

Arboricultural Impact Assessment for Land North of Exeter

Prepared for John Drake

**By Simon Major MSc (Arb)
Major Trees Ltd.**

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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 18/09/21. 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 a Autocad drawing with the topographical survey.

Susanne Lettau 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
Pollard	Trees that have been cut when young at some point above ground level and then repeatedly pruned back to the same or similar points when stems are still small. (This is not to be confused with 'topping' the poor practice of cutting through main stems)
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 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.

2.2 Site description

The site is three 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 a track (Mile Lane) to the east of the site. To the southeast is Mincinglake Valley Park – public open space 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.

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 17/09/21.

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, 5d,e, 6a,b, 9a, 12a,b, 13c.

5 TREE CONSTRAINTS

5.1 Crown spreads

For the trees 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. 3a, 3b in group 3).

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 of radius = 15 x stem diameter at 1.5m (with reference to standing advice from the Forestry Commission and Natural England – a material planning consideration)
- 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

5.3.1 Tree 1

There is a building within the RPA of Tree 10b. I have adjusted the shape of this RPA into a wider shaped area excluding the area of the barn.

Stoke Hill lane is probably within the RPAs of the Oaks in group 13 (on the lip of a very high bank in dense undergrowth). I have just estimated an RPA on the field side of this group.

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 online map which shows no Tree Preservation Orders or Conservation Areas affecting this site.

6 ARBORICULTURAL IMPACTS OF PROPOSED LAYOUT

6.1 Loss of existing trees to enable the development

Woodland 8

- An area of approximately 20m x 10m of small Willow trees and scrub (mostly less than 75mm diameter and not surveyed) near the top of Woodland 8 will need to be felled for the proposed access road between the fields
- The loss of the small Willow trees will have a minor adverse environmental impact that can be mitigated with nearby on-site planting.

Group 12

- An attenuation pond is proposed at the lowest, southern tip of the site
- The pond is currently drawn within an area of scrub and small trees in Group 12, but clear of the RPA of Tree 12b (Turkey Oak category A2)
- The location and size of this pond, and its construction methods is yet to be confirmed but it currently represents a moderate arboricultural impact that can be mitigated with nearby on-site planting.

All other trees not listed above will be retained but see 6.4 below for Tree 8b Turkey Oak which can be retained with an engineering solution.

6.2 Trees to be pruned to enable the development

Trees 5c and 5d (Oak coppices) will need to be crown raised to 2.5m over the proposed cycle path ramp down into Mile Lane. This is a negligible adverse impact but see 6.4 below for the cutting.

Tree 8b (Turkey Oak) will need to be crown raised to 2.5m above the proposed footway height, and 5m above the proposed access road height.

6.3 Demolition

There is no demolition required on this site.

6.4 Incursions into or over RPAs

Tree 1 (veteran Oak category A3)

- The proposed access road crosses 7% of the British Standard RPA (12x dbh capped at 15m) but 10% of the National Planning Policy Framework RPA (15x dbh) for a veteran tree
- There are additional hard 'shared surfacess proposed either side of the access road covering an additional 19% of the NPPF RPA
- Both the road and shared surfaces can be constructed with no-dig 3D cellular confinement systems (e.g. Cellweb), with aeration and drainage, so the impact on the veteran tree can be minimised
- Such systems have been adopted by highways authorities throughout the UK and around the world
- The proposed residential building to the north is beyond the BS RPA but will involve digging footings and building on 10% of the NPPF RPA
- I assess these cumulative incursions, with the no-dig road construction, as a moderate adverse impact on Tree 1.

Tree 8b (Turkey Oak category A2)

- The proposed access road and footway crosses 29% of the RPA with the footway passing 2.5m from the stem
- To minimise the impact on this tree, a 4m wide, low bridge could be constructed allowing some tree roots to be untouched passing through to the south, either side of the watercourse
- This will also maintain a wildlife corridor under the access road, down the line of trees and scrub
- To further minimise the impact on this tree the footway above the road could be constructed with a no-dig 3D cellular confinement system (e.g. Cellweb)
- To further minimise the impact the road either side of the bridge could be a no-dig 3D cellular confinement construction
- These construction methods would represent a minor adverse impact on the tree 8b
- If a no-dig system is not feasible for the road then a normal fill either side of the bridge would cover 22% of the RPA, raising the impact on the tree to moderately adverse
- If it is not possible to retain some roots under the road then it may be better to fell the tree, rather than bury/cut off a third of its rooting area where it leans slightly over the proposed road – felling this one tree would represent a moderate adverse arboricultural impact for the whole site which can be mitigated with onsite planting.

6.5 Service runs

- There is an existing high voltage supply into the site
- There is existing water within the site
- Other services in and out of the site will avoid digging within the RPAs of any trees, or will be carried out with airspade excavations.

