APPENDIX 2
PRE-DEVELOPMENT ARBORICULTURAL SURVEY

CAMDEN GOODSYARD, CAMDEN

PRE-DEVELOPMENT ARBORICULTURAL SURVEY

A Report to: Safeway Stores Limited and BDW Trading Limited

Report No: RT-MME-122107-01 Rev D

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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	28/04/2016	Dean Moore (Arboricultural Project Officer)	Ed Lusk HND, PTI (Principal Arboricultural Consultant)	Dr Philip Fermor CEnv, MCIEEM (Managing Director)
Rev A	15/06/2016	Dean Moore (Arboricultural Project Officer)	Lucy Philpott MSc. MArbor A CEnv, MCIEEM (Client Relationship Manager)	Dr Philip Fermor CEnv, MCIEEM (Managing Director)
Rev B	31/10/2016	Dean Moore (Arboricultural Project Officer) and Ben Jones MSc GradCIEEM (Arboricultural Support Officer)	Edmund Lusk HND PTI (Principal Arboricultural Consultant)	Dr Philip Fermor CEnv, MCIEEM (Managing Director)
Rev C	15/11/2016	Dean Moore (Arboricultural Project Officer) and Ben Jones MSc GradCIEEM (Arboricultural Support Officer)	Edmund Lusk HND PTI (Principal Arboricultural Consultant)	Dr Philip Fermor CEnv, MCIEEM (Managing Director)
Rev D	21/11/2016	Dean Moore (Arboricultural Project Officer) and Ben Jones MSc GradCIEEM (Arboricultural Support Officer)	Edmund 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 Camden Goodsyard in Camden. It is understood that the site will be the subject of a planning application for a residential led, mixed-use development. To fulfil the project brief a desk study and a field survey of the trees present on site were undertaken in April 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 north-western corner of the study area is situated within the Regents Canal Conservation Area.

Dean Moore (Arboricultural Project Officer) undertook the field survey in April 2016. The survey identified that the site contains a number of young trees which are predominately in a good condition.

The most significant trees recorded within the survey were a number of London Plane (*Platanus x acerifolia*) trees located along the southern boundary, as well as within the centre and in the north-west corner of the study area. All these specimens were considered to be of a high, Category A, retention value.

In addition to these specimens, a number of London Plane, Elm (*Ulmus* sp.) and Rowan (*Sorbus aucuparia*) trees deemed to be of a low, Category C, retention value were noted within the study area. These specimens were less significant in the local landscape and many exhibited a number of structural and physiological defects. These defects, including strimmer damage to main stems, non-occluding wounds, presence of dieback in crowns, presence of deadwood and other general signs of decline, have limited the likely future potential of these specimens.

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

1. INTRODUCTION

1.1 PROJECT BRIEF

In April 2016, Safeway Stores Limited and BDW Trading Limited commissioned Middlemarch Environmental Ltd to undertake an Arboricultural Survey of trees growing on land at, and adjacent to, Camden Goodsyard in Camden.

It is understood that the proposed development of the site is the construction of a residential-led mixed-use development, including a supermarket, petrol filling station, and office and retail buildings. The development will also include new access roads, as well as hard and soft landscaping works.

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 also been commissioned to undertake a number of assessment for Barratt London at this site. The findings of these surveys are detailed in Report Numbers:

- Preliminary Ecological Assessment (RT-MME-122085-01);
- Preliminary Roost Assessment of structures and trees (RT-MME-122085-02); and
- Arboricultural Impact Assessment (RT-MME-122107-02).

1.2 SITE DESCRIPTION

The site under consideration, hereinafter referred to as the study area, is an irregular shaped parcel of land, approximately 3.3 ha in size, which is located adjacent to Juniper Crescent to the north-west and Gilbeys Yard to the south in Camden at Ordnance Survey Grid Reference TQ 2843 8415.

The study area is located within a predominately residential area on the south-western fringes of Camden Town in central London. To the north and south the surrounding area is dominated residential developments.

The northern boundary of the study area is delineated by railway lines beyond which is Chalk Farm Road. To the south-east the study area runs into adjacent residential dwellings beyond which is Gilbeys Yard, whilst to north-west the study area abuts Juniper Crescent. The south-western boundary of the study area is defined by railway lines beyond which are residential developments in the Primrose Hill estate. Regents Canal is located 50 m south of the study area at its nearest point.

The north-western portion of the study area is currently the site of a petrol filling station off Chalk Farm Road and is dominated by the existing building and hardstanding. The southernmost portion of the study area is dominated by an existing double-height Morrisons supermarket and associated hard and soft landscaping. All notable vegetative features are located adjacent to or beyond the boundaries of the study area.

The topography of the study area is generally varied.

