

**CHOLPESDALE FARM,  
ABBAY GREEN ROAD, LEEK**

**PRE-DEVELOPMENT  
ARBORICULTURAL SURVEY**

A Report to: Hewitt and Carr Architects

Report No: RT-MME-120983-02

Date: March 2016



Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ

Tel: 01676 525880 Fax: 01676 521400

E-mail: [admin@middlemarch-environmental.com](mailto:admin@middlemarch-environmental.com) Web: [www.middlemarch-environmental.com](http://www.middlemarch-environmental.com)

## REPORT VERIFICATION

This study has been undertaken in accordance with British Standard 5837:2012 "Trees in relation to design, demolition and construction - Recommendations".

Report Version	Date	Completed by:	Checked by:	Approved by:
Final	02/03/2016	Dean Moore (Arboricultural Project Officer) and Ben Jones MSc (Arboricultural Support Officer)	Ed Lusk HND PTI (Principal Arboricultural Consultant)	Dr Philip Fermor CEnv, MCIEEM (Managing Director)

## DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

## VALIDITY OF DATA

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, an updated site visit should be carried out by a suitably qualified and experienced arboriculturist to assess any changes to the trees, groups and hedgerows on site and to inform a review of the conclusions and recommendations made.

It should be noted that trees are dynamic living organisms that are subject to natural changes as they age or are influenced by changes in their environment. As such following any significant meteorological event or changes in the growing environment of the trees they should be re-assessed by a suitably qualified and experienced arboriculturist.

## NON-TECHNICAL SUMMARY

Middlemarch Environmental Ltd was commissioned to undertake a pre-development arboricultural survey of a site at Abbey Green Road, Leek. It is understood that the site will be the subject of a planning application for development of a manège. To fulfil the project brief a desk study and a field survey of the trees present on site were undertaken in February 2016.

The desk study exercise identified that none of the trees present on site are protected by a Tree Preservation Order. Additionally this exercise established that the site is not situated within a Conservation Area.

The field survey was undertaken in February 2016 by Dean Moore (Arboricultural Project Officer). The survey identified that the site contains a number of young, early-mature and mature trees which are predominately in a good condition.

The most significant trees recorded within the survey were a large Horse Chestnut (*Aesculus hippocastanum*) located adjacent to the southern boundary of the study area and a group of mixed tree species abutting the western boundary of the study area. These trees were noted to be large specimens and in generally good condition. These trees are considered to have significant visual amenity value to the surrounding landscape.

However a number of trees including Sycamore (*Acer pseudoplatanus*) and Beech (*Fagus sylvatica*) specimens near the western boundary as well as an early-mature Horse Chestnut located along the northern boundary of the study area, were noted to be generally poor specimens with little to no retention value. Factors contributing to this assessment included wounds and mammal damage to the stem and crown, bleeding cankers (*Pseudomonas syringae* pathovar *aesculi*), windsnap damage and other general signs of decline. These factors are considered to have limited the likely future potential for these trees.

To ensure the protection of trees selected for retention during the course of the proposed development it is recommended that the guidance set out in Section 5 of this report is considered and that, during development of the site, the retained trees are protected by the erection of tree protection barriers to the specification set out in BS5837:2012.

## CONTENTS

<b>1. INTRODUCTION</b>	<b>4</b>
1.1 PROJECT BRIEF	4
1.2 SITE DESCRIPTION	4
<b>2. METHODOLOGY</b>	<b>5</b>
2.1 DESK STUDY	5
2.2 CONDITION STATUS	5
2.3 ROOT PROTECTION AREA (RPA)	5
<b>3. RESULTS</b>	<b>6</b>
3.1 DESK STUDY	6
3.2 WEATHER CONDITIONS AND PERSONNEL	6
3.3 SURVEY RESULTS	6
3.4 ROOT PROTECTION AREA (RPA)	15
<b>4. DISCUSSION</b>	<b>17</b>
4.1 DESK STUDY	17
4.2 TREE QUALITY	17
<b>5. ARBORICULTURAL DESIGN GUIDANCE</b>	<b>20</b>
5.1 THE TREE CONSTRAINTS PLAN	20
5.2 TREE RETENTION / REMOVAL	20
5.3 BELOW GROUND CONSTRAINTS	20
5.4 ABOVE GROUND CONSTRAINTS	21
<b>6. RECOMMENDATIONS</b>	<b>23</b>
<b>7. DRAWINGS</b>	<b>24</b>
<b>REFERENCES AND BIBLIOGRAPHY</b>	<b>26</b>

## 1. INTRODUCTION

### 1.1 PROJECT BRIEF

In January 2016, Hewitt and Carr Architects commissioned Middlemarch Environmental Ltd to undertake an Arboricultural Survey of trees growing on land at, and adjacent to, Cholpesdale Farm, Abbey Green Road, Leek.

It is understood that the proposed development of the site is the construction of new equestrian manège as well as alterations to the elevations of the existing farm house. These alterations include extensions to the first storey, demolition of side and rear extensions and the erection of a single storey side and rear extension and detached garage.

The purpose of this report is to:

- Record the current condition of the trees found on the site and categorise them using criteria outlined in BS5837:2012 "Trees in relation to design, demolition and construction - Recommendations".
- Provide a Tree Constraints Plan that identifies any constraints to development presented by the trees to include root protection areas for the retained trees as described in BS5837:2012.
- Provide guidance detailing arboricultural constraints to development and factors to be considered during the detailed design of the proposed development.

Middlemarch Environmental Ltd has previously carried out a Preliminary Ecological Assessment for Hewitt and Carr Architects at this site. The findings of this survey are detailed in Report Number RT-MME-120983-01.

### 1.2 SITE DESCRIPTION

The site under consideration, hereinafter referred to as the study area, is an irregular shaped parcel of land of approximately 0.4 ha in size which is located adjacent to Abbey Green Road in Staffordshire at Ordnance Survey Grid Reference SJ 9778 5790.

The study area is located within a predominately rural area on the northern fringes of Leek, a market town in the county of Staffordshire approximately 10 miles east of Stoke-on-Trent. The surrounding area in all directions is predominantly fields with a number of scattered farm buildings in the wider landscape.

The northern, eastern and southern boundaries of the study are delineated by post and rail fencing and barbed wire fencing beyond which are agricultural fields. To the west the study area abuts Abbey Green Road with the boundary line being defined by a mixed-species group of trees and an electric fence.

The study area is dominated by semi-improved grassland, with the existing farm buildings located in close proximity to the eastern boundary.

The topography of the study area is generally flat with no obvious gradient.

A total of fifty-one trees and two groups of trees have been surveyed. Species present comprised Apple (*Malus* sp.), Ash (*Fraxinus excelsior*), Beech (*Fagus sylvatica*), Buckeye (*Aesculus glabra*), Douglas Fir (*Pseudotsuga menziesii*), Elder (*Sambucus nigra*), English Oak (*Quercus robur*), English Yew (*Taxus baccata*), Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquilifolium*), Horse Chestnut (*Aesculus hippocastanum*), Scots Pine (*Pinus sylvestris*), Silver Birch (*Betula pendula*), Sycamore (*Acer pseudoplatanus*) and Western Red Cedar (*Thuja plicata*). A number of the trees surveyed were located off site but had canopies which overhang the site. The majority of notable vegetative features were located within the study area.

