Major Trees Ltd
Arboricultural Consultancy

Arboricultural Impact Assessment for Land North of Exeter
revised application 2023

Prepared for John Drake

by Simon Major MSc (Arb)
Major Trees Ltd.
04/10/2023

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1 INTRODUCTION

1.1 Instructions

James McMurdo, on behalf of John Drake, has instructed me to:

- Inspect the trees around and within the proposed development site
- Produce an Arboricultural Impact Assessment according to BS5837 2012 'Trees in relation to design, demolition and construction – Recommendations'.

1.2 Purpose of this report and drawing

- To identify and categorise the existing trees on and adjacent to the site
- To show crown spreads, root protection areas and shading patterns
- To inform the client, architects, and planning officers of the arboricultural impacts of the proposed development
- To guide the client and architects with their designs, to help minimise the potential impacts on trees.

1.3 Scope of the report

This is not a tree risk assessment. I have only looked for the highest risk tree amongst the trees I have surveyed, and have commented on the risk with the current land usage, in Appendix B.

I would re-visit and deliver a tree risk assessment if required if the development was to go ahead, or if the client wants the rest of his roadside trees assessed for risk.

This report does not consider the possible effects of tree roots and shrinkable soils on the subsidence of building foundations. The architects should satisfy themselves that foundation depths are sufficient considering the soil type and proximity of trees being retained or removed. Guidance is available from NHBC 4.2. I can give separate guidance on this if requested.

1.4 Area covered by this report

This survey and report only covers the area of land with trees plotted and numbered on my drawing titled 'Land North of Exeter Arboricultural Impact Assessment' dated 04/10/23. It does not include the trees elsewhere on the Rixlade Farm property.

1.5 Documents supplied

Rhys Donoghue of Stuart Michael Associates supplied me with an Autocad drawing with the topographical survey, and subsequent access and attenuation drawings.

Dominic Clifton of Clifton Emery Design supplied me with an Autocad drawing with the proposed layout.

1.6 Terminology

Clear	Height of crown clearance above ground level
Coppice	Trees cut to near ground level and re-growing with multiple stems from a 'stool'
Dbh	Diameter at breast height (1.5m), measured with a girthing tape
Occluding	New wood growing around a wound. An indication that the tree is attempting to strengthen around previous damage or pruning cuts
RPA	Root protection area
N E S W	North East South West
NPPF	National Planning Policy Framework

1.7 Keys

Tree numbering

T	Tree
G	Group
W	Woodland

Categories

U	Unlikely to contribute to the existing land use for more than 10 years
A	High quality and value, able to make a substantial contribution for more than 40 years
B	Moderate quality and value, able to make a significant contribution for more than 20 years
C	Low quality and value, able to make an adequate contribution for more than 10 years, or young trees with a stem diameter below 150mm.

Groups or woodlands may have a higher category than some or all of the individual trees within them.

Subcategories

1	Mainly arboricultural values
2	Mainly landscape values
3	Mainly cultural values including conservation.

Age Class

New	Recently planted or regenerated, of a transplantable size
Young	Less than 1/3 of normal maximum height or lifespan
Middle	Between 1/3 and 2/3 normal maximum height or lifespan, still actively growing
Mature	More than 2/3 to normal maximum height or lifespan, slow growth
Over	Beyond normal maximum lifespan. Dying back in crown
Veteran	A very old tree with several characteristics of having survived damage or infection
Ancient	Of great age - old relative to others of the same species.

Overall Physiological and Structural Condition

Good	In good vigour, no signs of pests or diseases, no significant structural defects
Fair	Signs of slight impairment of vigour and defects that are remedial, minor colonisation of pests or diseases
Poor	Severely impaired vigour, pests or diseases causing decline, defects that may be beyond remedy
Dead	

2 SITE VISIT

2.1 Site visit

I made an unaccompanied site visit for the tree survey of the original larger area on 15/10/20 and I returned for a second visit to selected areas on 15/09/21 The weather was fine and the visibility was good for both visits. When I considered assessing the roadside risks after my BS5837 survey, at the end of my first visit it was dusk and the visibility was poor and many of the trees are on top of a very high, steep bank in dense vegetation, so I limited my risk assessment to the largest tree (Turkey Oak 13d) in daylight in both visits.

I have not revisited the site for this revised 2023 application.

2.2 Site description

The site is two large permanent-grassland fields surrounded by semi-natural woodland and lines of trees. The land slopes, steeply in places, to the south. There is a lane, Stoke Hill, to the west of the site and agricultural fields to the northeast of the site. To the southeast is Mincinglake Valley Park, a public open space and nature reserve managed by Exeter City Council.

