Arboricultural Impact Assessment

- in accordance with BS5837: 2012

4 Park Drive

Stainborough

Barnsley

21st March 2019

Reference: **JC/183/190321**

Prepared for:

Leigh Grey

Prepared by:

Jon Coe Tree Services Ltd

Telephone: **0114 235 3889**

Mobile: **07747 664560**

Email: **jon@joncoetreeservices.co.uk**

Registered in England and Wales as limited company number 09689319

Registered office at 13 Green Oak Road, Sheffield, United Kingdom S17 4FP

Summary of report

This report is undertaken in accordance with the requirements of BS5837: 2012. It considers the impact on trees of a proposed development at 4 Park Drive in Stainborough.

Seven trees were surveyed. These are all either low quality, structurally poor or small garden trees. There are no category A or B trees here. All the surveyed trees are to be removed, each for one of the following reasons:

- They are within the proposed garage footprint.
- Their Root Protection Areas are significantly compromised by the proposed garage: the trees' low quality is such that they do not merit any special construction measures in order to retain them.
- They are structurally compromised at the root plate, and are only maintained currently by propping.
- They are causing damage to existing structure, or are likely to do so soon.

New planting is possible and likely as part of the garden re-design. The potential for this will be better assessed following the proposed garage construction.

CONTENTS

1. INTRODUCTION 4
1.1 Terms of instruction....4
1.2 Scope of survey....4
1.3 Documents supplied by client....4
1.4 Items included within this report....4
1.5 Qualifications and experience....4
1.6 Caveats and limitations....5
2. DATA COLLECTION 5
2.1 Site visit....5
2.2 The site and tree layout....6
2.3 Survey method....6
3. SUMMARY OF DATA 7
3.1 Trees....7
3.2 Retention categories....8
3.3 Below ground constraints....8
3.4 Above ground constraints....9
4. ARBORICULTURAL IMPACT ASSESSMENT 9
4.1 Trees losses....9
5. TREE PROTECTION PLAN 9
5.1 No tree protection required for the proposed development....9
6. ARBORICULTURAL METHOD STATEMENT 9
6.1 Removing trees....9
7. OTHER OBSERVATIONS 10
7.1 Legal status of trees on site....10
7.2 Wildlife considerations and law....10
Reference List 11
Photographs 12
Appendix A: Tree Schedule (excluding Root Protection Areas and crown spread) 14
Appendix B: Tree Constraints Data: Root Protection Areas (RPAs) and crown spread 16
Appendix C: Key to botanical names 18
Appendix D: Tree retention categories 19
Appendix E: Calculating Root Protection Areas 22
Appendix F: Tree Constraints Plan 23
Appendix G: Proposed development plan 25
Appendix H: Arboricultural impact assessment – drawing 27

1. Introduction

1.1 Terms of instruction

Jon Coe Tree Services Ltd was instructed by Leigh Grey to undertake a tree survey and report at 4 Park Drive in Stainborough (Barnsley).

1.2 Scope of survey

The key requirements identified were to establish the condition of the trees on site, and the impact of the proposed construction works upon them, in accordance with BS5837: 2012[1] '*Trees in relation to design, demolition and construction: Recommendations*' (referred to herein as BS5837: 2012[1]). This was not a detailed risk assessment survey.

The survey considered all trees that could be affected by the proposed works.

1.3 Documents supplied by client

Proposed and existing site layouts were supplied by Design Space Architects at the time of instruction.

1.4 Items included within this report

The main report describes, in this order: the collection of data; summary of data; arboricultural impact; tree protection; arboricultural method statement and other relevant issues. It is followed by references, photographs and the appendices.

Central to the purpose of this report are Appendices G and H - drawings of Tree Constraints and Arboricultural Impact.

1.5 Qualifications and experience

The survey and report were carried out by Jon Coe, who holds a BSc (Honours) degree in Arboriculture from Myerscough College, Professional-

grade membership of the Arboricultural Association, and Associate membership of the Institute of Chartered Foresters.