The location of the trees surveyed can be found on Middlemarch Environmental Ltd Drawing Number C120983-02-01.

## 2. METHODOLOGY

### 2.1 DESK STUDY

A desk study was undertaken to identify if any of the trees present within or in close proximity to the site are covered by Tree Preservation Orders (TPOs) or if the site is situated within a Conservation Area. This involved consultation with the Local Planning Authority.

### 2.2 CONDITION STATUS

To determine the status of the trees within the site a full arboricultural survey has been undertaken, assessing the species and status of all trees present. This survey has been carried out in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

All trees have been assigned a unique reference number. Individual trees above 75 mm in diameter (at 1.5 m above ground level) have had their position plotted to a survey drawing. The trees were visually assessed and a schedule prepared listing: tree number, species, trunk diameter at 1.5 m above ground level (or in accordance with Annex C of BS5837:2012), tree height, crown spread (cardinal points), crown clearance (cardinal points), height of first branch and growth direction, age class and estimated remaining life expectancy in years. Measurements for tree height, first branch height, crown clearance and crown spread were taken to an accuracy of 0.5 m. Stem diameter measurements were recorded to the nearest 10 mm. Any specific observations or recommendations with regard to management were also noted. All these observations and measurements are summarised in Section 3.3.

Each tree was assessed and assigned to one of the following categories:

- Category A: Those trees of high quality and value with an estimated remaining life expectancy of at least 40 years.
- Category B: Those trees of moderate quality and value with an estimated remaining life expectancy of at least 20 years.
- Category C: Those trees of low quality and value with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150 mm.
- Category U: Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Categories A, B and C have further sub-categories with regards to the reasons for tree retention:

- 1: Mainly arboricultural qualities.
- 2: Mainly landscape qualities.
- 3: Mainly cultural values, including conservation.

### 2.3 ROOT PROTECTION AREA (RPA)

In order to avoid damage to the roots or rooting environment of retained trees, the RPA has been calculated for each of the Category A, B and C trees. This is a minimum area around a tree which is deemed to contain sufficient roots and rooting volume to maintain the tree's viability. Protection of the roots and soil structure in this area should be treated as a priority.

These figures have been calculated utilising the formulas within Section 4.6 and Annex D of British Standard 5837:2012.

### 3. RESULTS

#### 3.1 DESK STUDY

Steven Massey (Staffordshire Moorlands District Council, 2016, *Pers. Comm.*) confirmed via email on 29<sup>th</sup> February 2016 that there are no Tree Preservation Orders within or closely surrounding the site and that the site is not situated within a Conservation Area.

#### 3.2 WEATHER CONDITIONS AND PERSONNEL

The survey was completed on 25<sup>th</sup> February 2016 by Dean Moore, Arboricultural Project Officer. The weather conditions at the time of the survey are shown in Table 3.1.

Conditions	Result
Temperature (°C)	-2
Cloud Cover (%)	10
Precipitation	Nil
Wind Speed (Beaufort)	F1-2

**Table 3.1: Weather Conditions at Time of Survey**

#### 3.3 SURVEY RESULTS

Tree species recorded during the survey are listed in Table 3.2.

Common Name	Scientific Name
Apple	<i>Malus</i> sp.
Ash	<i>Fraxinus excelsior</i>
Beech	<i>Fagus sylvatica</i>
Buckeye	<i>Aesculus glabra</i>
Douglas Fir	<i>Pseudotsuga menziesii</i>
Elder	<i>Sambucus nigra</i>
English Oak	<i>Quercus robur</i>
English Yew	<i>Taxus baccata</i>
Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
Horse Chestnut	<i>Aesculus hippocastanum</i>
Scots Pine	<i>Pinus sylvestris</i>
Silver Birch	<i>Betula pendula</i>
Sycamore	<i>Acer pseudoplatanus</i>
Western Red Cedar	<i>Thuja plicata</i>

**Table 3.2: Tree Species Recorded During Survey**

The full results of the Arboricultural Assessment are detailed in Table 3.3.

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
1	Sycamore	1	590	13.0	3.0 N	<u>5.0</u>	<u>5.0</u>	3.0	5.5	2.0	3.0	3.0	3.0	EM	G	F	20+	B1	<ul style="list-style-type: none"> <li>Minor deadwood present.</li> <li>Small branch hanging in crown.</li> <li>Minor cavity on main stem.</li> <li>Limited inspection due to vegetation.</li> </ul>	-
2	Sycamore	1	560	13.0	3.0 N	6.0	5.0	<u>5.0</u>	6.0	2.0	2.0	3.0	2.0	EM	G	G	20+	B1	<ul style="list-style-type: none"> <li>Tree located on embankment.</li> <li>Epicormic growth on base.</li> <li>Bifurcate at 2.0 m from ground level.</li> <li>Minor deadwood present.</li> </ul>	-
3	English Oak	1	<u>310</u>	<u>11.0</u>	2.5 S	<u>3.5</u>	<u>2.0</u>	<u>3.5</u>	<u>3.5</u>	<u>2.5</u>	<u>2.5</u>	<u>2.5</u>	<u>2.5</u>	Y	G	G	40+	A1	<ul style="list-style-type: none"> <li>Tree located off-site but overhangs the study area.</li> </ul>	-
4	Holly	4	420	12.0	2.0 E	<u>5.0</u>	3.5	3.5	3.5	2.5	2.5	2.5	2.5	EM	G	F	20+	C1	<ul style="list-style-type: none"> <li>Crown touching telephone line and stables.</li> <li>Multi-stemmed at base.</li> <li>Crossing branches.</li> <li>Included union at base.</li> <li>Generally a poor specimen.</li> </ul>	-
5	Apple	1	370	10.0	3.0 W	2.5	2.0	<u>3.0</u>	<u>3.0</u>	3.0	2.0	2.0	3.0	EM	F	P	10+	C1	<ul style="list-style-type: none"> <li>Exposed roots.</li> <li>Large quantity of deadwood present.</li> <li>Crossing branches.</li> <li>Tree in decline.</li> <li>Generally a poor specimen.</li> </ul>	-
6	Sycamore	1	410	14.0	4.0 N	5.0	2.0	5.0	4.0	3.0	4.0	4.0	4.0	Y	F	F	10+	C2	<ul style="list-style-type: none"> <li>Bifurcate at 2.5 m from ground level.</li> <li>Small branches hanging in crown.</li> <li>Epicormic growth on main stem.</li> <li>Generally a poor specimen.</li> </ul>	-