2.3 Methods of inspection

I made visual inspections from ground level only. I investigated for decay with a nylon mallet and a wire probe. I did not use any more specialised decay detection equipment. I taped diameters. I paced crown spreads or measured them with a Laserace. I estimated heights with a clinometer and a Laserace.

2.4 Tree numbering

I have worked clockwise around the site from the main entrance. I have not tagged the trees, as they are clear to identify on site using my table and drawing. Woodlands and Groups 3 to 8 are no longer in this smaller area application, so the tree numbering jumps from Group 2 to Group 9.

3 OBSERVATIONS

See appendix A.

4 SITE PLAN

See my drawing titled ‘Land North of Exeter - Arboricultural Impact Assessment’, scale 1:2500 on A3, dated 04/10/23.

I have assumed the tree centres are accurately plotted on the topographical survey supplied to me.

The following trees were not plotted on the topographical survey. I have plotted these trees in by triangulation off site features, using Google Earth, and using the topographical survey edge-of-vegetation lines: 2a,b,c,d, 9a, 12a,b, 13c.

5 TREE CONSTRAINTS

5.1 Crown spreads

For the trees that I have surveyed, I have deleted the circular crown spreads from the topographical survey and I have re-plotted the crown spreads of individual trees to four compass points. For groups and woodlands, I have plotted the spreads of significant end, edge or large trees and linked the spreads together (e.g. 9a, 9b, 9c in group 9).

5.2 Root Protection Areas

I have calculated and plotted RPAs as follows:

- For single stemmed trees I have plotted a circle of radius = 12 x stem diameter at 1.5m
- For trees with multiple stems below 1.5m I have aggregated the diameters. I have measured each stem at 1.5m and calculated the total cross-sectional area. I have then calculated the equivalent diameter for a single stemmed tree with that cross-sectional area
- For veteran and ancient trees I have plotted a circle for an extended ecological buffer zone of radius = 15 x stem diameter at 1.5m (with reference to the National Planning Policy Framework based on standing advice from the Forestry Commission and Natural England)
- For groups and woodlands, I have plotted the RPAs of significant end, edge or large trees and linked the RPAs together.

5.3 Existing hard surfaces within Root Protection Areas

Tree 10b, veteran Oak, has is a building within 7% of its RPA The building occupies an additional 12% of its veteran buffer zone. I have increased the radius of the buffer zone for this veteran tree into a wider shape of the same area, with the area of the barn excluded.

Group 13, Oaks, have the tarmac lane, Stoke Hill, possibly within their RPAs. The trees are on the lip of a very high bank so the face of the bank will be part of their RPAs. Many of the trees are in dense undergrowth and have not been accurately plotted. I have estimated an RPA on the field side of this group.

Tree 13d, Turkey Oak has the tarmac lane, Stoke Hill, over 27% of its circular RPA. It is possible that the roots extend under the road especially if the tree was there before the road was sealed. There may be some lateral permeability of water under the road, and some, but less, permeability of oxygen. There is a compacted stone semi-permeable access track to a house and a barn, over 15% of the tree 13d RPA. I have not re-drawn the shape of this circular RPA although the tree may be using land more to the south.

5.4 Shading

I have not plotted shadow patterns for the trees on this project as the layout of residential properties has been kept well to the north of all the trees, beyond the mid-summer shadow pattern.

5.5 Tree Preservation Orders and Conservation Areas

I have checked the Exeter City Council (ECC) online map in 2021 which showed no Tree Preservation Orders or Conservation Areas affecting this site. I am not aware of a TPO having been served in the meantime. The ECC TPO map is currently not online so I have emailed a TPO search request.

6 ARBORICULTURAL IMPACTS OF PROPOSED LAYOUT

6.1 Loss of existing trees to enable the development

No trees need to be felled to enable this development.

6.2 Trees to be pruned to enable the development

No trees need to be pruned to enable this development.

6.3 Demolition

There is no demolition required on this site.

6.4 Incursions into or over RPAs

Tree 1 Oak, category A3 veteran

- The proposed access road crosses 8% of the standard RPA (BS5837 - 12x dbh capped at 15m)
- This access road crosses an additional 18% of the veteran tree ecological buffer zone beyond the RPA (NPPF - 15x dbh)
- This road will be adoptable by Devon County Council who still will not engage with cellular confinement systems under highways, as other authorities throughout the UK and the world have for decades. As such this road will be of normal construction, compacted and impervious to water and oxygen.
- The footway between the access road and the tree, and the small embankment off the side of the footway can be constructed over a cellular confinement system (such as Cellweb). Devon County Council have used this method under footways and cycle paths elsewhere. This no-dig cellular confinement construction will be over 14% of the RPA and an additional 5% over the veteran tree buffer zone
- The proposed residential buildings to the north are beyond the veteran tree buffer zone
- There are small areas of land to the north and west of the buffer zone that can be secured for an extended buffer zone in these directions, that compensate for 60% of the lost buffer zone to the south
- I assess this incursion with the no-dig road construction and compensatory land to the north, as a minor adverse impact on the RPA, and a moderate adverse impact on the buffer zone of veteran Oak Tree 1.