Jon undertakes many shorter courses as part of his commitment to professional development. These have included the following Arboricultural Association courses:

- BS5837: Tree surveying and categorisation
- BS5837: Tree assessment for planning applications
- BS5837: Managing trees on construction sites

Jon has fourteen years of continuous experience working in the arboricultural industry.

1.6 Caveats and limitations

This report is for the use of the client only. Its use or reproduction by any other party is forbidden without the author's prior written consent.

The survey was solely concerned with the requirements of BS5837: 2012[1]. The survey was not a risk assessment survey, and it considered tree health only so far as necessary to fulfil the requirements of BS5837: 2012[1].

The survey and all observations were made from ground level only.

No soil samples were taken.

Observations were valid at the time they were made. However, trees are dynamic and growing structures that experience changes affected by time, weather and other factors.

2. Data collection

2.1 Site visit

The survey was conducted on Friday 15th March 2019. It was a dry day with strong winds, and visibility was fine for survey purposes.

2.2 The site and tree layout

The survey area is in the rear garden of 4 Park Drive. Site layout is as shown on the Tree Constraints Plan at Appendix F. Individual tree's details are recorded in the Tree Schedule (Appendix A) and the Tree Constraints data (Appendix B). Findings are summarised in section 3.1.

2.3 Survey method

The initial survey was conducted without reference to the development proposal.

Each tree was given a tree identification number, as shown on the Tree Constraints Plan (Appendix F).

Stem locations were identified by the arboricultural surveyor using a laser rangefinder (Leica Disto D810). Measurements were taken from fixed building points and boundary lines that were visible on site and on the Ordnance Survey Mastermap base layer.

The species of each tree was recorded. Common names are used in the Tree Schedule (Appendix A), with a list of botanical names supplied in Appendix C.

Where appropriate, trees were assigned to group locations if they formed cohesive arboricultural units.

Tree height was estimated in metres (m), to the nearest 0.5 m (rounded up) - or the nearest metre for trees above 10 m. At regular intervals, or for trees where precise height is likely to be important, it was recorded using the 'Measure Height' Android app; this has been checked for accuracy using a Suunto clinometer, to which it bears close comparison.

Stem diameter was measured in millimetres (mm) using a diameter tape, in accordance with the conventions detailed in Annex C of BS5837: 2012[1], which in most cases is at 1.5m above ground level.

Crown spread was recorded at the four cardinal points, to the nearest 0.5m (rounded up) - using a laser range-finder (Leica Disto D810).

Height of canopy clearance was recorded to the nearest 0.5 m. This was often an estimate, as canopy clearance is not usually consistent around the whole tree; a figure for the typical low point around the canopy was therefore estimated. Where appropriate, minor or epicormic branch growth was disregarded, in order to better portray the situation so far as clearance was concerned.

Age class was assessed according to the five possible categories listed in BS5837: 2012[1]. These are young, semi-mature, early-mature, mature and over-mature.

Structural and physiological condition of trees were separately assessed and summarised using five possible categories: poor, moderate, fair, good, very good. More specific observations on condition were noted under 'Observations'.

'Observations' included details of specific structural and physiological issues, notes on past and suggested future management, and problems currently presented by the trees.

An estimate was made (in years) of the potential remaining contribution that each tree could offer, in its current situation, without a need for significant tree surgery operations.

Each tree was categorised according to the guidance given in BS5837: 2012[1] (Appendix D). Retention categories of A, B, C or U were allocated (in descending order of tree quality), with an additional sub-category of 1, 2 or 3 that defines whether the principal category was allocated for arboricultural, landscape or cultural reasons respectively.

3. Summary of data

3.1 Trees

This is a collection of seven unremarkable trees. The largest is a Norway spruce, which is medium-sized for that species. Also a good-sized holly that is damaging an outhouse (or will soon do so) due to proximity of stem and structure. There are two apples, the largest of which has experienced previous rootplate movement and is now supported by a stone prop; the

other apple is very small. The last three trees are a nearly dead lilac, a structurally poor cherry, and a heavily-pruned magnolia.

3.2 Retention categories

Retention categories have been assigned in accordance with the criteria in BS5837: 2012[1] (Appendix D).

As a nearly dead tree, the lilac is assigned category U.

