	Ash	C1
T21	Sycamore	C2
T22	Walnut	B3

B3: Trees with some conservation value for wildlife, and potential cultural benefits.

C1: Trees not qualifying in higher categories.

C2: Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit.

C3: Trees with very limited conservation or other cultural benefits.

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 garden.

Irrespective of the proposed development, none of the trees were identified as requiring removal (BS5837 category 'U'), but all were categorised as C quality.

Although category C trees have some cultural, ecological and landscape value, they should not constrain the proposed development, as they could be replaced. Their removal may also assist in the growth and development of higher category trees.

The construction of the new dwellings, garaging and access will be used 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 dwellings, garages, driveway and parking will require sensitive positioning 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.

It can be seen that the RPAs of T1-T15 will all be incurred to varying extents by proposed driveway, some of them by up to 40%.

In order to minimise the impact of these incursions, the driveway and parking will be constructed using a no-dig method, with a permeable, load bearing surface to ensure that water and gaseous exchange by the roots is unaffected and there is no compaction of the soil.

The PBF will be installed along the edge of the new driveway to protect the main stems. It is not necessary to install the PBF along the edge of the RPAs, as most of these lie under the existing stoned areas and polytunnel, and as such are already covered by permeable hard surfacing and/or an impermeable structure.

The RPAs of T14 and T15 will also be incurred by the construction of plot 1, but by less than 10% which is an acceptable extent under BS5837.

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



As services will be associated with the new dwelling, any underground utilities which have to be installed within close proximity to 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 potentially 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:

- Twenty-two trees within potential impacting distance of the proposed works were examined;
- The root protection areas (RPA) of the trees were calculated;
- The RPAs of T1-T15 will be incurred by the construction of the driveway;
- The driveway will be constructed using a no-dig method, with a permeable, load-bearing surface which will ensure the long-term health of trees;
- The RPAs of T14 and T15 will be incurred by less than 10% by the construction of plot 1. This is acceptable within the parameters of BS5837;
- 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).

## 5.0 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 – T21	Retain and protect
T8-T13 and T19	Remove Ivy from main stem and canopy

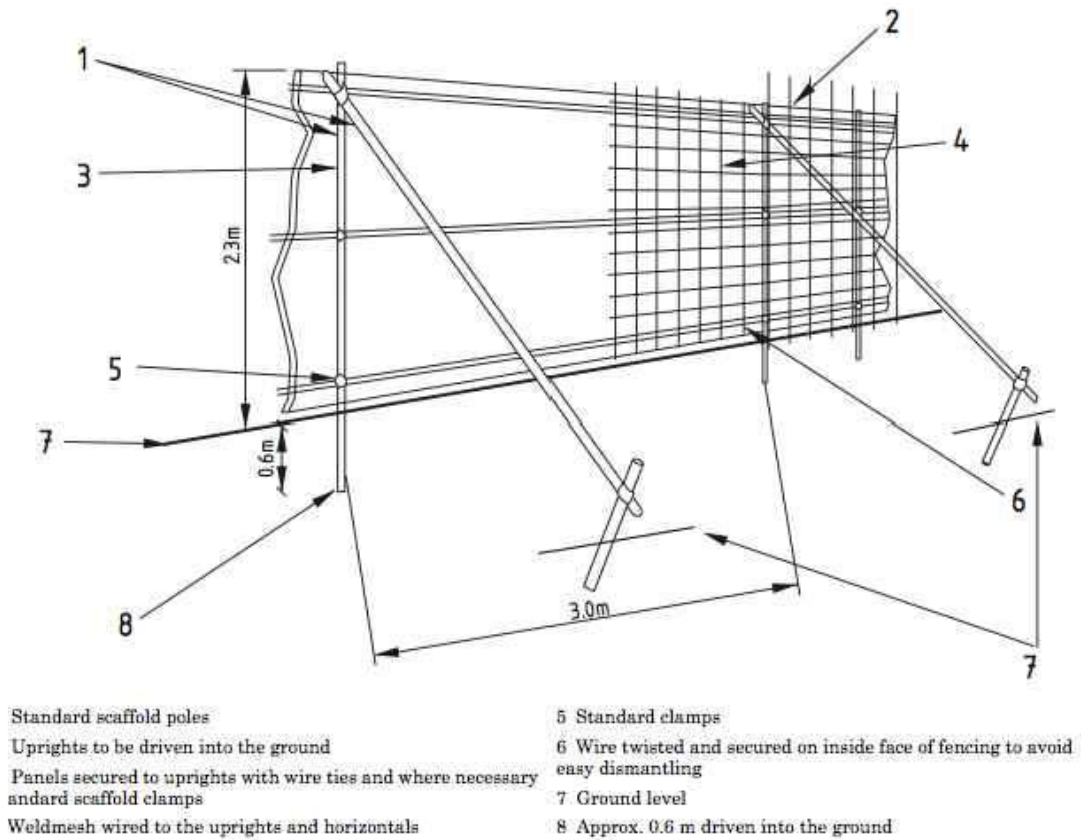
#### Protective Barrier Fencing (PBF) Specification

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. 5 below.