Tree 9a Ash category A3

- An attenuation bund will cover 11% of the RPA of this tree
- There is no other development in any other directions around this tree and an extended RPA can be secured in all other directions
- I assess this bund as minor adverse impact on the RPA of this tree

Tree 10a Oak category A3 veteran

- There is to be no development within the modified area (accounting for the existing barn) of the veteran tree buffer zone
- The buffer zone can be protected post-development to discourage high footfall
- As such I assess there to be a negligible impact on this tree.

Tree 10b Oak category A3

- Four parking spaces, a path and a bus shelter will be constructed over 15% of the RPA
- These are partly over the existing compacted, semi-permeable access track to the barn
- These will be a cellular confinement construction after lifting some of the existing stone track, retaining a sub-base just sufficient for e.g. Cellweb
- The no-dig parking level can be aligned to meet the access road level
- A bus turning area will be of a normal construction over 5% of the RPA
- Acco type drains will be installed to improve permeability of water and oxygen if the parking spaces and path are to be sealed
- There is a large area to the west of the tree, not shared with other RPAs and protected within the veteran tree buffer zone of 10a, that will compensate for the impact on the RPA of 10b
- I assess these constructions to be a minor adverse impact on tree 10b.

Tree 13d Turkey Oak category A2

- There will be a new footway around the existing entrance splay to provide a point for pedestrians to cross Stoke Hill to a footway on the other side
- This footway will need to be dug into the bank to a depth of approximately 500mm to reach the level of the road, digging into 3% of the nominal circular RPA
- To the east of the dug-in section the footway becomes raised above the existing ground level. Here the construction can be no-dig with a cellular confinement system.
- In the same direction the existing entrance splay will be brought up to an adoptable standard and sealed. This will not take up any more of the RPA than the existing splay, but will become impermeable to water and oxygen other than some lateral permeability
- The visibility splay from the entrance has been assessed with recorded traffic flows and speeds and the tree can be retained with these speeds
- The existing stone track to the barn will also become sealed and become the access road to the residences in the southern area
- I assess the dug-in footway, the no-dig footway, and the sealing of the existing stone track to be a moderate adverse impact on Turkey Oak T13d.

6.5 Service runs

- There is an existing high voltage supply into the site
- There is existing water within the site and additional water can be brought in between RPAs at various points along Stoke Hill Road
- Other services in and out of the site can also be taken in/out between RPAs and airspading can be used to investigate and protect tree roots if close to RPAs.

6.6 Parking areas and paths

- There will be no parking areas within RPAs other than those described in 6.4 above, for tree 10b
- Any potential paths connecting with Mincinlake Valley Park to the west can be aligned between RPAs or be of no-dig cellular confinement construction.

6.7 Fences

There are no fences planned within RPAs

6.8 Changes of levels close to trees

There will be no changes to levels within the RPAs of trees other than those described in 6.4 above.

6.9 Future pressure for removal or pruning

The proposed residential properties have been sited well back from all the trees and so I do not foresee pressure for future removal or of heavy pruning of trees.

With Ash Dieback already on site it is likely that some dying Ash trees within striking distance of roads and houses may need removing over time.

6.10 Off-site footway, foot/cycle path provisions

The proposed footway along the southern section of Stoke Hill is planned to be constructed within the width of the existing road, without digging into the roadside bank

The proposed foot/cycle path leaving the site to the southeast can be located between existing tree RPAs or as no-dig cellular confinement construction over them.

6.11 Summary of arboricultural impacts

I assess the overall arboricultural impacts across the site as moderate adverse. The impacts are on four RPAs and one veteran tree buffer zone. No trees are to be lost to the development.

The veteran tree buffer zone will be extended in other directions to account for 60% of the lost buffer zone to the south. The proposed tree planting of native tree and shrub species in the extended buffer zone area will partially mitigate the lost 40%, enhancing the buffer zone without competing with the veteran tree.

The planting plan throughout the site has sufficient space to grow at least 40 trees of large species, to their full size, and a similar number of smaller tree species.

These new trees will, over the following 10 years, more than mitigate the impacts on the four existing large tree RPAs. They will also compensate for (although not directly mitigate) the 40% lost buffer zone of one of the veteran trees.