The remainder of the trees on site lack the qualities required to raise them above the level of category C.

3.3 Below ground constraints

The Root Protection Areas (RPAs) are the areas in which construction and activities related to the construction process should not take place, in order to protect the trees' root systems. Where such activities cannot be avoided, it may be possible to incorporate design measures that prevent the damage that may occur to the tree's health and stability through soil compaction, level changes, root severance and contamination. Sections 6 and 7 of BS5837: 2012[1] outline methods for protecting RPAs during the construction process, and for building within them where this is unavoidable.

RPAs are generically calculated as an area equivalent to a circle with a radius 12 times the stem diameter, in accordance with section 4.6.1 of BS5837: 2012[1]; this also provides methods for calculating the combined stem diameter of multi-stem trees.

In accordance with BS5837: 2012[1], the RPAs listed in the Tree Constraints data (Appendix B) have been determined from the stem diameter by using Table 4 (Appendix E), whose values are themselves extracted from Table D.1 in Annex D of the standard (BS5837: 2012[1]). Stem diameters are rounded up to align with those in Table 4; potentially to the trees' benefit.

3.4 Above ground constraints

Data for crown spread is listed in the Tree Constraints Data (Appendix B). Additionally, the Tree Schedule (Appendix A) contains data on canopy clearance, and the height of the first major branch (where applicable).

4. Arboricultural Impact Assessment

4.1 Trees losses

All the surveyed trees are to be removed, for the following reasons:

- They are within the proposed garage footprint (trees 01, 02 and 03).
- Their Root Protection Areas are significantly compromised by the proposed garage: the trees' low quality is such that they do not merit any special construction measures in order to retain them (04, 05).
- They are structurally compromised at the root plate, and are only maintained currently by propping (06).
- They are causing damage to existing structure, or are likely to do so soon (07).

New planting is possible and likely as part of the garden re-design. The potential for this will be better assessed following the proposed garage construction.

5. Tree Protection Plan

5.1 No tree protection required for the proposed development

As all the surveyed trees are to be removed, there are no tree protection requirements for the proposed works.

6. Arboricultural Method Statement

6.1 Tree removals

Removal of the seven surveyed trees should be carried out in accordance with the guidance in *BS 3998: 2010 Tree work – Recommendations* [2].

7. Other observations

7.1 Legal status of trees on site

The site is within the Wentworth Castle & Stainborough Park Conservation Area; we have not checked separately for Tree Preservation Orders. The relevant legislation to these matters is contained within the Town and Country Planning Act 1990 [3] and The Town and Country Planning (Tree Preservation) (England) Regulations 2012 [4].

7.2 Wildlife considerations and law

The requirements the following legislation should also be considered in the planning of any arboricultural operations.

- Wildlife and Countryside Act 1981 [5]
- Countryside and Rights of Way Act 2000 [6]
- The Conservation of Habitats and Species Regulations 2010 [7]
- The Conservation of Habitats and Species (Amendment) Regulations 2011 [8]

One combined effect of the above legislation is that tree work operations must be planned to avoid disturbance to nesting, breeding or roosting birds, or to bats and their roosts. The nests of wild birds are protected whilst in use, and all 18 bat species found in the UK are afforded European Protected Species status.

Reference List

1. British Standards Institution (2012) *BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations*. London, BSI Standards Ltd.
2. British Standards Institution (2010) *BS 3998: 2010 Tree work – Recommendations*. London, BSI Standards Ltd.
3. *Town and Country Planning Act 1990*. London, HMSO.
4. *The Town and Country Planning (Tree Preservation) (England) Regulations 2012*. London, HMSO.
5. *Wildlife and Countryside Act 1981*. London, HMSO.
6. *Countryside and Rights of Way Act 2000*. London, HMSO.
7. *The Conservation of Habitats and Species Regulations 2010*. London, HMSO.
8. *The Conservation of Habitats and Species (Amendment) Regulations* 2011. London, HMSO.