Table 3.3: Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
7	Beech	1	360	14.0	3.0 SE	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	Y	G	F	20+	B1,2	<ul style="list-style-type: none"> <li>Bifurcate at 3.0 m from ground level.</li> <li>Young tree in good health.</li> </ul>	-
8	Beech	1	280	14.0	3.0 SE	3.5	3.0	3.0	2.5	3.0	2.0	3.0	3.0	Y	F	F	20+	B1	<ul style="list-style-type: none"> <li>Crown touching telephone line.</li> <li>Tree leaning north.</li> <li>Bifurcate at 3.0 m from ground level.</li> </ul>	-
9	Beech	1	250	14.0	2.0 SE	3.5	3.5	3.5	3.5	2.5	2.5	2.5	2.5	Y	G	G	20+	B1	<ul style="list-style-type: none"> <li>Young tree in good health.</li> </ul>	-
10	Sycamore	2	390	14.0	3.0 W	2.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	Y	F	F	10+	C2	<ul style="list-style-type: none"> <li>Bifurcate at 1.0 m from ground level.</li> <li>Epicormic growth on main stem.</li> <li>Mammal damage on main stem.</li> <li>Tear wound in crown, wound occluding.</li> <li>Major and minor deadwood present.</li> </ul>	-
11	Sycamore	1	340	14.0	3.0 E	2.5	3.0	2.0	5.0	3.0	3.0	3.0	3.0	Y	F	F	10+	C2	<ul style="list-style-type: none"> <li>Bifurcate at 2.5 m from ground level.</li> <li>Mammal damage on main stem.</li> <li>Minor deadwood present.</li> </ul>	-
12	Sycamore	1	340	13.0	2.5 N	8.0	3.0	1.0	5.5	3.0	3.0	5.0	3.0	Y	F	F	10+	C2	<ul style="list-style-type: none"> <li>Root plate lifting.</li> <li>Minor deadwood.</li> <li>Mammal damage on main stem.</li> </ul>	-
13	Beech	1	340	14.0	2.5 NW	5.5	3.0	5.0	4.5	2.5	2.5	2.5	2.5	Y	G	G	40+	B1	<ul style="list-style-type: none"> <li>Bifurcate at 2.0 m from ground level.</li> <li>Crossing branches.</li> <li>Minor deadwood present.</li> <li>Mammal damage on main stem; wounds occluding.</li> </ul>	-

Table 3.3 (cont'd): Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
14	Beech	2	330	14.0	2.0 S	2.0	3.0	4.0	2.0	2.0	2.0	2.0	2.0	Y	G	F	20+	B1,2	<ul style="list-style-type: none"> <li>• Bifurcate at 0.5 m from ground level.</li> <li>• Suppressed by T16.</li> <li>• Mammal damage on main stem.</li> <li>• Minor deadwood present.</li> </ul>	-
15	Beech	1	340	14.0	5.0 W	2.0	5.0	3.5	3.5	>5.0	>5.0	>5.0	>5.0	Y	G	G	40+	B2	<ul style="list-style-type: none"> <li>• Bifurcate at 2.0 m from ground level.</li> <li>• Major deadwood present.</li> <li>• Exposed roots.</li> </ul>	-
16	Sycamore	1	280	14.0	5.0 S	4.5	4.0	5.0	4.0	>5.0	>5.0	>5.0	>5.0	Y	G	G	40+	B2	<ul style="list-style-type: none"> <li>• Minor deadwood present.</li> <li>• Trifurcate at 3.0 m from ground level.</li> <li>• Dieback on lateral branches.</li> <li>• Exposed roots.</li> <li>• Hanging branches.</li> <li>• Mammal damage on main stem.</li> </ul>	-
17	Beech	1	250	14.0	3.0 E	5.5	2.0	2.0	3.0	2.5	3.0	3.0	3.0	Y	G	G	20+	B2	<ul style="list-style-type: none"> <li>• Exposed roots.</li> <li>• Telephone line touching main stem.</li> </ul>	-
18	Sycamore	1	260	14.0	3.0 E	5.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	Y	F	F	20+	C3	<ul style="list-style-type: none"> <li>• Bifurcate at 3.5 m from ground level.</li> <li>• Mammal damage on main stem.</li> <li>• Epicormic growth on main stem.</li> <li>• Dieback on lateral branches.</li> <li>• Hanging branches.</li> <li>• Tree showing signs of decline.</li> </ul>	-

Table 3.3 (cont'd): Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
19	Sycamore	2	280	11.0	2.5 E	5.5	4.0	1.0	2.0	3.0	3.0	3.0	3.0	Y	F	P	<10	U	<ul style="list-style-type: none"> <li>Bifurcate at 0.5 m from ground level.</li> <li>Occluding wound present from ground level to 1.0 m above ground level.</li> <li>Mammal damage on main stem.</li> <li>Exposed roots.</li> <li>Hanging branches.</li> <li>Tree in heavy decline.</li> </ul>	Remove tree.
20	Beech	1	450	16.0	2.5 N	8.5	4.5	3.0	4.0	2.0	2.0	>5	2.0	EM	F	F	10+	C1	<ul style="list-style-type: none"> <li>Wound present from ground level to 2.0 m above ground level.</li> <li>Exposed roots.</li> <li>Minor deadwood present.</li> <li>Crossing branches.</li> </ul>	-
21	Beech	1	240	13.0	5.0 W	2.0	2.0	3.0	3.0	5.0	5.0	5.0	5.0	Y	F	F	10+	C2	<ul style="list-style-type: none"> <li>Exposed roots.</li> <li>Wound present from ground level to 1.5 m above ground level.</li> <li>Minor deadwood.</li> </ul>	-
22	Sycamore	1	230	11.0	2.5 NW	5.0	1.0	1.0	2.0	3.0	4.0	4.0	4.0	Y	F	F	10+	C2	<ul style="list-style-type: none"> <li>Exposed roots.</li> <li>Minor deadwood present.</li> <li>Epicormic growth on main stem.</li> <li>Hanging branches.</li> <li>Mammal damage on main stem.</li> </ul>	-
23	Beech	1	150	13.0	3.5 S	2.0	2.0	2.0	2.0	>5.0	>5.0	>5.0	>5.0	Y	G	G	20+	C2	<ul style="list-style-type: none"> <li>Bifurcate at 4.5 m from ground level.</li> <li>Young tree in good health.</li> </ul>	-
24	Norway Spruce	1	300	15.0	-	2.5	2.0	1.0	1.0	>5.0	>5.0	>5.0	>5.0	Y	G	G	20+	B2	<ul style="list-style-type: none"> <li>Minor deadwood present.</li> <li>Exposed roots.</li> </ul>	-
25	Ash	1	380	16.0	3.5 W	7.0	3.0	5.0	4.0	>5.0	>5.0	>5.0	>5.0	Y	G	G	40+	A2	<ul style="list-style-type: none"> <li>Minor deadwood present.</li> <li>Storm damage present.</li> </ul>	-