7 SUBJECT AREAS FOR ARBORICULTURAL METHOD STATEMENT AND TREE PROTECTION PLAN

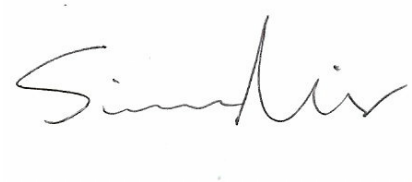
For the development phase of the project an Arboricultural Method Statement report and Tree Protection Plan drawing will be produced. These will cover the following general subjects in more detail:

- Marking and methods of trees to be removed and pruned
- Construction Exclusion Zones
- Protective barriers
- Ground protection
- Service runs
- No-dig constructions within RPAs
- Excavations and root pruning within RPAs
- Veteran tree buffer zone design and management
- Supervision and monitoring.

8 FURTHER WORK

I will await further instructions from James McMurdo

Signed



MSc in Arboriculture and Community Forest Management
BSc. (Hons) in Agriculture
Advanced Diploma in Arboriculture and Community Forest Management
Arboricultural Association's Technicians Certificate in Arboriculture

APPENDIX A - TREE SURVEY DATA

T G W	No.	Species	Ht (m)	dbh (mm)	Spread (m) N	E	S	W	Cat	RPA. Radius (m)	clear (m)	Age Class	Condition	Observations	Prelim. Management Recommendations
T	1	Oak	18	1500	6	6	6	10	A3	25.0	1	Veteran	Good	Pollard from 3-4m. Tears, cavities, deadwood on small pedestal. Owl box. Dbh at waist. Wild Bees in pruning wound 2m S	
T	2a	Scots Pine	18	700	2	1	7	2	A2	10.5	14	Veteran	Fair	Large hazard beam to S. Heavy Ivy. 40 Elms <300mm dying.	Sever Ivy
T	2b	Oak	16	700	6	7	7	6	A2	8.4				Beside and over road.	
T	2c	Limes x3	18	600	5	5	5	5	A2	7.2	1	Mature	Good	Deadwood in southern tree	
T	2d	Ash	16	566	6	6	6	5	B2	6.8	3	Middle	Good	2 stems from 1m. Possible early Ash dieback (some browned leaves)	
	3-8													Woodlands and Groups 3 to 8 are no longer in this smaller application area	
T	9a	Ash	16	945	6	6	7	7	A3	11.3	2	Mature	Good	Coppice, 10 stems, no sign of Ash dieback. Possible 3 trees but RPA calculated as 1	
T	9b	Ash	16	755	4	6	4	7	A3	9.1	1	Mature	Good	Coppice, 4 stems. 2 more coppices (one either side). No sign Ash dieback.	
T	9c	Oak	14	758	7	7	7	5	A3	9.1	1	Mature	Good	Pollard, 5 stems	Consider phased re-pollarding of this smaller/younger tree
T	10a	Oak	18	1580	13	16	10	9	A3	23.7	4	Veteran	Good	Pollard at 1.5m, 6 branches cut to torn stumps SW, 4 sprouting well. Beefsteak at 200mm NW	Consider continuing phased re-pollarding of old Oak
T	10b	Oak	14	870	9	4	5	5		10.4				5 branches cut to torn stumps SW, all sprouting. Tree beside lean to NE	
T	11a	Goat Willow	10	461	5	3	5	5	B3	5.5	3	Middle	Good	2 stems compressing at	

T G W	No.	Species	Ht (m)	dbh (mm)	Spread (m) N	E	S	W	Cat	RPA. Radius (m)	clear (m)	Age Class	Condition	Observations	Prelim. Management Recommendations
														1.2m	
T	11b	Oak	16	800	7	6	8	8	A2	9.6	4	Mature	Good	Middle of 3 older Oaks	
T	12a	Turkey Oak	16	600	6	6	6	6	A2	7.2		Mature			
T	12b	Turkey Oak	22	1040	14	10	14	10	A2	12.5		Mature			
T	13a	Oak	16	500	7	5	7	6	A2	6.0		Mature		Set back behind scrub above road	
T	13b	Oak	16	500	5	5	6	6	A2	6.0		Mature		Set back behind scrub above road	
T	13c	Oak	16	500	6	8	6	6	A2	6.0	3	Mature	Good	On edge of 6m vertical drop to road	
T	13d	Turkey Oak	20	971	11	9	12	7	A2	11.7	6	Mature	Good	2 stems from 1.2m, 1 dom' and enclosing other	Inspect roadside in daylight with hi-vis

APPENDIX B – TREE RISK ASSESSMENT

		Quantified Tree Risk Assessment added in as extra.	Target range	Size range	Probability of failure range	Risk of harm	Observations	Recommendations
T	13d	Turkey Oak at main entrance **Details of methodology supplied separately**	3 480-4700 cars per day at 30mph	1 Larger than 450mm	6 One range from a self-optimised tree	1:4 000 000 One in four million	2 stems from 1.2m, 1 dominant and enclosing the other	Inspect rest of roadside in daylight with hi-vis