Photographs

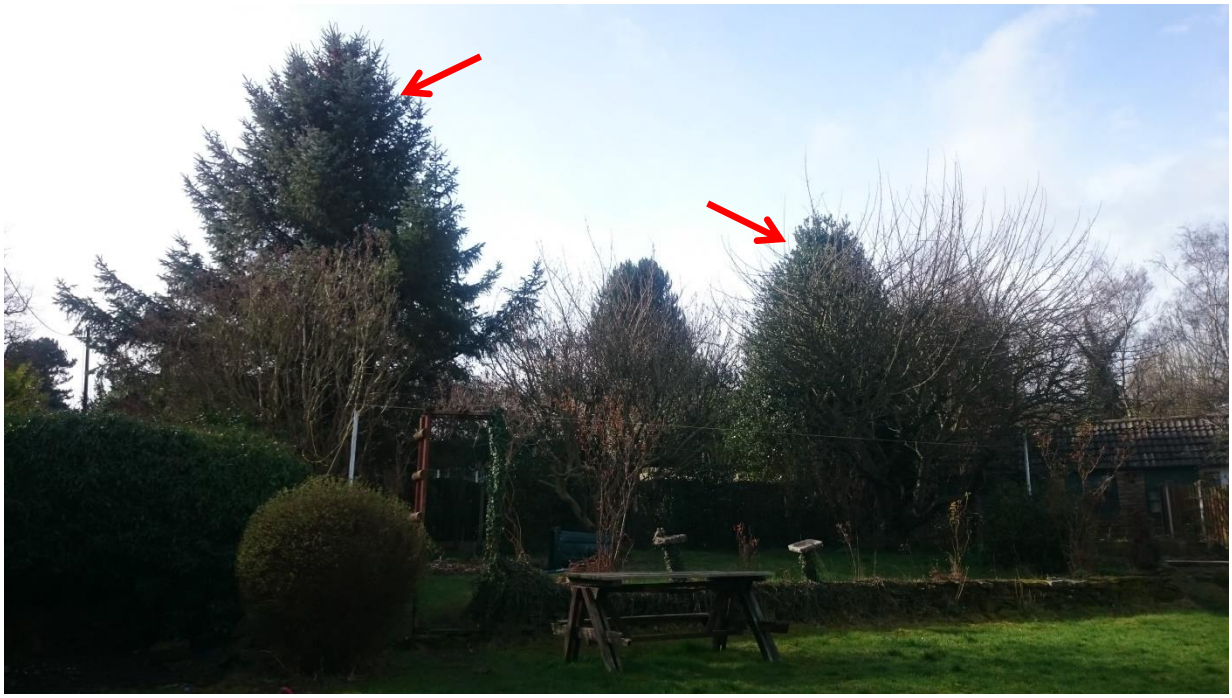


Photo 1. Showing the tree layout. The red arrows point to tree 01 (left) and tree 07 (right).Trees 2 to 6 are between these, and in the foreground.



Photo 2. A view through the group containing trees 02 (front right), 04, 05 and 06 (furthest back).



Photo 3. Showing the base of apple tree 06, where the leaning stem is supported by a stone bock due to previous root-plate movement.



Photo 4. The stem of holly tree 07 is growing immediately adjacent to outhouse. If left in place it will definitely damage this - if it is not already doing so.

Appendices

Appendix A: Tree Schedule (excluding Root Protection Areas and crown spread)

Table 1 (overleaf) contains data for all trees, excluding Root Protection Areas and crown spread details – which are found in Appendix B.

Condition categories, in ascending order of quality: *poor – moderate – fair – good - very good*

Tree Number	Species (common name)	Height (m)	Canopy clearance (m)	Life stage	Observations, and suggestions for management	Remaining contribution (years)	BS retention category	Condition (physiological : structural)
01	Spruce, Norway	14	2.5	Mature	No significant issues observed	20+ Years	C1	Fair : Fair
02	Lilac	5	1.5	Over Mature	nearly dead	<10 years	U	Poor : Moderate
03	Cherry	7	2.5	Mature	Poor structural form due to severe pruning at various times in the past.	10+ Years	C1	Fair : Moderate
04	Apple	6	2.5	Mature	low quality	10+ Years	C1	Fair : Moderate
05	Magnolia	5	1.5	Mature	Heavily pruned in past. Not special.	20+ Years	C1	Fair : Fair
06	Apple	8	1	Mature	Tree leans heavily north due to previous rootplate movement. Propped up with stone block.	10+ Years	C1	Fair : Moderate
07	Holly, Common	9	0.5	Mature	Growing immediately adjacent to outhouse. If left in place it will definitely damage this - if it is not already doing so.	20+ Years	C1	Fair : Moderate