**Fig. 5 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. 6).



**Fig. 6 Example of signage**

### Sensitive RPA Excavations

Where works are proposed within an 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).

This situation will be encountered, as there will be minor excavations within the RPAs of T14 and T15.

### 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.

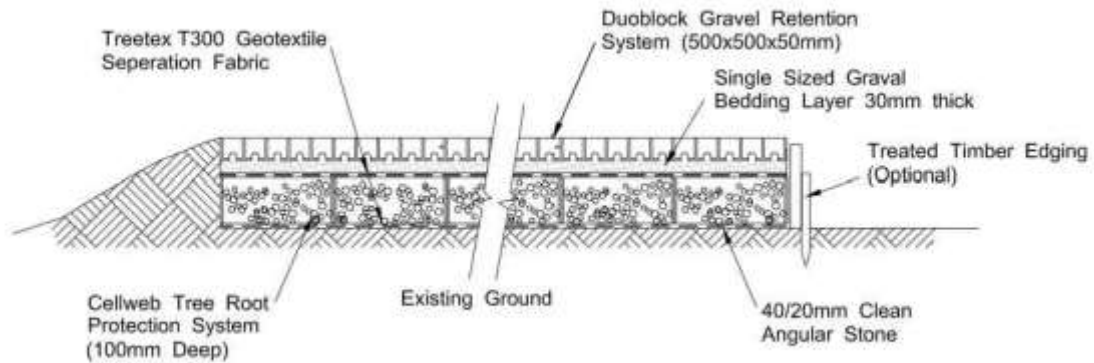
At Brook Farm Gardens this will be employed for the construction of the new access road.

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. 7).

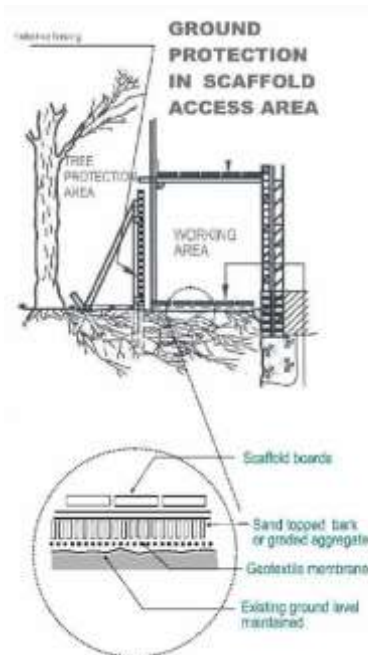


**Fig. 7 Example of load bearing surfacing for use in RPAs**

An alternative to gravel surfacing is to use permeable paving as the finished surface.

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. 8).



**Fig. 8 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.

## 6.0 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 m<sup>2</sup>. 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)<sup>2</sup> × 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.