Ninety three trees and one group have been surveyed. The location of the trees surveyed can be found on Middlemarch Environmental Ltd Drawing Number C122107-01-01 Rev B, contained within Section 7 of this report.

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

Rav Curry (Camden Borough Council, 2016, *Pers. Comm*.) confirmed via telephone on the 28th April 2016 that there are no current Tree Preservation Orders within or closely surrounding the study area.

However the northern section of the study area, comprising the petrol station north of the main Morrisons building, is situated within the Regents Canal Conservation Area. The Conservation Area is also located adjacent to the northern and eastern boundaries of the study area. No works may be carried out on trees within the Conservation Area without prior submission of a Section 211 notice to the Local Planning Authority giving six weeks' notice of the proposed works.

3.2 WEATHER CONDITIONS AND PERSONNEL

Dean Moore (Arboricultural Project Officer) completed the survey on 20th April 2016. The weather conditions at the time of the survey are shown in Table 3.1.

Conditions	Result
Temperature (°C)	12
Cloud Cover (%)	10
Precipitation	Nil
Wind Speed (Beaufort)	F 0-1

Table 3.1: Weather Conditions at Time of Survey

3.3 SURVEY RESULTS

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

Common Name	Scientific Name
Apple	*Malus* sp.
Ash	*Fraxinus excelsior*
Common lime	*Tilia x europaea*
Elm	*Ulmus* sp.
Flowering cherry	*Prunus* sp.
Hornbeam	*Carpinus betulus v Fastigiata*
London Plane	*Platanus x acerifolia*
Norway maple	*Acer platanoides*
Rowan	*Sorbus aucuparia*
Silver birch	*Betula pendula*
Sumach	*Rhus typhina*
Whitebeam	*Sorbus aria*

Table 3.2: Tree and Shrub 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	Elm	1	170	8.0	2.0 S	3.5	3.5	3.5	3.5	2.0	2.0	2.0	2.0	Y	G	G	20+	B1	• Young tree in good health. • Exposed roots. • Wound present on main stem at 0.0 to 0.5 m from ground level; wound is occluding.	-
2	Elm	1	130	7.0	2.5 N	3.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	Y	F	G	20+	C1	• Young tree in good health. • Exposed roots. • Major deadwood present. • Crossing branches.	-
3	Elm	1	140	7.0	2.0 W	3.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	Y	F	G	20+	C1	• Young tree in good health. • Exposed roots. • Sparse crown. Major deadwood present. • Tree showing signs of decline.	-
4	Elm	1	150	8.0	2.5 NE	3.5	3.0	3.0	2.5	2.0	2.0	2.0	2.0	Y	G	G	20+	C1	• Young tree in good health. • Exposed roots.	-
5	Elm	2	130	6.0	2.5 N	3.5	2.0	3.5	3.0	2.5	2.5	2.5	2.5	Y	F	F	20+	C1	• Exposed roots. • Sparse crown. • Bifurcate at 1.5 m from ground level. • Major deadwood present. • Tree showing signs of decline.	-
6	Ash	2	110	5.5	2.0 NW	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	Y	F	F	10+	C1	• Bifurcate at ground level. • Wounds present on main stem at multiple locations. • Generally a poor specimen.	-
7	Elm	1	180	8.5	2.0 SE	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	G	G	20+	B1	• Young tree in good health. • Exposed roots. • Occluding wounds present on main stem at multiple locations.	-
8	Elm	1	40	4.0	2.0 S	0.5	0.5	0.5	0.5	2.0	2.0	2.0	2.0	Y	G	G	40+	C1	• Young tree in good health • Tree stake and tie present.	-

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							
9	Apple	2	230	8.5	2.5 SE	4.0	4.0	4.0	4.0	2.5	2.5	2.5	2.5	Y	G	F	20+	B1	• Bifurcate at 1.0 m from ground level. • Main union is included. • Epicormic growth on main stem and in crown. • Crossing branches.	-
10	Elm	1	40	3.0	1.5 E	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	Y	G	G	40+	C1	• Young tree in good health. • Tree stake and tie present. • Strimmer damage present at base.	Spiral guard or mulch circle.
11	Elm	1	40	3.0	0.5 S	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	Y	G	G	40+	C1	• Young tree in good health. • Tree stake and tie present. • Strimmer damage present at base.	Spiral guard or mulch circle.
12	London plane	1	70	5.5	2.0 N	2.5	2.0	1.0	1.5	2.0	3.0	3.0	3.0	Y	F	F	20+	C1	• Tree stake and tie present. • Irregular crown and form. • Strimmer damage present at base.	Spiral guard or mulch circle. Remove tree stake.
13	London plane	1	60	5.0	2.0 S	2.0	2.0	2.0	1.0	2.5	2.5	2.5	2.5	Y	F	F	20+	C1	• Tree stake and tie present. • Strimmer damage present at base	Spiral guard or mulch circle. Remove tree stake.
14	London plane	1	350	12.0	3.5 N	5.5	4.5	4.5	5.0	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Previous work: crown lift, wounds are occluding. • Crown touching lamppost. • Hardstanding present within RPA of tree.	-
15	London plane	1	180	10.0	3.0 E	3.0	3.0	2.5	2.5	3.0	3.0	3.0	3.0	Y	G	G	40+	B1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-