Appendix B: Tree Constraints Data: Root Protection Areas (RPAs) and crown spread

Table 2 (overleaf) contains data for Root Protection Areas and crown spread for all trees – all other tree data is found in in Appendix A.

Tree Number	No. of stems	Diameter (mm) single stem	Diameter (mm) - 2 to 5 stems					Mean stem diameter (mm)	Calculated stem diameter (mm)	Radius of nominal circle (m)(from BS5837: 2012[1] Annex D)	RPA Area (m^2) (from BS5837: 2012[1] Annex D)	Crown spread (m)			
			stem 1	stem 2	stem 3	stem 4	stem 5	> 5 stems				north	south	east	west
01	1	460							460	5.7	102	4	4	4	4
02	4		200	200	150	100			335	4.2	55	3	1	4	1
03	1	380							380	4.8	72	1.5	4	2.5	3.5
04	1	220							220	2.7	23	2.5	2	2	3
05	1	300							300	3.6	41	3.5	1.5	2.5	2.5
06	1	350							350	4.2	55	5	3	3	4
07	4		250	200	200	150			406	5.1	81	3	3	3	3

Appendix C: Key to botanical names

Apple	- *Malus* spp.
Cherry	- *Prunus* spp.
Holly	- *Ilex aquifolium*
Lilac	- *Syringa vulgaris*
Magnolia	- *Magnolia* spp.
Norway spruce	- *Picea abies*

Appendix D: Tree retention categories

Trees are assessed for retention categories in the order in which those categories appear in the table below – with all trees initially assessed against the criteria for category ‘U’, followed sequentially by categories ‘A’, ‘B’ and ‘C’.

Table 3 (overleaf) is based on Table 1 of BS5837: 2012 [1]; some but not all of the text is necessarily reproduced verbatim.

Table 3.

Trees that are not suitable for retention			
Category U Trees whose condition means that their retention as living trees beyond 10 years is unrealistic in the context of the current land use	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (where, for example, the loss of companion shelter cannot be mitigated by pruning). Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. In some circumstances, category U trees may have conservation value which it might be desirable to preserve, despite tree condition.		
Trees whose retention should be prioritised			
	1. **Predominantly arboricultural merit**	**2.** **Predominantly landscape merit**	**3.** **Predominantly cultural merit (includes conservation value)**
Category A High quality trees, currently with life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially rare or unusual species. Also trees that are essential components of groups or formal or semi - formal arboricultural features (such as an avenue's dominant or principal trees).	Trees, groups or woodlands that have particular visual importance as arboricultural and/or landscape features .	Trees, groups or woodlands that have significant conservation, historical, commemorative or other value (such as veteran trees or wood - pasture)

Trees whose retention should be considered (with Category B assuming the greater priority in retention decisions)			
	1. **Predominantly arboricultural merit**	**2.** **Predominantly landscape merit**	**3.** **Predominantly cultural merit (includes conservation value)**
Category B Moderate quality trees, currently with life expectancy of at least 20 years	Trees that are excluded from category A due to impaired condition (such as the presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention beyond 40 years. Also trees that simply lack the special quality necessary to merit the category A designation.	Trees present in numbers, often those growing as groups or woodlands, such that their collective rating is higher than that which they might attract as individuals. Also trees occurring as collectives but situated so as to make little visual contribution to the wider locality .	Trees that have material conservation or other cultural value .
Category C Low quality trees, currently with life expectancy of at least 10 years. Also young trees of stem diameter <150mm.	Trees that are unremarkable or of very limited merit, or that have such impaired condition that they do not qualify in higher categories .	Trees growing as groups or woodlands, but without this conferring on them significantly greater collective landscape value. Also trees offering low or only temporary/transient landscape benefits	Trees lacking any material conservation or other cultural value .