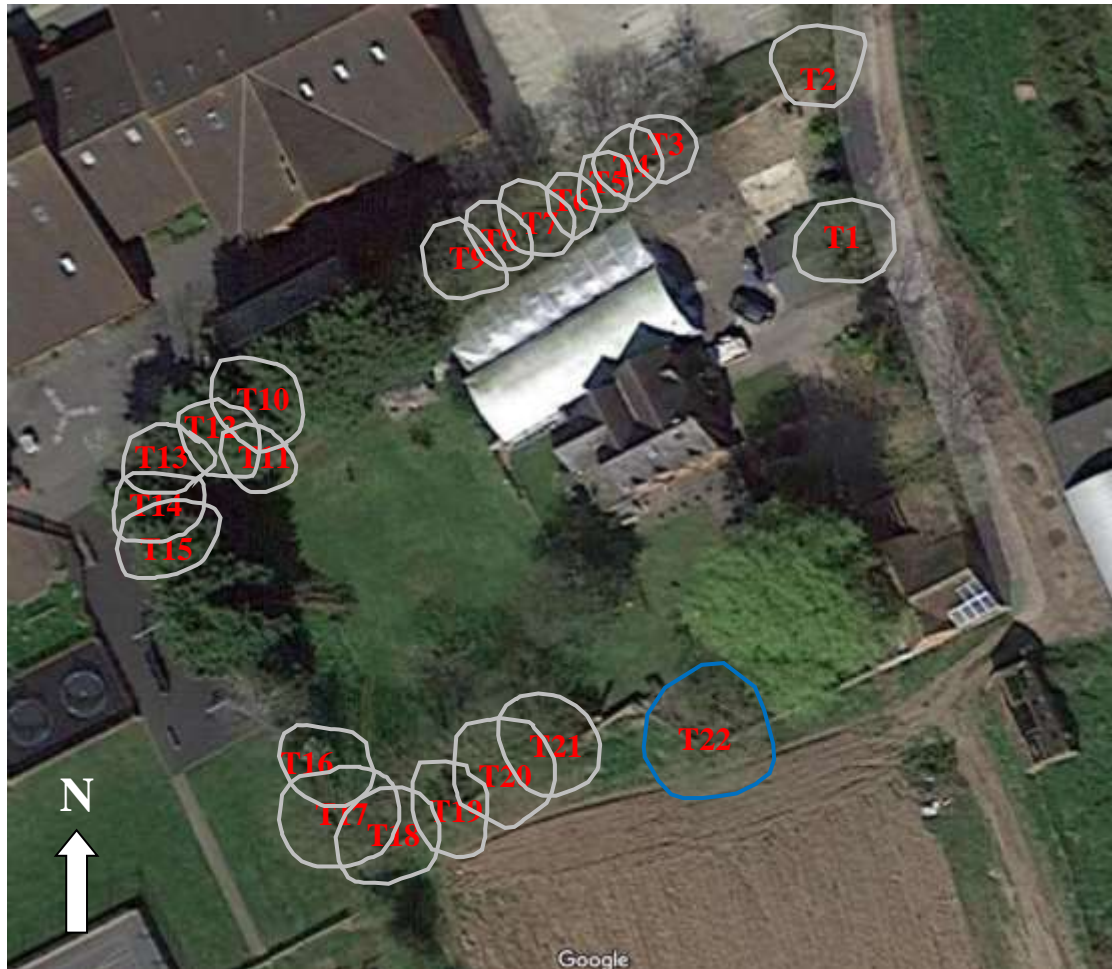
## Appendix I - Tree survey schedule

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	Sycamore <i>Acer pseudoplatanus</i>	13	452	N 4 S 4 E 4 W 4	2	Middle Aged	Fair	Fair		40+	C1
2	Sycamore <i>Acer pseudoplatanus</i>	14	355	N 3 S 3 E 3 W 3	2	Middle aged	Fair	Fair		40+	C1
3	Alder <i>Alnus glutinosa</i>	16	352	N 3 S 3 E 3 W 2	1.5	Mature	Good	Good		40+	C1
4	Ash <i>Fraxinus excelsior</i>	16	445	N 1 S 4 E 5 W 5	1.5	Mature	Good	Good		40+	C1
5	Ash <i>Fraxinus excelsior</i>	16	429	N 2 S 4 E 4 W 4	2	Mature	Good	Good		40+	C1
6	Ash <i>Fraxinus excelsior</i>	17	465	N 3 S 3 E 3 W 3	2	Mature	Good	Good		40+	C1
7	Cherry <i>Prunus sp.</i>	13	446	N 4 S 4 E 3 W 2	2	Mature	Fair	Fair		40+	C1

<b>8</b>	Ash <i>Fraxinus excelsior</i>	14	322	N 0 S 5 E 2 W 2	2	Mature	Good	Fair	Remove ivy growth	40+	C1
<b>9</b>	Ash <i>Fraxinus excelsior</i>	17	395	N 3 S 3 E 1 W 0	2	Mature	Good	Fair	Remove ivy growth	40+	C1
<b>10</b>	Sycamore <i>Acer pseudoplatanus</i>	16	265 & 248	N 1 S 1 E 1 W 0.5	4	Mature	Good	Fair	Remove ivy growth	40+	C2
<b>11</b>	Sycamore <i>Acer pseudoplatanus</i>	17	270 & 255	N 1 S 1 E 0.5 W 0.5	2	Mature	Good	Fair	Remove ivy growth	40+	C2
<b>12</b>	Sycamore <i>Acer pseudoplatanus</i>	15	385	N 1 S 1 E 0.5 W 0.5	4	Mature	Good	Fair	Remove ivy growth	40+	C2
<b>13</b>	Sycamore <i>Acer pseudoplatanus</i>	14	320	N 1 S 1 E 0.5 W 1	4	Mature	Good	Fair	Remove ivy growth	40+	C2
<b>14</b>	Leyland Cypress <i>Chamaecyparis leylandii</i>	8	490	N 2 S 2 E 2 W 2	0.5	Mature	Good	Fair topped		40+	C3
<b>15</b>	Leyland Cypress <i>Chamaecyparis leylandii</i>	8	420	N 2 S 2 E 2 W 2	0.5	Mature	Good	Fair Topped		40+	C3
<b>16</b>	Sycamore <i>Acer pseudoplatanus</i>	16	339	N 3 S 2 E 2 W 3	2	Mature	Good	Fair		40+	C2

