Major Trees Ltd
Arboricultural Consultancy

Arboricultural Impact Assessment for Clifton Hill

Prepared for Exeter City Living

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1 INTRODUCTION

1.1 Instructions

Justin Pickford of Baker Ruff Hannon 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. However I have recorded the highest risk on the site with my own assumptions of occupancy rates (see Appendix B). I have sent Justin Pickford a one-page summary of my risk assessment methodology. I would re-visit and deliver a tree risk assessment if required if the development was to go ahead.

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 inside and within 15m of the red line on my drawing titled 'Clifton Hill Arboricultural Impact Assessment' dated 19/07/20. It does not include the trees further to the northeast or east on the wider property.

1.5 Documents supplied

Tomas Gaertner of SE3 Design supplied me with a digital topographical survey. Daniel Hutchings of Clifton Emmery Design supplied me with a digital proposed layout.

1.6 Terminology

Clear	Height of crown clearance above ground level
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
Raise	Prune the lower branches to increase the clearance above the ground or objects below the tree
Reduce	Shorten branches back to strong side branches, making target pruning cuts, maintaining the form and shape characteristic of the species
RPA	Root protection area
N E S W	North East South West
>	More than
<	Less than.

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 29/01/20. I returned on 12/06/20 to measure the levels either side of the wall at T1 Yew, and to identify other tree species in leaf. The weather was fine and the visibility was good on both visits.

2.2 Site description

The site is the grounds of a former sports hall, set within residential buildings and parkland.

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 'Clifton Hill Arboricultural Impact Assessment', dated 19/07/20.

I have assumed the tree centres are accurately plotted on the topographical survey supplied to me. Trees 1, 2, and 3 were not plotted on the topographical survey. I have plotted these trees in by triangulation off site features using a Laserace.

5 TREE CONSTRAINTS

5.1 Crown spreads

I have deleted the circular crown spreads from the topographical survey and I have re-plotted the crown spreads of all individual trees to four compass points.

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
- There are no ancient or veteran trees on this site for which I would have plotted RPAs of 15 x stem diameter.

5.3 Existing hard surfaces within Root Protection Areas

There is a tarmac highway and footway, a tarmac access road, and several underground services within the nominal, circular RPA of Tree 1 Yew. I have plotted an alternative shaped RPA for this tree, as my anticipated extended rooting area is offsite to the northeast in the three neighbouring gardens.

There are tarmac carparks and footways within the RPAs of trees 25 to 30. I have not adjusted the shape of these RPAs as they are surrounded by tarmac and are proposed for removal in this plan.

5.4 Shading

I have plotted shadow patterns for two example trees that are to the south of the proposed residential properties. The pattern represents the approximate shadow cast by the whole tree between 10am and 5.30pm in midsummer based on a local model produced by myself.

For this Passivhaus development these deciduous trees to the southeast of the buildings will play an important role in cooling the properties during the summer, while allowing some solar gain during the winter.

5.5 Tree Preservation Orders and Conservation Areas

I have checked the Exeter City Council online map that shows no Tree Preservation Orders on this site. The map shows that the northwestern half of the site is within a Conservation Area.

6 ARBORICULTURAL IMPACTS OF PROPOSED LAYOUT

6.1 Loss of existing trees to enable the development

The following trees will need to be felled to enable the development or to be reasonable with the proposed layout:

- Tree 3 Holly
- Trees 4, 5 and 6 Cherry Plums
- Trees 18 to 30 – two Apples, one Lime, three Maples, one Sweet Gum, four Birches, one Cherry and one Tulip Tree
- Total 17 trees.

I have outlined the centres of the trees to be removed in magenta circles with magenta labels in my Arboricultural Impact Assessment drawing.

The tree losses will be to enable the density of housing required.

The trees are all semi-mature from 1980s landscape planting and the loss of these 17 trees will have a moderate adverse arboricultural impact.

This adverse impact will be partially mitigated by planting of the 24 new trees proposed in the landscape plan.

All other trees not listed above will be retained.

6.2 Trees to be pruned to enable the development

The following trees will need to be pruned to enable the development:

- Tree 17 Cherry Plum, will be raised to 4m above the proposed driveway and reduced to provide a 1.5m clearance from the proposed building
- Tree 13 Goat Willow, will be reduced to provide a 1.5m clearance from the proposed building.

These pruning works will be a minor adverse arboricultural impact and will need repeating on approximately a 5 year cycle.

6.3 Demolition

The existing wall beside Tree 1 Yew will be demolished. This work will be described further in a Tree Protection Plan drawing and an Arboricultural Method Statement report to avoid impacts on the tree.

The demolition of the existing buildings can be carried out with no impacts on trees to be retained.

6.4 Incursions into RPAs

The proposed buildings close to trees 10 (Maple) and 13 (Willow) will require 0.5m and 1.5m (respectively) deep cuttings into 10% and 9% the circular RPAs.

As the land is not being developed or changed on the other sides of these trees these incursions will represent very minor adverse arboricultural impacts.

6.5 Service runs

The existing underground services will be used and so there will be no new trenching near to retained trees.

6.6 Parking areas and paths

Four car parking space are proposed within the RPA or Tree 1 Yew. These will be sloped up and partially dug-in to the RPA and partially no-dig. This work will be described further in a Tree Protection Plan drawing and an Arboricultural Method Statement report.

The dug-in sections of the parking areas will be a moderate adverse arboricultural impact.

A 1.2m wide strip at the front of these four parking spaces (currently in front of the wall and under tarmac, with an underground electricity supply trenched just outside the wall) will be improved with the use of Silva Cells or structural soil to partially mitigate the dug-in parking sections. This will depend on a survey or trial pit for the depth of the electricity supply.