Appendix E: Calculating Root Protection Areas

Table 4. This table was used to establish Root Protection Areas (RPAs) in accordance with section 4.6.1 of BS5837: 2012[1], and Annex D of the same standard (from which this table's values are drawn). 'Stem diameter' refers to either the measured diameter of single stem trees, or the calculated combined stem diameter of multi-stem trees (BS5837: 2012[1], 4.6.1).

Stem diameter (mm)	Radius of a uniformly circular RPA (m)	RPA – area (m^2)
75	0.9	3
100	1.2	5
125	1.5	7
150	1.8	10
175	2.1	14
200	2.4	18
225	2.7	23
250	3.0	28
275	3.3	34
300	3.6	41
325	3.9	48
350	4.2	55
375	4.5	64
400	4.8	72
425	5.1	81
450	5.4	92
475	5.7	102
500	6.0	113
525	6.3	124
550	6.6	137
575	6.9	150
600	7.2	163
625	7.5	177
650	7.8	191

Stem diameter (mm)	Radius of a uniformly circular RPA (m)	RPA – area (m^2)
675	8.1	206
700	8.4	222
725	8.7	238
750	9.0	255
775	9.3	272
800	9.6	290
825	9.9	308
850	10.2	327
875	10.5	346
900	10.8	366
925	11.1	387
950	11.4	408
975	11.7	430
1000	12.0	452
1025	12.3	475
1050	12.6	499
1075	12.9	519
1100	13.2	547
1125	13.5	573
1150	13.8	598
1175	14.1	625
1200	14.4	652
1225	14.7	679
1250+	15.0	707

Appendix F: Tree Constraints Plan

The Tree Constraints Plan (overleaf) indicates the locations, retention categories, Root Protection Areas and crown spreads of all relevant trees. Tree locations were identified to the best ability of the arboricultural surveyor, by taking measurements from fixed landmarks on site using a laser rangefinder.



Jon Coe Tree Services
13 Green Oak Road
Totley
Sheffield
S17 4FP

Jon Coe Tree Services Ltd
mobile: 07747 664560
office: 0114 235 3889
email: jon@joncoetreeservices.co.uk
www.joncoetreeservices.co.uk

Site: 4 Park Drive, Stainborough	1:200 @ A3
Drawing Title: Tree Constraints Plan	March 2019

Key:

- Category A
- Category B
- Category C
- Category U

Category
Root Protection Area
13 Birch B2
Crown Spread
Tree Number
Species
Category

NOTE: Tree numbers marked have approximate locations.

Appendix G: Proposed development plan

The proposed layout overleaf, on which this report's findings are based, was supplied by Design Space Architects.

Notes:

PLANNING DRAWINGS - THIS DRAWING SHOULD NOT BE USED FOR ANY OTHER PURPOSES THAN THAT SPECIFIED HERE

COPYRIGHT - THIS DRAWING MAY NOT BE REPRODUCED OR MODIFIED IN WHOLE OR PART BY ANY PERSON OR ORGANISATION WITHOUT THE ARCHITECTS CONSENT. ISUING COPIES TO THIRD PARTIES MAY NOT BE DONE WITHOUT THE ARCHITECTS CONSENT

Revision: --

Revision List:

0 10m

Project/ Client: 4 Park Drive / Gray

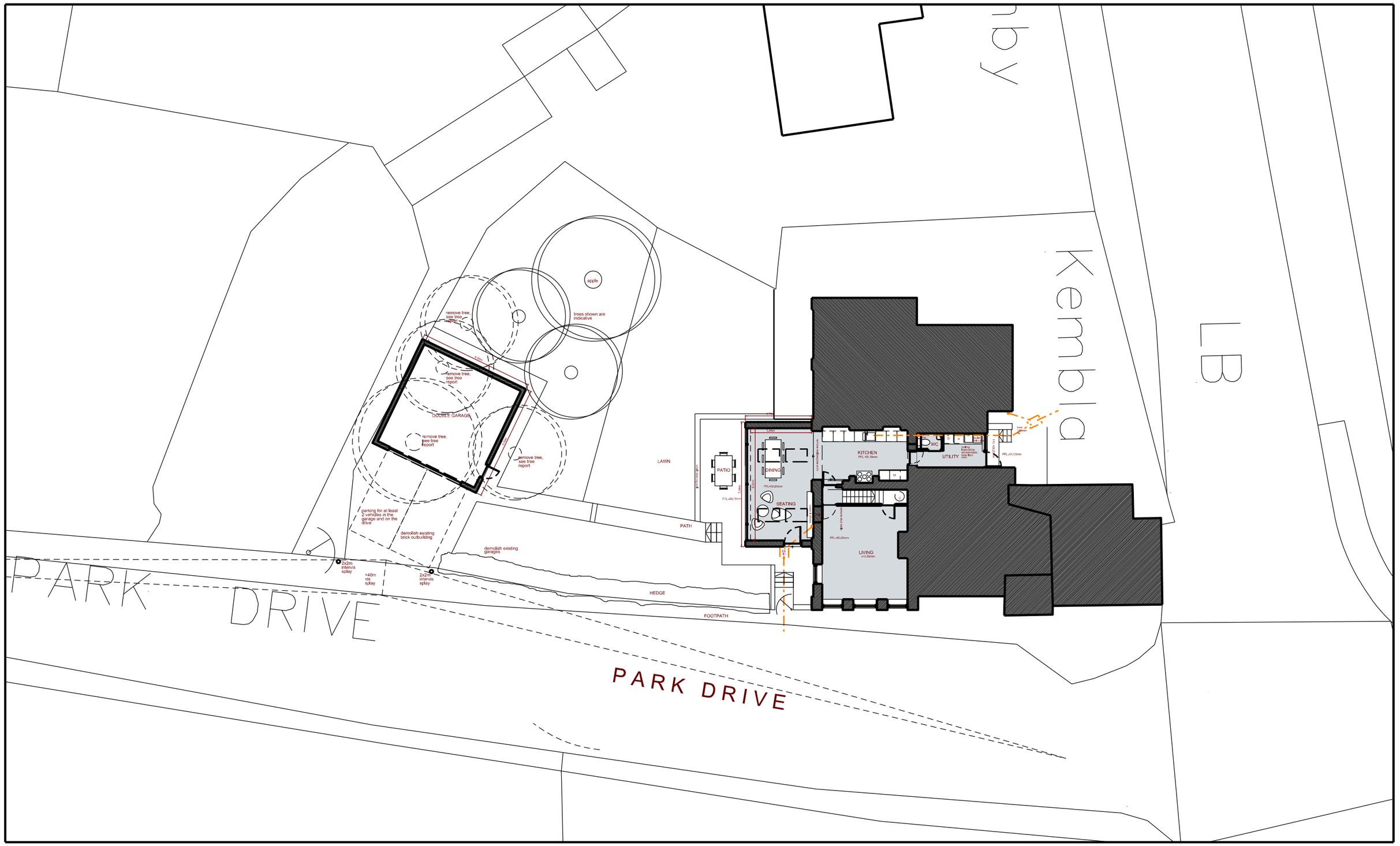
Drawing Title: Site Plans - Proposed

Drawing Number: 2071/TP/005

Scale at A3: 1:200

N

Date: Feb 19



Appendix H: Arboricultural impact assessment – drawing

The drawing overleaf illustrates the proposed layout in relation to trees, as referred to in the Arboricultural Impact Assessment (section 4).



Jon Coe Tree Services
13 Green Oak Road
Totley
Sheffield
S17 4FP

Jon Coe Tree Services Ltd
mobile: 07747 664560
office: 0114 235 3889
email: jon@joncoetreeservices.co.uk
www.joncoetreeservices.co.uk

Site: 4 Park Drive, Stainborough	1:200 @ A3
Drawing Title: Arboricultural Impact Assessment	March 2019

Key:

- Category A
- Category B
- Category C
- Category U

Category
Root Protection Area
13
Birch
B2
Crown Spread
Tree Number
Species
Category

Trees to be removed

NOTE: Tree numbers marked have approximate locations.