<b>17</b>	Sycamore <i>Acer pseudoplatanus</i>	16	225 301 156	N 2 S 2 E 4 W 4	2	Mature	Good	Fair		40+	C2
<b>18</b>	Sycamore <i>Acer pseudoplatanus</i>	16	220 225 305	N 4 S 4 E 2 W 2	2	Mature	Good	Fair		40+	C2
<b>19</b>	Ash <i>Fraxinus excelsior</i>	17	Tri- dominant at 2m. ~500	N 4 S 4 E 2 W 2	2	Mature	Good	Fair	Remove ivy growth Birds nest present	40+	C2
<b>20</b>	Ash <i>Fraxinus excelsior</i>	16	383	N 4 S 4 E 4 W 4	2	Mature	Good	Fair		40+	C1
<b>21</b>	Sycamore <i>Acer pseudoplatanus</i>	15	337 305 298	N 4 S 4 E 4 W 4	2	Mature	Good	Fair		40+	C2
<b>22</b>	Walnut <i>Juglans regia</i>	12	425 & 469	N 4 S 4 E 4 W 4	2	Mature	Good	Fair		20-40	B3

## Appendix II – Tree quality assessment

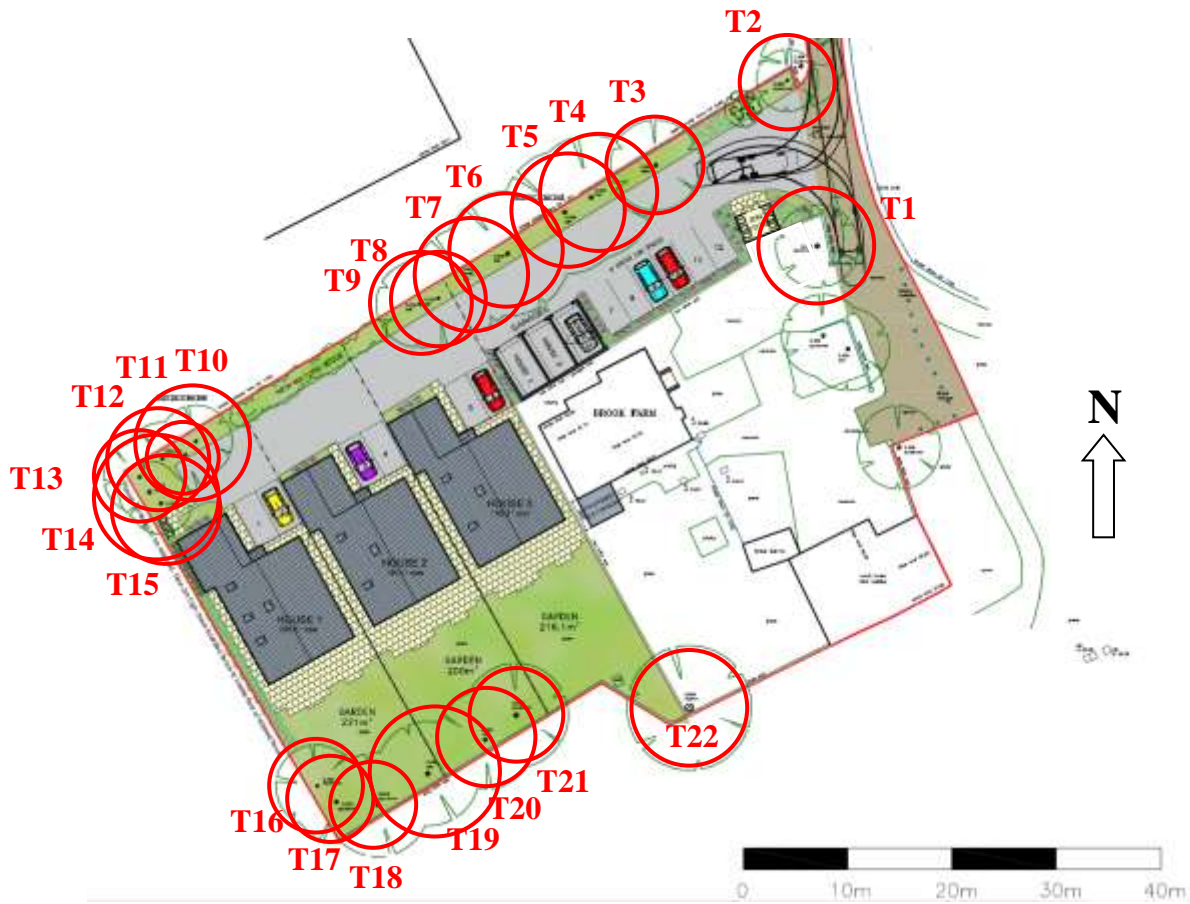