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							
16	London plane	1	200	10.0	3.0 NE	4.0	4.0	4.0	4.0	2.5	2.5	2.5	2.5	Y	G	F	20+	B1	• Young tree in good health. • Wound present on main stem at ground level; decay present, wound not occluding. • Hardstanding present within RPA of tree.	-
17	London plane	1	240	10.0	3.0 S	4.0	4.0	4.0	3.5	3.0	3.0	3.0	3.0	Y	G	G	40+	B1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-
18	London plane	1	450	15.0	4.5 S	6.0	6.0	6.0	6.0	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-
19	London plane	1	450	14.0	5.0 W	6.0	6.0	6.0	5.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-
20	London plane	1	260	12.0	3.5 NE	3.5	3.5	3.5	3.5	2.5	2.5	2.5	2.5	Y	G	G	40+	B1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-
21	London plane	1	90	6.5	2.0 S	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	Y	G	G	40+	C1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-
22	London plane	1	140	8.0	2.0 NE	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-

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							
23	London plane	1	150	8.0	2.0 NE	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-
24	London plane	1	130	8.0	2.0 N	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	G	G	40+	C1	• Young tree in good health. • Previous work: crown lift, wounds not occluding. • Hardstanding present within RPA of tree.	-
25	London plane	1	150	9.0	2.0 N	3.5	3.5	3.5	3.5	2.5	2.5	2.5	2.5	Y	G	G	40+	C1	• Limited inspection due to vegetation. • Young tree in good health. • Hardstanding present within RPA of tree.	-
26	London plane	1	130	8.0	2.5 SE	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	Y	G	G	40+	C1	• Limited inspection due to vegetation. • Young tree in good health. • Hardstanding present within RPA of tree.	-
27	London plane	1	140	7.0	2.0 S	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	Y	G	G	40+	C1	• Limited inspection due to vegetation. • Young tree in good health. • Hardstanding present within RPA of tree.	-
28	London plane	1	130	7.0	2.0 E	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	Y	G	G	40+	C1	• Limited inspection due to vegetation. • Young tree in good health. • Hardstanding present within RPA of tree.	-
29	Norway maple	1	210	9.0	3.0 NE	3.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	Y	G	G	20+	B1	• Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
30	Norway maple	1	140	8.0	2.0 S	2.5	1.5	2.5	1.5	3.0	3.0	3.0	3.0	Y	G	G	20+	C1	• Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-

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							
31	Norway maple	1	170	7.0	2.0 SW	2.5	2.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	G	G	20+	B1	• Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
32	London plane	1	170	9.0	3.0 NE	3.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	Y	G	G	20+	B1	• Previous crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
33	London plane	1	220	8.5	3.0 SW	4.0	3.0	4.0	4.0	3.0	2.5	3.0	3.0	Y	G	G	40+	B1	• Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-
34	London plane	1	190	9.5	3.0 NW	4.0	4.5	4.0	4.5	3.0	3.0	3.0	3.0	Y	G	G	40+	B1	• Occluding wound present on main stem at 0.5 m from ground level; potentially caused by cars. • Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-
35	London plane	1	160	8.0	2.5 SE	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	G	G	40+	B1	• Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-
36	London plane	1	190	7.0	3.0 S	4.0	4.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	F	G	20+	B1	• Tear wound present on main stem, wound is occluding. • Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-
37	London plane	1	170	9.0	3.0 E	4.0	4.0	3.0	2.0	3.0	3.0	3.0	4.0	Y	G	G	40+	B1	• Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-

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							
38	London plane	1	280	10.5	3.0 NW	5.0	3.0	4.5	4.5	3.0	3.0	3.0	3.0	Y	G	G	40+	B1	• Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-
39	London plane	1	300	11.0	3.5 NE	5.0	5.0	5.0	4.0	3.0	3.0	3.0	4.0	Y	G	G	40+	B1	• Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-
40	London plane	1	330	11.0	3.5 SE	5.0	5.0	5.0	4.5	3.0	3.0	3.0	3.0	Y	G	G	40+	B1	• Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree. • Crown touching power line.	-
41	London plane	1	280	11.5	3.0 E	6.0	5.0	6.0	5.0	4.0	4.0	4.0	4.0	Y	G	G	40+	B1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Crown touching power line. • Hardstanding present within RPA of tree.	-
42	London plane	1	320	11.5	3.5 NW	6.0	4.5	6.0	6.0	4.0	3.0	3.0	3.0	Y	G	G	40+	B1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
43	Common lime	1	90	5.0	2.0 N	1.0	0.5	1.0	1.0	2.0	2.0	2.0	2.0	Y	G	G	40+	C1	• Young tree in good health. • Previous work: crown lift, wounds have fully occluded. • Hardstanding present within RPA of tree.	-