Table 3.3 (cont'd): Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
26	Beech	1	140	14.0	3.0 W	1.0	3.0	1.5	1.5	4.0	2.0	4.0	4.0	Y	G	G	40+	C1,2	<ul style="list-style-type: none"> <li>Tree located off site but overhangs the study area.</li> <li>Telephone touching main stem.</li> <li>Crossing branches.</li> <li>Minor deadwood.</li> </ul>	-
27	Beech	1	240	14.0	3.0 W	4.0	4.0	3.0	2.0	3.0	3.0	3.0	3.0	Y	G	G	20+	B2	<ul style="list-style-type: none"> <li>Tree located off site but overhangs the study area.</li> <li>Hanging branches.</li> </ul>	-
28	Beech	2	410	15.0	3.0 N	3.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	EM	G	F	10+	C2	<ul style="list-style-type: none"> <li>Tree located off site but overhangs the study area.</li> <li>Included union.</li> <li>Minor deadwood present.</li> <li>Crossing branches.</li> </ul>	-
29	Beech	1	380	16.0	3.0 N	6.0	4.0	4.0	5.0	2.5	4.0	4.0	4.0	EM	G	G	40+	A1	<ul style="list-style-type: none"> <li>Tree in good health.</li> </ul>	-
30	Beech	1	580	16.0	1.5 NW	6.5	6.5	6.5	6.5	2.0	3.0	3.0	3.0	EM	G	G	40+	A1	<ul style="list-style-type: none"> <li>Mammal damage in multiple locations.</li> <li>Small branches hanging in crown.</li> <li>Minor deadwood present.</li> </ul>	-
31	Beech	1	460	19.0	3.0 E	6.5	6.5	5.0	5.0	2.5	2.5	4.0	4.0	EM	G	G	40+	A1	<ul style="list-style-type: none"> <li>Tree in good health.</li> </ul>	-
32	Beech	1	140	10.0	2.5 N	3.0	2.0	2.0	3.0	2.5	3.0	3.0	3.0	Y	G	G	40+	C1	<ul style="list-style-type: none"> <li>Crossing branches.</li> <li>Young tree in good health.</li> </ul>	-
33	Beech	1	180	7.0	2.5 N	4.5	4.0	3.0	3.0	3.0	3.0	3.0	3.0	Y	F	P	<10	U	<ul style="list-style-type: none"> <li>Excessive mammal damage on main stem.</li> <li>Not structurally sound – windsnap.</li> </ul>	Remove tree.
34	Beech	1	340	16.0	3.0 S	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	EM	G	G	40+	A1	<ul style="list-style-type: none"> <li>Tree in good health.</li> </ul>	-

Table 3.3 (cont'd): Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
35	Buckeye	1	360	14.0	2.0 S	2.5	4.0	6.0	3.5	4.0	3.0	2.5	2.5	EM	F	F	10+	C1	<ul style="list-style-type: none"> <li>Minor deadwood present.</li> <li>Crossing branches.</li> <li>Bifurcate at 1.5 m from ground level with included union.</li> <li>Decay present; extent unknown.</li> <li>Cavity present on main stem.</li> </ul>	-
36	Buckeye	1	280	14.0	3.0 N	2.0	3.0	5.5	3.0	4.0	3.0	2.5	2.5	Y	G	G	20+	B1	<ul style="list-style-type: none"> <li>Co-dominant at 2.0 m from ground level.</li> </ul>	-
37	Beech	1	360	16.0	2.5 W	3.0	5.0	6.0	3.5	4.0	2.5	2.5	2.5	EM	G	G	40+	A1	<ul style="list-style-type: none"> <li>Mammal damage on main stem.</li> <li>Crossing branches.</li> </ul>	-
38	Beech	1	300	16.0	3.0 W	4.0	3.5	6.5	3.5	4.0	3.0	2.0	2.0	EM	G	G	40+	A1	<ul style="list-style-type: none"> <li>Co-dominant at 3.0 m from ground level.</li> <li>Crossing branches.</li> <li>Mammal damage on main stem.</li> </ul>	-
39	Beech	1	310	15.0	4.0 E	5.0	2.0	6.0	5.0	4.0	3.0	2.0	3.0	EM	F	F	20+	C1	<ul style="list-style-type: none"> <li>Minor deadwood present.</li> <li>Excessive mammal damage in crown at multiple locations.</li> <li>Tree has been ring-barked in crown.</li> </ul>	-
40	Buckeye	1	300	14.0	2.0 S	2.0	3.0	5.0	3.0	4.0	3.0	2.0	2.0	Y	G	G	20+	B1	<ul style="list-style-type: none"> <li>Minor deadwood present.</li> </ul>	-
41	Horse Chestnut	1	380	12.0	2.0 S	2.0	4.0	6.0	4.0	4.0	3.0	2.0	2.0	EM	F	P	<10	U	<ul style="list-style-type: none"> <li>Helical fracture present on main stem.</li> <li>Major deadwood present.</li> <li>Bleeding canker (<i>Pseudomonas syringae</i> pathovar <i>aesculi</i>) on main stem.</li> <li>Tree in heavy decline.</li> </ul>	Remove tree.
42	Horse Chestnut	1	440	12.0	2.0 SE	2.5	3.5	5.5	3.5	4.0	4.0	3.0	3.0	EM	G	F	20+	B1	<ul style="list-style-type: none"> <li>Major deadwood present.</li> <li>Small branches hanging.</li> <li>Storm damage; tear wound present.</li> </ul>	-

Table 3.3 (cont'd): Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
43	Buckeye	1	440	13.0	4.0 N	3.5	3.0	6.0	5.5	4.0	3.0	2.0	3.0	EM	G	F	20+	C1	<ul style="list-style-type: none"> <li>Bifurcate at 2.0 m from ground level.</li> <li>Bleeding canker on main stem.</li> <li>Storm damage present.</li> <li>Tear wounds in crown.</li> <li>Occluding wound at base.</li> </ul>	-
44	Alder	1	370	13.0	3.0 W	5.0	5.0	5.0	6.0	4.0	4.0	4.0	3.0	EM	G	G	20+	B1	<ul style="list-style-type: none"> <li>Minor deadwood present.</li> <li>Previous works; crown lift, wounds not occluding.</li> </ul>	-
45	Beech	1	190	8.0	1.5 N	3.0	3.0	1.5	2.0	2.5	2.5	3.0	2.5	Y	G	G	20+	B1	<ul style="list-style-type: none"> <li>Tree located off site but overhangs the study area.</li> <li>Young tree in good health.</li> </ul>	-
46	Beech	1	140	11.0	2.0 N	2.5	2.5	3.0	2.5	2.5	2.5	2.5	4.0	Y	G	G	40+	C1	<ul style="list-style-type: none"> <li>Young tree in good health.</li> </ul>	-
47	Beech	1	340	14.0	3.0 NW	5.5	5.5	5.5	5.5	2.5	2.5	4.0	2.5	EM	G	G	40+	A1	<ul style="list-style-type: none"> <li>Mammal damage on main stem, wounds occluding.</li> </ul>	-
48	Beech	1	180	12.0	1.0 S	4.0	3.0	1.5	3.0	1.5	1.5	4.0	1.5	Y	G	G	40+	B1	<ul style="list-style-type: none"> <li>Tree located off site but overhangs the study area.</li> <li>Small branches hanging in crown.</li> <li>Young tree in good health.</li> </ul>	-
49	Beech	4	540	16.0	1.5 NE	5.0	6.0	5.0	4.0	2.5	2.5	4.0	4.0	EM	G	F	20+	B1	<ul style="list-style-type: none"> <li>Multi-stemmed at ground level.</li> <li>Crossing branches.</li> <li>Exposed roots.</li> <li>Minor deadwood present.</li> <li>Including unions present at base and in crown.</li> </ul>	-
50	Douglas Fir	1	670	12.0	2.0 W	5.0	5.0	5.0	5.0	2.5	2.5	2.5	2.5	M	G	G	40+	A1	<ul style="list-style-type: none"> <li>Deadwood present.</li> <li>Crown has been reduced.</li> </ul>	-