**Plan 2 Tree Quality Assessment & crown spread (to scale)**

- 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.

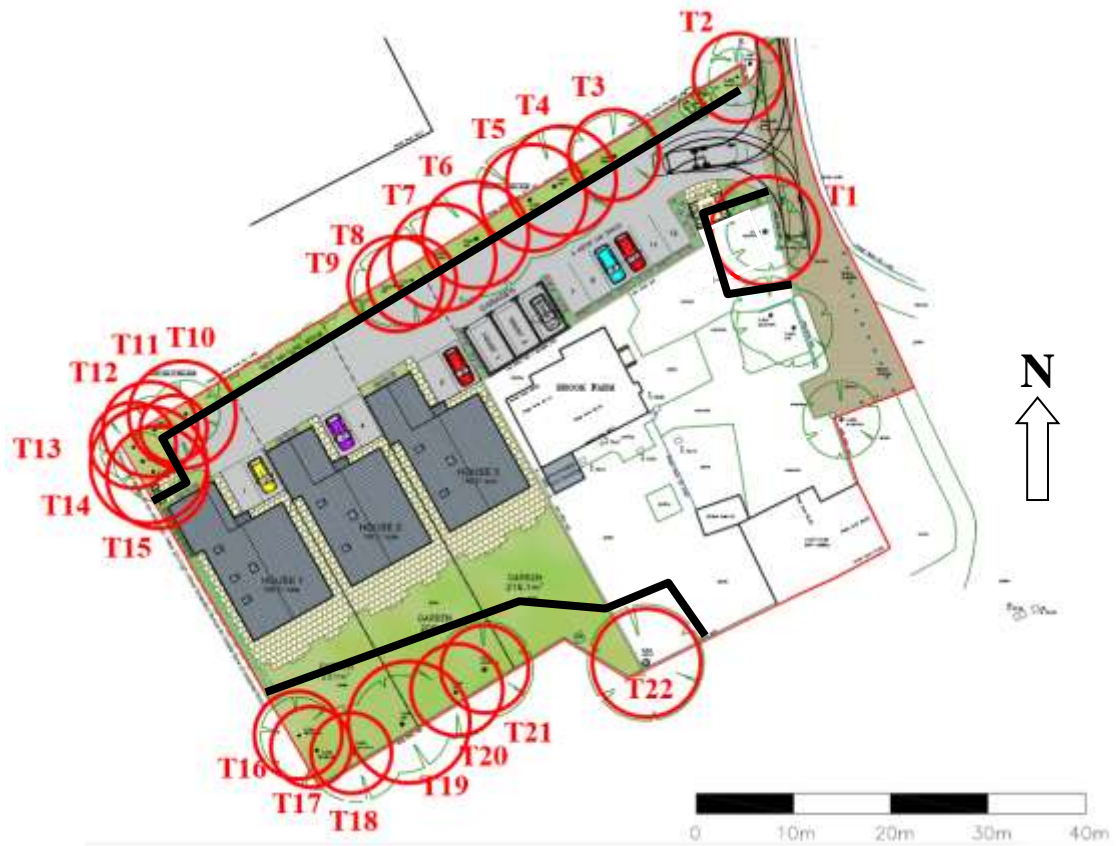
### Appendix III – Tree Constraints Plan



RPAs shown to scale (RPA radius in metres)

Tree No.	RPA radius (m)	Tree No.	RPA radius (m)
T1	5.4	T12	4.6
T2	4.2	T13	3.8
T3	4.2	T14	5.8
T4	5.3	T15	5.0
T5	5.1	T16	4.1
T6	5.6	T17	3.6
T7	5.3	T18	3.6
T8	3.8	T19	6.0
T9	4.7	T20	4.6
T10	5.3	T21	4.0
T11	3.2	T22	5.6

### Appendix IV – Tree Protection Plan



Protective Barrier Fence **—————**

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Brook Farm Gardens, Myton Road, Warwick – Tree Survey Report

To: Paul Philips

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