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							
44	Common lime	1	90	4.5	1.5 S	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	Y	G	G	40+	C1	• Young tree in good health. • Previous work: crown lift, wounds have fully occluded. • Hardstanding present within RPA of tree.	-
45	Norway maple	1	160	8.0	2.0 S	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	Y	G	G	20+	B1	• Young tree in good health. • Previous work: crown lift, wounds have fully occluded. • Hardstanding present within RPA of tree.	-
46	Norway maple	1	190	8.0	2.5 E	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	Y	G	G	20+	B1	• Young tree in good health. • Previous work: crown lift, wounds have fully occluded. • Hardstanding present within RPA of tree.	-
47	London plane	1	220	10.0	3.5 S	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds have fully occluded. • Wound present on main stem at 0.0 to 0.5 from ground level. • Hardstanding present within RPA of tree.	-
48	London plane	1	180	9.0	3.0 E	3.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	Y	G	G	20+	B1	• Young tree in good health. • Previous work: crown lift, wounds have fully occluded. • Hardstanding present within RPA of tree.	-
49	London plane	1	190	10.0	3.0 N	4.0	3.5	4.0	4.0	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-

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							
50	London plane	1	360	13.0	3.0 SE	5.5	5.5	5.0	5.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Occluding wound present on main stem at 0.5 m from ground level. • Hardstanding present within RPA of tree.	-
51	London plane	1	210	12.0	4.0 W	3.0	3.0	4.5	3.0	3.0	3.0	2.5	3.0	Y	F	G	20+	B1	• Northern crown is showing signs of dieback. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
52	London plane	1	250	11.0	3.0 W	5.0	5.0	5.0	4.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
53	London plane	1	260	10.0	3.0 W	5.0	5.0	4.0	5.0	3.0	3.0	4.0	3.0	Y	F	G	20+	C1	• Sparse crown. • Previous work: crown lift, wounds are occluding. • Tree is showing signs of decline. • Hardstanding present within RPA of tree.	-
54	Norway maple	1	170	7.5	2.5 S	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	Y	G	G	20+	B1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
55	London plane	1	310	11.0	3.5 E	5.5	5.5	5.5	5.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Crown touching lamppost. • Hardstanding present within RPA of tree.	-

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							
56	London plane	1	310	11.0	3.0 S	6.0	5.5	6.0	5.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Occluding wound present at ground level. • Hardstanding present within RPA of tree.	-
57	London plane	1	450	12.0	3.5 N	7.0	7.0	7.0	7.0	3.0	3.0	2.5	3.0	Y	G	G	40+	A1	• Previous work: crown lift, wounds are occluding. • Good specimen. • Hardstanding present within RPA of tree.	-
58	London plane	1	110	8.0	3.0 N	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	Y	G	G	20+	C1	• Young tree in good health. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
59	London plane	1	140	8.0	2.5 N	3.0	2.0	1.5	2.0	3.0	3.0	3.0	3.0	Y	G	G	20+	C1	• Previous work: crown lift, wounds are occluding. • Young tree in good health. • Hardstanding present within RPA of tree.	-
60	London plane	1	180	8.0	3.5 SW	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	Y	F	G	10+	C1	• Sparse crown. • Previous work: crown lift, wounds are occluding. • Small branches hanging in crown. • Tree is showing signs of decline. • Hardstanding present within RPA of tree.	-
61	London plane	1	180	8.0	3.0 S	3.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	Y	F	G	10+	C1	• Sparse crown. • Previous work: crown lift, wounds are occluding. • Small branches hanging in crown. • Tree is showing signs of decline. • Hardstanding present within RPA of tree.	-

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							
62	London plane	1	280	14.0	3.0 W	6.0	6.0	6.0	4.0	2.5	2.5	2.5	2.5	Y	G	G	40+	A1	• Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
63	London plane	1	410	14.0	3.0 W	6.5	6.5	6.5	6.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Previous work: crown lift, wounds are occluding. • Good specimen. • Hardstanding present within RPA of tree.	-
64	London plane	1	120	6	3.5 E	2.0	2.0	2.0	2.0	3.5	3.5	3.5	3.5	Y	P	F	10+	C1	• Generally a poor specimen. • Sparse crown. • Tree showing signs of decline. • Hardstanding present within RPA of tree.	-
65	London plane	1	200	6.0	2.0 S	3.0	3.0	2.5	2.5	3.0	3.0	3.0	3.0	Y	P	F	<10	U	• Tree is in heavy decline. • Tree has grown over fence. • Major and minor deadwood present. • Hardstanding present within RPA of tree.	Remove tree.
66	London plane	1	120	5.0	2.0 E	3.0	2.5	1.5	1.5	3.0	3.0	3.0	3.0	Y	F	F	10+	C1	• Young tree in fair condition. • Hardstanding present within RPA of tree.	-
67	London plane	1	200	9.5	3.0 E	3.5	3.5	3.5	3.5	2.5	2.5	2.5	2.5	Y	G	G	20+	B1	• Young tree in good condition. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
68	London plane	1	200	9.5	2.5 W	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	G	G	20+	B1	• Young tree in good condition. • Previous work: crown lift, wounds are occluding. • Crossing branches. • Hardstanding present within RPA of tree.	-