Table 3.3 (cont'd): Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	H't 1st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
51	Horse Chestnut	1	1040	18.0	2.0 N	7.5	9.5	10.0	8.0	2.5	2.5	2.5	2.5	M	G	G	40+	A1	<ul style="list-style-type: none"> <li>Tree located off-site but overhangs the study area.</li> <li>Bleeding canker on main stem.</li> <li>Minor deadwood present.</li> <li>Storm damage at ground level.</li> <li>Cavities present on main stem.</li> </ul>	Aerial inspection of cavities.
G1	Ash, Beech, Elder, English Oak, English Yew, Hawthorn, Holly, Silver Birch, Sycamore	1	110 - 1120	2.0 - 18.0	0.0 E	4.0	8.0	10.0	4.0	>5.0	>5.0	>5.0	>5.0	Y - EM - M	G	G	40+	A1,2,3	<ul style="list-style-type: none"> <li>Group located off-site but overhangs the study area.</li> <li>Dead and dying trees present.</li> <li>Major and minor deadwood present.</li> </ul>	-
G2	Beech, Buckeye, Douglas Fir, Hawthorn, Scots Pine, Western Red Cedar	1	40 - 500	1.5 - 14.0	0.5 E	3.5	3.5	3.5	3.5	1.5	1.5	4.0	2.0	Y - EM	G	G	20+	B2	<ul style="list-style-type: none"> <li>Group located off-site but overhangs the study area.</li> <li>Dead and dying trees present.</li> </ul>	-

**Key**

Age Class

Y: Young = tree within first third of average life expectancy  
EM: Early mature = tree within second third of average life expectancy  
M: Mature = tree within final third of average life expectancy  
OM: Over mature = tree beyond average life expectancy

Physiological Condition

G: Good = no health problems  
F: Fair = symptoms of ill health that may be remedied  
P: Poor = poor health

Structural Condition

G: Good = no structural defects  
F: Fair = remedial structural defects  
P: Poor = significant structural defects

000: Estimated dimension due to access restrictions

**Table 3.3 (cont'd): Results of Arboricultural Survey**

### 3.4 ROOT PROTECTION AREA (RPA)

Table 3.4 provides details of the Root Protection Area (RPA) of all trees or groups surveyed which were classified as Category A, B or C specimens. This table also gives an approximate root protection radius for these trees.

Tree No.	Species	Diameter (mm)	Approximate Root Protection Radius (m)	Root Protection Area (m <sup>2</sup> )
1	Sycamore	590	7.2	163
2	Sycamore	560	6.9	150
3	English Oak	310	3.9	48
4	Holly	420	5.1	81
5	Apple	370	4.5	64
6	Sycamore	410	5.1	81
7	Beech	360	4.5	64
8	Beech	280	3.6	41
9	Beech	250	3.0	28
10	Sycamore	390	4.8	72
11	Sycamore	340	4.2	55
12	Sycamore	340	4.2	55
13	Beech	340	4.2	55
14	Beech	330	4.2	55
15	Beech	340	4.2	55
16	Sycamore	280	3.6	41
17	Beech	250	3.0	28
18	Sycamore	260	3.3	34
20	Beech	450	5.4	92
21	Beech	240	3.0	28
22	Sycamore	230	3.0	28
23	Beech	150	1.8	10
24	Norway Spruce	300	3.6	41
25	Ash	380	4.8	72
26	Beech	140	1.8	10
27	Beech	240	3.0	28
28	Beech	410	5.1	81
29	Beech	380	4.8	72
30	Beech	580	7.2	163
31	Beech	460	5.7	102
32	Beech	140	1.8	10
34	Beech	340	4.2	55
35	Buckeye	360	4.5	64
36	Buckeye	280	3.6	41
37	Beech	360	4.5	64
38	Beech	300	3.6	41
39	Beech	310	3.9	48
40	Buckeye	300	3.6	41
42	Horse Chestnut	440	5.4	92

**Table 3.4: RPA and Approximate Root Protection Radius of Category A, B and C Trees and Groups Surveyed (continues)**

Tree No.	Species	Diameter (mm)	Approximate Root Protection Radius (m)	Root Protection Area (m <sup>2</sup> )
43	Buckeye	440	5.4	92
44	Alder	370	4.5	64
45	Beech	190	2.4	18
46	Beech	140	1.8	10
47	Beech	340	4.2	55
48	Beech	180	2.4	18
49	Beech	540	6.6	137
50	Douglas Fir	670	8.1	206
51	Horse Chestnut	1040	12.6	499
G1	Mixed Species	1120	13.5*	573*
G2	Mixed Species	500	6.0*	113*
<b>Key:</b>  *: Around centre of each tree within group. 000: Estimated dimension.				

**Table 3.4 (cont'd): RPA and Approximate Root Protection Radius of Category A, B and C Trees and Groups Surveyed**

## 4. DISCUSSION

### 4.1 DESK STUDY

The desk study identified that no trees within the study area are subject to a Tree Preservation Order (TPO) and the study area is not situated within a Conservation Area.

### 4.2 TREE QUALITY

#### Retention Value

The initial stage of a tree survey in accordance to BS5837:2012 looks at the trees on the site in terms of life expectancy and condition. Trees are then categorised according to their retention value.

Category A trees are those that have been assessed as being of a high quality and value; significant amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in **Green** on the Tree Constraints Plan.

Category B trees are those that have been assessed as being of a moderate quality and value; amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in **Blue** on the Tree Constraints Plan.

Category C trees are those that have been assessed as being of a low quality and value; the loss of these specimens should not necessarily be considered as a constraint to development. These trees are shown in **Grey** on the Tree Constraints Plan

Category U trees are those that have been assessed as having no retention value; these trees should not be a material consideration in the planning process. These trees are shown in **Red** on the Tree Constraints Plan.

Category A, B or C trees are those that should be a material consideration in the planning process whilst Category U trees are those which would be lost in the short term for reasons connected to their physiological or structural condition and hence they should not be a consideration in the planning process.

Overall fifty-one trees and two groups of trees have been inspected in accordance with BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

A summary of the trees and groups in each of the four categories is given in Table 4.1.