6.6 Parking areas and paths

Trees 5c and 5d (Oak coppices, category A3)

- A cycle path is proposed to link up with Mile Lane that will require cutting a ramp down through the 1.8m high bank onto the lane
- I have measured the widest gap between this continuous line of Oak coppices as 6m between the buttresses of Trees 5c and 5d
- A ramp would cut through 22% of the RPA of Tree 5c and 5% of the RPA of tree 5d
- This will be a moderate adverse impact on the trees but will provide good public access
- There is an existing cutting through the bank for a narrower footway just south of the boundary in Mincinglake Valley Park – this cutting would be very narrow for a cycle path and could not be widened without felling a tree.

Woodlands 8 and 9

- A footpath is proposed through Woodlands 8 and 9
- This will be feasible with a no-dig, porous surface (stone chippings) on dryer land and a 3D cellular confinement system on wetter land and cross-slopes.
- A few sections may need steps
- The route can be easily decided upon to avoid the removal of any trees - only Blackthorn and Willow scrub to be cut along the line – and some Hazel may need re-coppicing beside the line
- This footpath will be a negligible arboricultural impact.

Tree 10a (veteran Oak category A3)

- A minor access road and carparking is proposed beyond the BS RPA (12x dbh capped at 15m) but will cover 17% of the NPPF RPA (15x dbh) for a veteran tree
- A footpath will cover a further 7% of the NPPF RPA
- The access, parking and footpath can be constructed with a no-dig 3D cellular confinement system (e.g. Cellweb) with aeration and drainage to limit the impact to a moderate adverse arboricultural impact to this tree

Group 13 Oaks and small Ash

- A parking barn is proposed over part of the RPA of Group 13
- The RPA will be confirmed after further scrub clearance to re-survey the roadside Oaks
- The barn will be constructed with only footings dug only for poles (no strip footings)
- The surface within the RPA will be constructed with a no-dig 3D cellular confinement system (e.g. Cellweb)
- This will represent a minor adverse arboricultural impact

6.7 Fences

Woodland 11

- The back corner of one garden extends within the RPA of smaller edge trees of Woodland 11
- The fence will be constructed without excavations or footings, with posts driven in at 2m spacing
- This will be a negligible arboricultural impact.

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 6.1 to 6.7 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 beside access roads or paths will need removing over time.

6.10 Summary of arboricultural impacts

I assess the overall arboricultural impacts across the site as moderately adverse.

There is a planting plan throughout the site with sufficient open space to grow at least 75 replacement trees of large species, to their full size, and at least 50 smaller tree species.

With my recommended construction methods and the replanting the impacts can be minimised and mitigated for.

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
- Changes of levels near to trees
- Excavations and root pruning within RPAs
- Hard landscaping within RPAs
- Supervision and monitoring.

8 FURTHER WORK

I will await further instructions from James McMurdo

Signed

A handwritten signature in black ink, appearing to read 'Simon', written in a cursive style.

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)				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)	
T	3a	Wych Elm	14	620	8	7	7	6	A3	7.4	1	Mature	Good	Pollard at 3m, on top of bank	
T	3b	Oak	16	870	11	9	8	7	A3	10.4				Coppice, 2 stems. 3rd stem torn out, occluding.	Reduce spread of E stem by 2-3m to N&E by making 12x100-150mm target pruning cuts.
T	4a	Turkey Oak	16	905	8	8	8	8	A3	10.9	2	Middle	Good	2 stems, 1 horizontal for 2m from 1m forming bench, on pedestal	
T	4b	Oak	14	812	8	8	8	5	A3	9.7	3	Mature	Good	Coppice, 3 stems	
T	5a	Oak	12	665	6	2	6	6	A3	8.0	3	Mature	Good	Coppice, 4 stems, beside lane	
T	5b	Oak	12	648	4	2	4	7	A3	7.8	2	Mature	Good	Coppice, 5 stems	
T	5e	Oak	10	500	2	4	2	5	A3	6.0	2	Mature	Good	Coppice, 2 stems, 3rd is small standing deadwood	5c, 5d drawn in after survey using 5b dims
T	6a	Oak	14	815	8	8	8	8	A3	9.8	2	Mature	Good	Coppice, 6 stems, might be 2 trees	
T	6b	Oak	18	500	9	6	7	8	A2	6.0	1	Mature	Good		
T	7a	Oak	14	720	0	9	13	8	A3	8.6	1	Mature	Good	Whole tree leant heavily to S, almost horizontal over valley park	

T G W	No.	Species	Ht (m)	dbh (mm)	Spread (m)				Cat	RPA. Radius (m)	clear (m)	Age Class	Condition	Observations	Prelim. Management Recommendations
T	7b	Oak	14	1050	9	9	13	11	A2	12.6	1	Mature	Good	Possible pollard at 1.5m, 4 stems/branches	
T	8a	Oak	16	678	0	7	9	10	A3	8.1	2	Mature	Good	Lean to SW of ridge of bank, pollard from 1m	
T	8b	Turkey Oak		660	6	10	9	10	A2	7.9	0	Mature	Good	Slight lean and all spread to SW. Blushing Bracket fungus on roots to NW	
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 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