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							
69	London plane	1	150	8.0	2.5 NE	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	Y	G	G	20+	C1	• Young tree in good condition. • Hardstanding present within RPA of tree.	-
70	London plane	1	150	9.0	2.5 S	2.5	3	3	2.5	2.5	2.5	2.5	2.5	Y	G	G	20+	C1	• Young tree in good condition. • Hardstanding present within RPA of tree.	-
71	London plane	1	340	10.5	2.5 NW	4.5	4.5	4.5	4.5	2.5	2.5	2.5	2.5	Y	G	G	40+	A1	• Good specimen. • Previous work: crown lift, wounds are occluding. • Hardstanding present within RPA of tree.	-
72	Rowan	1	120	5.5	2.5 N	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	Y	D	D	-	U	• Dead tree.	Remove tree.
73	Rowan	1	90	5.0	2.0 NE	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	Y	G	G	10+	C1	• Tree showing signs of decline. • Generally a poor specimen. • Damage to main stem present. • Hardstanding present within RPA of tree.	-
74	Norway maple	1	230	9.0	2.5 S	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	Y	G	G	40+	A1	• Trifurcate at 2.0 m from ground level. • Previous work: crown lift, wounds are occluding. • Generally a good specimen. • Exposed roots. • Hardstanding present within RPA of tree.	-
75	Silver birch	1	100	6.0	2.0 S	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0	Y	F	F	10+	C1	• Sparse crown. • Generally a poor specimen. • Hardstanding present within RPA of tree.	-

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							
76	London plane	1	80	5.0	1.5 NW	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	Y	G	G	40+	C1	• Young tree in good health. • Tree stake and tie present. • Hardstanding present within RPA of tree.	Remove tree stake.
77	Norway maple	1	50	5.0	1.5 W	0.5	0.5	0.5	1.0	2.0	2.0	2.0	2.0	Y	F	F	10+	C1	• Tree stake and tie present. • Sparse crown. • Tree has poor form. • Hardstanding present within RPA of tree.	Remove tree stake.
78	Norway maple	1	50	5.0	1.0 N	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	Y	F	F	10+	C1	• Tree stake and tie present. • Sparse crown. • Tree has poor form. • Generally a poor specimen. • Hardstanding present within RPA of tree.	-
79	Ash	1	120	6.0	1.5 S	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	Y	G	G	10+	C1	• Young tree in good health. • Hardstanding present within RPA of tree.	-
80	Elm	1	140	7.0	1.0 W	2.5	2.5	2.5	2.5	1.5	1.5	1.5	1.5	Y	G	G	40+	C1	• Young tree in good health. • Good specimen. • Hardstanding present within RPA of tree.	-
81	Whitebeam	1	110	6.5	2.0 W	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	Y	F	F	10+	C1	• Vandalism present; branches have been broken off. • Hardstanding present within RPA of tree.	-
82	Elm	1	50	5.0	2.0 N	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	Y	G	G	40+	C1	• Young tree in good health. • Tree stake and tie present. • Hardstanding present within RPA of tree.	-

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							
83	London plane	1	60	5.5	1.5 E	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	Y	G	G	40+	C1	• Young tree in good health. • Tree stake and tie present. • Hardstanding present within RPA of tree.	-
84	Common lime	1	60	5.5	1.5 E	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	Y	G	G	40+	C1	• Vandalism present; branches have been broken off. • Young tree in good health. • Tree stake and tie present. • Hardstanding present within RPA of tree.	-
85	Elm	1	60	5.0	2.0 SW	0.5	0.5	0.5	0.5	1.5	1.5	1.5	1.5	Y	G	G	40+	C1	• Young tree in good health. • Tree stake and tie present. • Hardstanding present within RPA of tree.	-
86	Elm	1	50	5.0	2.0 S	0.5	0.5	0.5	0.5	1.5	1.5	1.5	1.5	Y	G	G	40+	C1	• Young tree in good health. • Tree stake and tie present. • Hardstanding present within RPA of tree.	-
87	Hornbeam	1	100	5.0	1.0 S	2.5	2.5	2.5	2.5	0.5	0.5	0.5	0.5	Y	G	G	40+	C1	• Young tree in good health. • Hardstanding present within RPA of tree.	-
88	Hornbeam	1	90	5.0	0.5 S	1.5	1.5	1.5	1.5	0.5	0.5	0.5	0.5	Y	G	G	40+	C1	• Young tree in good health. • Hardstanding present within RPA of tree.	-
89	Flowering cherry	1	160	6.5	2.0 N	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	Y	G	G	20+	B1	• Young tree in good health. • Crossing branches. • Hardstanding present within RPA of tree.	-