BS5837:2012 Category	Tree Number
A	3, 25, 29, 30, 31, 34, 37, 38, 47, 50, 51, G1.
B	1, 2, 7, 8, 9, 13, 14, 15, 16, 17, 24, 27, 36, 40, 42, 44, 45, 48, 49, G2.
C	4, 5, 6, 10, 11, 12, 18, 20, 21, 22, 23, 26, 28, 32, 35, 39, 43, 46.
U	19, 33, 41.

**Table 4.1: Summary of Trees and Groups in BS5837:2012 Categories**

#### Physiological Condition

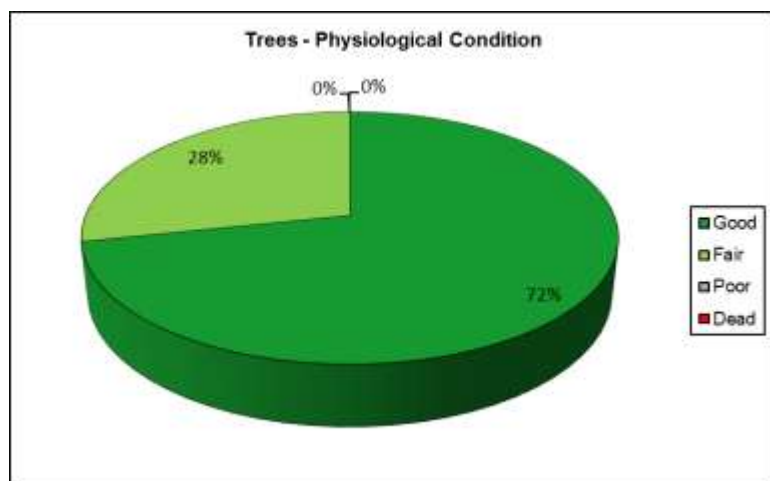
Trees considered to be in a good physiological condition are those with crown density and shoot extension growth levels within the expected ranges for their age and species. Generally these trees, subject to being of a suitable structural condition, can be expected to make a lasting contribution to the site. Additionally trees within the good condition class are likely to tolerate changes within their growing environment that occur as a result of development; as such their successful retention will be easier to achieve.

Trees considered to be in a fair physiological condition are those specimens exhibiting lower shoot extension growth and reduced crown density than would typically be expected. These specimens have a lower life

expectancy than those within the good condition class and will not tolerate significant changes as a result of development as well as those in the good condition class.

Trees considered to be in a poor physiological condition are those exhibiting crown and shoot dieback and significantly reduced crown density. Trees of a poor physiological condition are not likely to make a lasting contribution to the site and whilst their retention in the short term may be beneficial such retention will only be achievable if the trees are fully protected throughout development as they will not tolerate changes in their growing environment.

Chart 4.1 summarises the distribution of tree physiological condition across the study area.



**Chart 4.1: Tree Physiological Condition**

### Age Distribution

Those trees assessed as being young (Y) in age can generally be considered to have significant growth potential. Whilst these specimens are not likely to make a substantial contribution to the landscape character of the site at present they will, if retained, provide succession for the eventual removal of mature or over-mature trees as a result of declining physiological or structural condition.

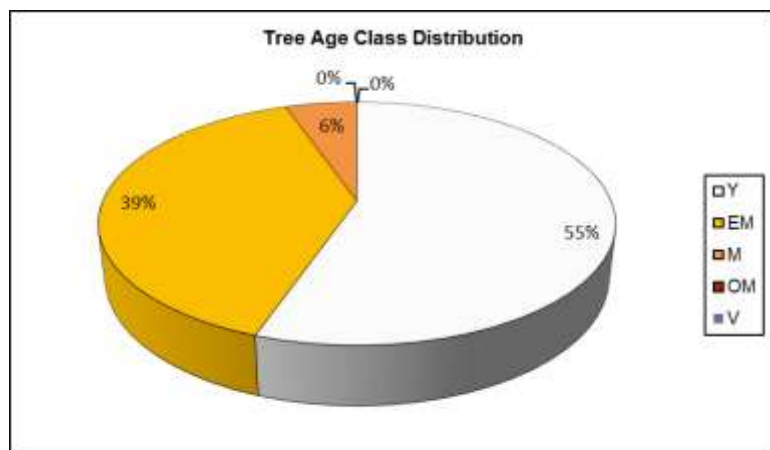
Early mature trees (EM) will generally make a significant contribution to the landscape character and appearance of the site and their retention will provide more immediate succession. These trees will also have significant growth potential.

Mature trees (M) are not considered to have significant future growth potential and have generally reached their maximum expected size for the location. These trees will generally make the highest contribution to the landscape contribution of the site however a tree stock over dominated by mature trees will require careful management to ensure that continuation of canopy cover can be achieved.

Over-mature trees (OM) do not have the potential to increase in size and may in fact reduce in size as their crowns begin to break up. These trees will often make a significant contribution to the landscape character of the site and are likely to have ecological value. However the retention of these trees within new development must be carefully planned as they are approaching the end of their useful life expectancy and they will often have structural defects. Where over-mature trees are to be retained in new development it is essential that access is available for their eventual removal.

Veteran trees (V) are those that show features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species. These trees have negligible potential to increase in size. Veteran trees are usually of a high ecological value and they will require sensitive management where they are to be retained in new development. As such it is again essential that they are located in areas where access is available to undertake management operations and where there is a reduced risk of harm occurring from failure of the trees.

Chart 4.2 shows the distribution of the age class of trees within the study area.



**Chart 4.2: Tree Age Class Distribution**

### Visual Amenity

A large horse chestnut (T51) was located outside the study area but overhanging along the southern boundary of the study area. This tree was noted to be significantly mature and in good condition and is therefore considered to have a high visual amenity value.

### Ecological Value

Generally speaking it is known that trees are of ecological value and that they fulfil an important role in the urban landscape. In particular it should be noted that trees may provide habitat for protected species, notably for birds and bats.

## **5. ARBORICULTURAL DESIGN GUIDANCE**

### **5.1 THE TREE CONSTRAINTS PLAN**

The Tree Constraints Plan (Drawing Number C120983-02-01 in Section 7) is designed to show the influence that the trees have upon the site by virtue of their size and position. The plan seeks to act as a design tool that shows both the above and below ground constraints presented by the trees. The plan shows the initial RPA which may be modified dependent on site conditions.

The information provided within this section of the report is to assist in the interpretation of the Tree Constraints Plan and aims to ensure that those trees selected for retention can be successfully integrated within the proposed development.

### **5.2 TREE RETENTION / REMOVAL**

The prioritisation for tree retention should be based upon the guidance contained within BS5837:2012. Category A trees should be seen as the highest priority for retention and Category C the lowest.

Category U trees have no retention value and in most circumstances such specimens will not be considered for retention within new development.

When considering which Category C trees to retain in the new development priority should be given to those trees that have been included within this category solely due to their having stem diameters of less than 150mm at 1.5m above ground level. These specimens are normally relatively young trees with future potential.

### **5.3 BELOW GROUND CONSTRAINTS**

#### **Root Protection Areas**

Root Protection Areas for each tree and group of trees surveyed have been determined in accordance with BS5837:2012 and a schedule of Root Protection Areas is detailed within this Report as Table 3.4.