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							
90	London plane	1	310	9.5	3.0 W	4.0	4.0	3.5	4.0	4.5	4.5	4.5	4.5	Y	G	G	40+	A1	• Tree is located off-site but canopy overhangs study area. • Tree has recently been pollarded to old pollard ears. • Tree generally in good health. • Hardstanding present within RPA of tree.	-
91	London plane	1	320	9.5	2.5 E	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	Y	G	G	40+	A1	• Tree is located off-site but canopy overhangs study area. • Tree has recently been pollarded to old pollard ears. • Tree generally in good health. • Hardstanding present within RPA of tree.	-
92	London plane	1	320	9.5	3.0 SE	3.0	3.0	2.0	2.0	4.5	4.5	4.5	4.5	Y	G	G	40+	A1	• Tree is located off-site but canopy overhangs study area. • Tree has recently been pollarded to old pollard ears. • Tree generally in good health. • Hardstanding present within RPA of tree.	-
93	London plane	1	350	9.5	3.0 W	3.0	3.0	2.5	2.5	4.5	4.5	4.5	4.5	Y	G	G	40+	A1	• Tree is located off-site but canopy overhangs study area. • Tree has recently been pollarded to old pollard ears. • Tree generally in good health. • Hardstanding present within RPA of tree.	-

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							
G1	*Rhus typhina*	1	40 - 100	1.5 - 3.0	0.5 S	2.0	2.0	2.0	2.0	0.5	0.5	0.5	0.5	Y	F	F	20+	C2	• Dead and dying trees present.	-

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
D: Dead = dead tree

Structural Condition
G: Good = no structural defects
F: Fair = remedial structural defects
P: Poor = significant structural defects
D: Dead = dead tree major structural defects

000: Estimated dimension due to access restrictions/vegetation
RPA: Root Protection Area

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 and 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^2)
1	Elm	170	2.1	14
2	Elm	130	1.8	10
3	Elm	140	1.8	10
4	Elm	150	1.8	10
5	Elm	130	1.8	10
6	Ash	110	1.5	7
7	Elm	180	2.4	18
8	Elm	40	0.9	3
9	Apple	230	3.0	28
10	Elm	40	0.9	3
11	Elm	40	0.9	3
12	London plane	70	0.9	3
13	London plane	60	0.9	3
14	London plane	350	4.2	55
15	London plane	180	2.4	18
16	London plane	200	2.4	18
17	London plane	240	3.0	28
18	London plane	450	5.4	92
19	London plane	450	5.4	92
20	London plane	260	3.3	34
21	London plane	90	1.2	5
22	London plane	140	1.8	10
23	London plane	150	1.8	10
24	London plane	130	1.8	10
25	London plane	150	1.8	10
26	London plane	130	1.8	10
27	London plane	140	1.8	10
28	London plane	130	1.8	10
29	Norway maple	210	2.7	23
30	Norway maple	140	1.8	10
31	Norway maple	170	2.1	14
32	London plane	170	2.1	14
33	London plane	220	2.7	23
34	London plane	190	2.4	18

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^2)
35	London plane	160	2.1	14
36	London plane	190	2.4	18
37	London plane	170	2.1	14
38	London plane	280	3.6	41
39	London plane	300	3.6	41
40	London plane	330	4.2	55
41	London plane	280	3.6	41
42	London plane	320	3.9	48
43	Common lime	90	1.2	5
44	Common lime	90	1.2	5
45	Norway maple	160	2.1	14
46	Norway maple	190	2.4	18
47	London plane	220	2.7	23
48	London plane	180	2.4	18
49	London plane	190	2.4	18
50	London plane	360	4.5	64
51	London plane	210	2.7	23
52	London plane	250	3.0	28
53	London plane	260	3.3	34
54	Norway maple	170	2.1	14
55	London plane	310	3.9	48
56	London plane	310	3.9	48
57	London plane	450	5.4	92
58	London plane	110	1.5	7
59	London plane	140	1.8	10
60	London plane	180	2.4	18
61	London plane	180	2.4	18
62	London plane	280	3.6	41
63	London plane	410	5.1	81
64	London plane	120	1.5	7
66	London plane	120	1.5	7
67	London plane	200	2.4	18
68	London plane	200	2.4	18
69	London plane	150	1.8	10
70	London plane	150	1.8	10
71	London plane	340	4.2	55
73	Rowan	90	1.2	5
74	Norway maple	230	3.0	28

Table 3.4 (cont'd): 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^2)
75	Silver birch	100	1.2	5
76	London plane	80	1.2	5
77	Norway maple	50	0.9	3
78	Norway maple	50	0.9	3
79	Ash	120	1.5	7
80	Elm	140	1.8	10
81	Whitebeam	110	1.5	7
82	Elm	50	0.9	3
83	London plane	60	0.9	3
84	Common lime	60	0.9	3
85	Elm	60	0.9	3
86	Elm	50	0.9	3
87	Hornbeam	100	1.2	5
88	Hornbeam	90	1.2	5
89	Flowering cherry	160	2.1	14
90	London plane	310	3.9	48
91	London plane	320	3.9	48
92	London plane	320	3.9	48
93	London plane	350	4.2	55
G1	Sumac	40 - 100	1.2*	5*

Key:

*: 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 or closely surrounding the study area are subject to Tree Preservation Orders (TPO).

The north-western section of the study area, comprising the petrol station north of the main Morrisons building, is situated within the Regents Canal Conservation Area (as illustrated on Drawing Number C122107-01-01 Rev A, Section 7). Tree numbers 87, 88, 89, 90, 91, 92 and 93 are situated within the overlap between the site boundary and the Conservation Area, which also runs adjacent to the northern and eastern boundaries of the study area.

The existence of the Conservation Area confers a degree of statutory legal protection upon the trees, with a stem diameter of greater than 75mm (at 1.5 m above ground level), growing within it. In particular, it should be noted that prior to undertaking any works to trees within a Conservation Area it is necessary to submit a Section 211 notice to the Local Planning Authority giving six weeks' notice of the proposed works. In practice the submission of a planning application containing fully specified details of proposed tree works will usually meet this requirement.

An authority may treat a planning application for development in a Conservation Area that includes specified tree work as a Section 211 notice if the applicant has clearly stated that it should be considered as such. However, if work is proposed to trees other than those immediately affected by a proposed development then a separate Section 211 notice should be submitted. Where an authority has granted planning permission for development in a Conservation Area, only tree works necessary to implement the development may be carried out. The authority may use conditions or informatives attached to the permission to clarify this requirement.

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 ninety three trees and one group 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	14, 18, 19, 22, 23, 47, 49, 50, 52, 55, 56, 57, 62, 63, 71, 74, 90, 91, 92, 93.
B	1, 7, 9, 15, 16, 17, 20, 29, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 45, 46, 48, 51, 54, 67, 68, 89.
C	2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 21, 24, 25, 26, 27, 28, 30, 43, 44, 53, 58, 59, 60, 61, 64, 66, 69, 70, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, G1.
U	65, 72.

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.

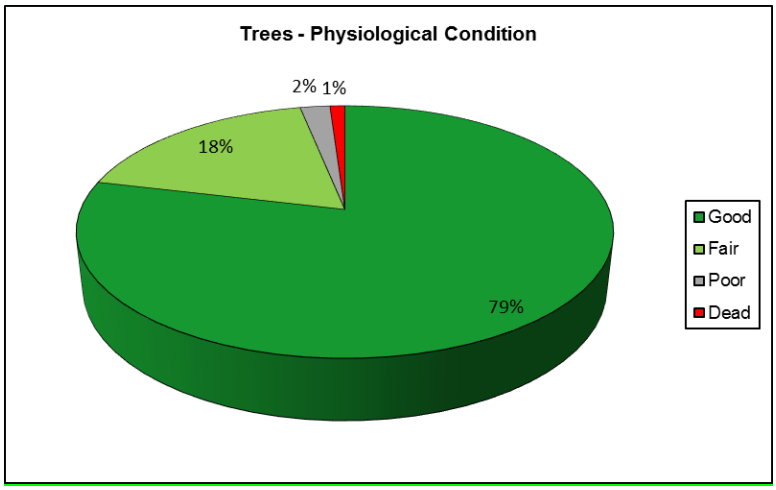


Chart 4.1: Tree Physiological Condition

Age Distribution

All trees surveyed have been assessed as young in age and will offer the study area and the local landscape a significant contribution.

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.

Visual Amenity

The trees located in the car park have a high amenity value and should be considered when developing the site.

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 C122107-01-01 Rev B, contained within Section 7 of this report) 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 150 mm at 1.5 m 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 C122107-01-01 Rev B, contained within Section 7 of this report).