Initial Root Protection Areas (RPA's) for the trees have been plotted onto the Tree Constraints Plan as circles, with the tree located centrally, extending to encompass the area of ground, and thus the rootable soil volume, required for protection.

It must be noted that there are areas on site where, due to the presence of existing structures and hard surfaces, tree root development will have been restricted as a result of reduced nutrient or moisture availability and a lack of provision for gaseous exchange. In such areas it may be appropriate to modify the shape of the RPAs, whilst not reducing their area, to take into account the likely root morphology and distribution of the affected trees. However, it is not a simple process to determine exactly where a tree's root system will extend to and whilst roots can generally be considered to be absent beneath substantial buildings, such as houses, they may well be present, if not abundant, beneath lighter structures and areas of hard surfacing.

Where possible all development, including new hard landscaping, shall be situated outside of the retained trees designated Root Protection Areas.

#### **Removal of Existing Hard Surfaces and Buildings**

As noted above there are areas on site where buildings and hard surfaces are present within the initial Root Protection Areas of trees on the site.

In addition to the effects that such construction may have upon the shape and location of the Root Protection Area of the tree the presence of existing construction within the trees initial RPA's is also of note. Removal of such construction, should it be required, has a greater potential to cause harm to the trees due to the need for works in close proximity to them.

Where existing hard surfaces are located within the Root Protection Areas of retained trees care should be taken in their removal and such works should be completed by hand and supervised by an Arboricultural Consultant.

Where existing buildings are located within the Root Protection Areas of retained trees, care shall be taken in their demolition and works should be completed from outside the RPA with buildings being pulled back away from the trees. Again it is recommended that such works are supervised by an Arboricultural Consultant.

### **New Hard Surfaces and Buildings within Root Protection Areas**

The construction of new hard surfaces and buildings around trees has the potential to cause soil compaction, to cause root damage and to reduce nutrient and moisture availability to tree roots to the detriment of tree health and vitality.

To minimise harm occurring as a result of such works, where installation of new hard surfacing is proposed within the Root Protection Areas of retained trees, it must be installed in accordance with no-dig principles.

Should new buildings be proposed within the RPA of an existing tree it will be necessary to take steps to minimise the potential impact to the tree to allow construction. In this respect the guidance contained within BS5837:2012 at clause 7.5 should be considered. This states: *"The use of traditional strip footings can result in extensive root loss and should be avoided. The insertion of specially engineered structures within RPAs may be justified if this enables the retention of a good quality tree that would otherwise be lost (usually Categories A or B). Designs for foundations that would minimize adverse impact on trees should include particular attention to existing levels, proposed finished levels and cross-sectional details. In order to arrive at a suitable solution, site-specific and specialist advice regarding foundation design should be sought from the project arboriculturist and an engineer. In shrinkable soils, the foundation design should take account of the risk of indirect damage."*

### **Building Foundations**

Any structures built on the site should comply with the foundation depths for buildings near or adjacent to trees and allow for the potential size of the trees at maturity. The soil types throughout the site will need investigating and appropriate measures taken.

If trees are removed across the site the potential for soil heave should be assessed and foundations designed accordingly (see NHBC Chapter 4.2, 2014).

### **Service Runs**

All service runs, utilities and similar infrastructure should take note of trees and allow for working methods that will minimise damage to trees by referring to documents such as NJUG Volume 4 - Guidelines for the planning, installation and maintenance of utility services in proximity to trees (National Joint Utilities Group 2007).

## **5.4 ABOVE GROUND CONSTRAINTS**

### **Existing Canopy Spreads**

The existing canopy spreads of the trees on site are shown on the Tree Constraints Plan (Drawing Number C120983-02-01, Section 7).

The current spread of a tree is a constraint due to its dominance, size and movement in strong winds. It will typically be unacceptable to design any built development within the current spread of a tree.

Where built development is proposed in close proximity to existing trees consideration should be given to the amount of working space required to allow its construction.

Additionally where development is proposed in close proximity to the existing canopy spread of a tree the likelihood of leaf or fruit fall or an accumulation of honeydew causing nuisance must be given.

It should also be noted that where the Root Protection Areas for retained trees do not extend to the edge of existing canopy spreads it is possible that those parts of the trees extending beyond the RPA may sustain damage during construction.

Where this occurs there are two primary options available to manage and minimise the potential for damage to tree canopies during development and these may be used singularly or in combination.

The first option is to create a Construction Exclusion Zone (CEZ), by the erection of protective fencing, around the full extent of the tree's canopy. The second is to undertake pre-development pruning works to the trees to reduce the potential for branch damage to occur.

### **Future Tree Growth**

Some of the trees surveyed are not yet mature and they have the potential for future growth. Where these are to be retained consideration of their ultimate crown spread should be given as future branch growth may result in interference with the proposed development, damage to branches and the need for a tree pruning regime.

Within the area of maximum branch spread, construction activities should be restricted for the long-term health and vigour of the trees. It is considered that within the area of maximum branch spread single storey buildings and the installation of hard surfaces would be an appropriate form of construction, however should car parking be proposed beneath the ultimate spread of trees the likelihood of fruit fall, leaf litter or sap exudation causing a nuisance must be considered.

In addition it is important to consider the likelihood of damage to trees or structures that may be caused by continuous whipping of branches in windy conditions. In such circumstances branches may have to be repeatedly cut back which will introduce wounds in the tree and may spoil its form or shape. In general terms trees should not be retained upon the basis that their ultimate branch spread can be significantly controlled by periodic pruning.

## 6. RECOMMENDATIONS

The following site-specific recommendations are made:

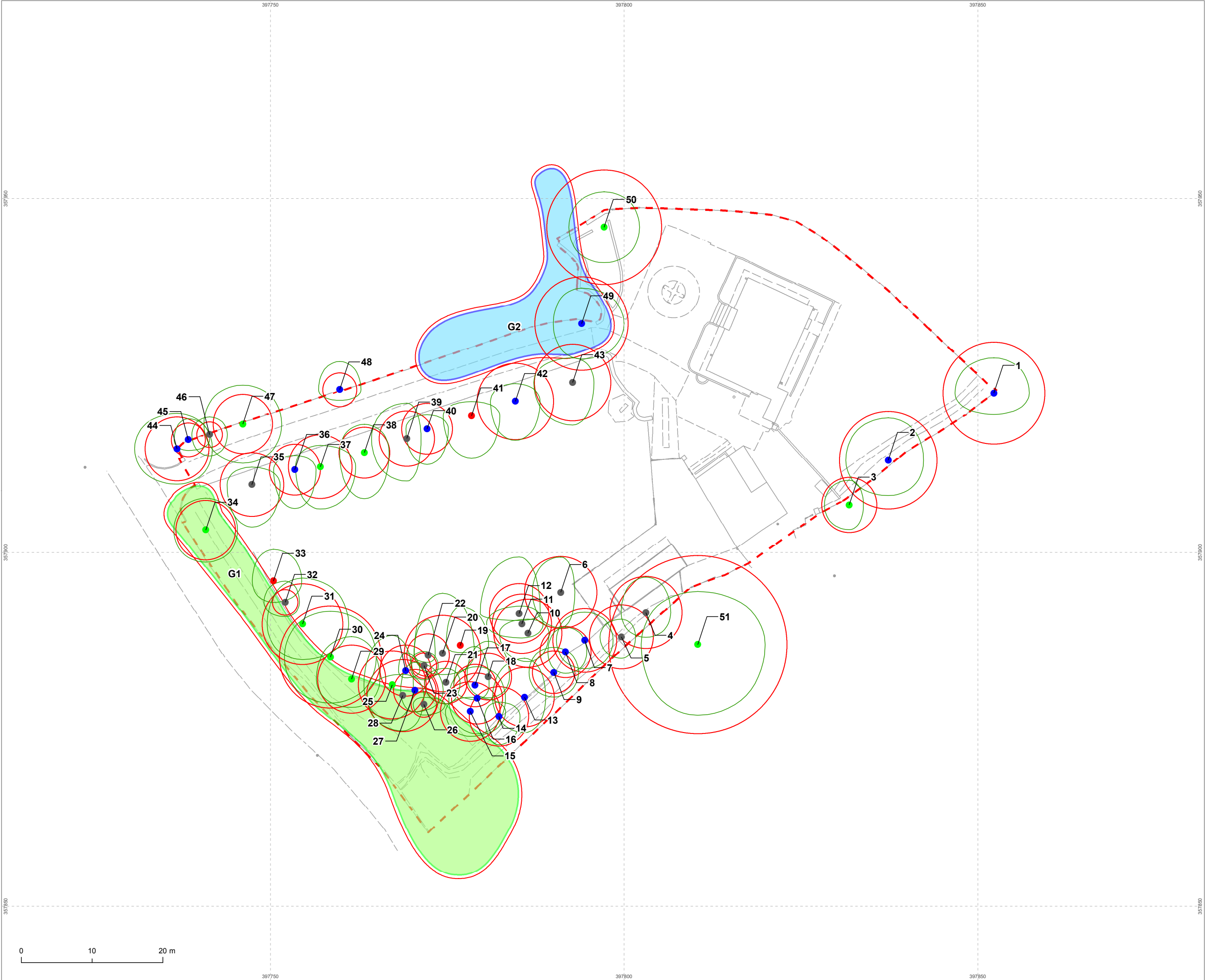
- The retention of the Category A and B trees across the site should be considered as a priority as these specimens are likely to make a substantial contribution to the continued landscape character of the site.
- The retention of the Category C trees should be considered where possible though it must be noted that these specimens have a low retention value and are likely to only offer a temporary contribution to the landscape character of the site.
- The removal of all category U specimens is recommended as these only offer a limited contribution to the study area due to mammal damage and wounds on the main stem, windsnap damage, bleeding cankers and other general signs of decline.
- In general all new development shall be located outside of the RPA or canopy spread of any retained tree.
- Where any new development is proposed within the RPA or canopy spread of a retained tree it must be constructed in such a way that damage of the trees root system or crown can be avoided.
- Should new development require works within the RPA of any retained tree an Arboricultural Method Statement should be prepared to set out what steps are to be taken to protect the trees during the course of development.
- Any proposed new planting should consist of native and wildlife attracting species with a robust five year management plan to assist with the development proposal and to offer mitigation for any tree loss.
- This Arboricultural Survey is valid for a period of 12 months. If works are not commenced within this time period then it is advised that the trees are re-inspected to ensure no significant defects have developed since the original survey.

The following generic guidance should also be taken into account during the construction phase of any development, or significant engineering:

- Any trees or groups that are to be retained should be adequately protected by Heras fencing, in line with BS5837:2012, extending at least to the Root Protection Radius, to prevent accidental damage by vehicles or contractors (see Table 3.4, page 15-16, for RPA data for each tree).
- All tree works are to be carried out by a competent and qualified arborist to BS3998:2010 standards.
- Tree protection should be included in the induction and/or briefing sessions by the contractors to site personnel.
- Soil compaction, from the storage of large quantities of materials and plant tracking, may result in changes to soil permeability and local drainage. This may lead to waterlogging or loss of soil crumb structure. These effects may in turn lead to root asphyxiation and root death, a cause of instability and or mortality in trees. For this reason, heavy machinery and the storage of materials should be excluded from the crown and Root Protection Radius of all trees.
- The recommendations of BS5837:2012 and National Joint Utilities Group Volume 4 (Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees) (as appropriate to operations) should be followed when working close to trees.
- If works take place during the bird breeding season, usually from March to September inclusive, trees and hedgerows should be checked for nesting birds. If any trees are to be removed this should be done outside the breeding season or in the presence of a suitably qualified ecologist.
- Mature trees often contain cavities, hollows, peeling bark or woodpecker holes which provide potential roosting locations for bats. Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. Consequently causing damage to a bat roost constitutes an offence. As such prior to undertaking works to trees a check to see if they are being used for bat roosting should be undertaken by a suitably qualified and experienced ecologist.

## **7. DRAWINGS**

Drawing Number C120983-02-01 – Tree Constraints Plan



C120983-02-01

Legend

●

Category A tree

●

Category B tree

●

Category C tree

●

Category U tree

Category A group

Category B group

Current canopy extent

Root Protection Area

Site boundary

The original of this drawing was produced in colour -  
a monochrome copy should not be relied upon

Project

Cholpesdale Farm, Abbey Green Road, Leek

Drawing

Tree Constraints Plan

Client

Hewitt & Carr Architects

Drawing Number

C120983-02-01

Revision

00

Scale @ A3

1:500

Date

March 2016

Approved By

DM

Drawn By

RP

MIDDLEMARCH ENVIRONMENTAL

Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ  
T:01676 525880 F:01676 521400  
E:admin@middlesmarch-environmental.com

This map is reproduced from the Ordnance Survey material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office. © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution of civil proceedings.  
Licence Number: 100040519

## REFERENCES AND BIBLIOGRAPHY

- Arboricultural Advisory Information Services. (2007). 'Practice Note 12. Through Trees to Development'.
- British Standards Institution. (2012). *British Standard 5837:2012, Trees in relation to design, demolition and construction – recommendations*. British Standards Institution, London.
- British Standards Institution. (2010). *British Standard 3998:2010, Trees work– recommendations*. British Standards Institution, London.
- Johnson, O. and More, D. (2004). *Tree Guide*. Collins, London.
- Lonsdale, D. (1999). *Principles of Tree Hazard Assessment and Management*. DETR, London.
- Massey, S. (2016) *Pers. Comm.* Trees and Woodlands Officer. Staffordshire Moorlands District Council.
- National House Building Council. (2014). NHBC Standards 2014: Chapter 4.2 - Building Near Trees. NHBC, Milton Keynes.
- National Joint Utilities Group. (2007). *Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees*. NJUG, London.