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:

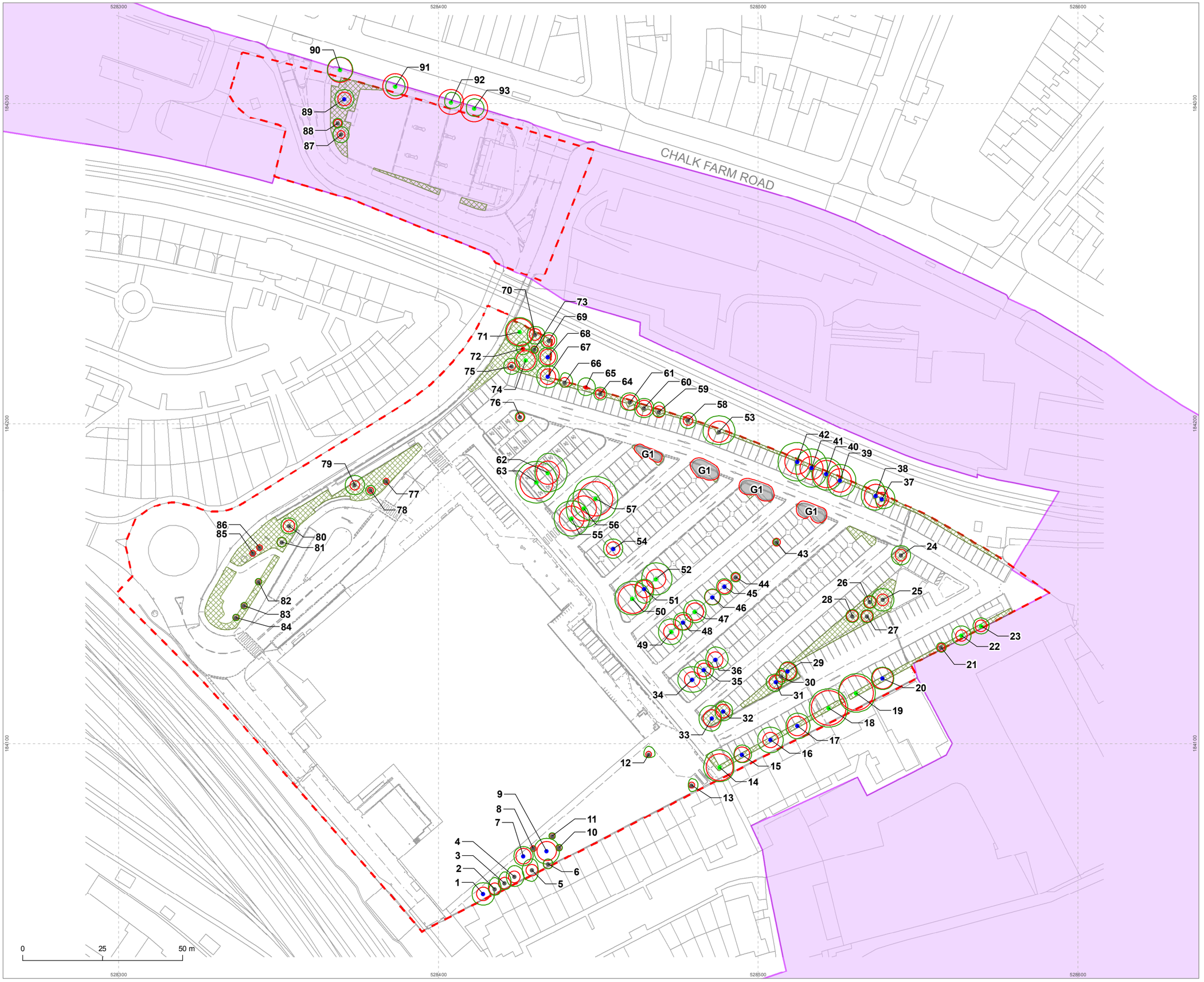
- No works on any trees located within the Regents Canal Conservation Area are to be carried out without prior submission of a Section 211 notice to the Local Planning Authority giving six weeks' notice of the proposed works.
- The retention of the Category A and B trees across the site should be considered 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 landscape character of the site. Many of these species are structurally defective and need to be removed as a matter of urgency.
- A number of young specimens as identified within Table 3.3 have been recommended to have either spiral guards or to have mulch circles around them, by having either option will reduce further strimmer damage occurring to these young specimens.
- 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, pages 22-24, 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 C122107-01-01 Rev B – Tree Constraints Plan



C122107-01-01_RevA

Legend

- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category C group
- Shrub bed
- Regent's Canal Conservation Area
- 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

N

Project	Camden Goodsyard, Camden
Drawing	Tree Constraints Plan
Client	Safeway Stores Limited and BDW Trading Limited
Drawing Number: C122107-01-01_RevA	Revision: Rev A
Scale @ A3: 1:1100	Date: June 2016
Approved By: BJ	Drawn By: AM

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