6.7 Fences

A new fence will be constructed within the RPAs of Tree 1 Yew and Tree 2 Red Cedar. The fence will be constructed with wide spaced posts (at least 1.5m apart) that will be hand dug. This work will be described further in a Tree Protection Plan drawing and an Arboricultural Method Statement report to minimise impacts on the trees.

This will be a negligible adverse arboricultural impact.

6.8 Future pressure for removal or pruning

There will be a need to prune trees 7, 9, 10, and 13 in the future to maintain clearances from the buildings. This will be possible on a five-year cycle.

This pruning will be a minor adverse arboricultural impact and the Passivhaus principles should minimise the pressure on tree removal.

6.9 Overall impact

The overall proposed development will be a moderate adverse impact.

This impact will be partially mitigated with the Silva Cells (or structural soil) and the new planting.

This impact and mitigation must be weighed up in the context of the provision of Passivhaus housing.

7 SUBJECT AREAS FOR ARBORICULTURAL METHOD STATEMENT AND TREE PROTECTION PLAN

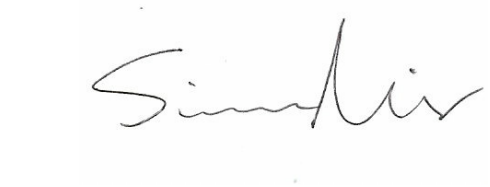
For the development phase of the project an Arboricultural Method Statement report and Tree Protection Plan drawing will be produced. These will cover the following general subjects in more detail:

- Marking and methods of trees to be removed and pruned
- Demolition within RPAs
- Construction Exclusion Zones
- Protective barriers
- Ground protection
- Service runs
- Excavations and root pruning within RPAs
- Dug-in and no-dig construction within RPAs
- Changes of levels near to trees
- Hard landscaping within RPAs
- Supervision and monitoring.

8 FURTHER WORK

I will await further instructions from Justin Pickford or Tomas Gaertner

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

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	Yew	15	1020	7	7	6	7	A3	12.2	4	Mature	Good	4 stems from 1.8m	Raise to 5m over access
2	Western Red Cedar	16	530	5	5	2	6	B2	6.4	2	Mature	Good	4 stems, dbh aggregated, variegated variety	None
3	Holly	10	400	3	3	3	3	A2	4.8	4	Mid	Good	dbh estimated offsite	None
4	Cherry Plum	6	200	2	2	2	2	B2	2.4	4	Mid	Fair	dbh estimated offsite	None
5	Cherry Plum	8	200	2	4	3	1	B2	2.4	4	Mid	Fair	dbh estimated offsite	None
6	Cherry Plum	10	300	4	2	1	2	B2	3.6	4	Mid	Fair	dbh estimated offsite	None
7	Cherry Plum	12	400	5	5	5	5	B2	4.8	4	Mid	Good	Heavy varigated Ivy. dbh estimated offsite.	None
8	Sycamore	18	500	8	8	8	8	B2	6.0	3	Mid	Good	Multi-stemmed from 2m (10 stems compressing) dbh estimated offsite	None
9	Lobel's Maple	14	440	6	6	6	4	B2	5.3	3	Mid	Good	2 stems from 2m	None
10	Silver Maple	21	580	6	4	6	4	B2	7.0	2	Mid	Good	5 stems by 4m	None
11	Silver Maple	22	590	6	4	6	4	B2	7.1	3	Mid	Good	5 stems by 5m	None
12	Silver Maple	18	580	6	4	6	4	B2	7.0	2	Mid	Good	5 stems by 4m	None
13	Sycamore	17	470	5	3	5	4	B2	5.6	2	Mid	Fair	2 stems from 1.5m, weak compressing fork	Reduce stem to NW by 3-4m in height by making 1x150mm target pruning cut to sub-dominate
14	Willow	12	574	6	6	6	6	B3	6.9	0	Mid	Good	3 stems crossing over, maybe grafted	None
15	Sycamore	20	600	7	7	7	7	B2	7.2	6	Mature	Good	8 stems by 6m	None
16	Sycamore	12	397	4	5	4	4	C2	4.8	0	Young	Fair	7 stems growing through chainlink fence	None
17	Sycamore	10	260	4	2	1	3	C2	3.1	1	Young	Fair	3 stems growing through chainlink fence	None
18	Apple	5	240	3	3	3	3	B3	2.9	1.5	Mid	Good	4 stems by 1.5m	None
19	Lime	10	280	5	5	5	2	B2	3.4	2	Mid	Good	Branches with slightly compressing forks	None

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
20	Cappadocian Maple	13	400	6	6	6	6	B2	4.8	2	Mid	Good	Scar 0.2-1m x 50mm occluding	None
21	Cappadocian Maple	13	460	6	6	6	6	B2	5.5	2	Mid	Good	5 stems at 1.8m, several compressing forks	Reduce stem to SW by 3m in height by making 1x150mm target pruning cut to sub-dominate to central stem
22	Apple	8	318	4	2	4	4	B3	3.8	2	Mid	Good	6 stems by 1.5m	None
23	Sweet Gum	12	190	5	5	3	4	B2	2.3	3	Mid	Good	3 stems by 4m	Reduce 2 southern stems by 2m in height by making 3x80mm target pruning cuts
24	Cappadocian Maple	14	440	6	6	6	6	B2	5.3	1.5	Mid	Good	6 stems by 3m	Reduce 2 eastern & 1 southern stem by 3m in height by making 6x150mm target pruning cuts
25	Silver Birch	11	300	4	4	4	4	B2	3.6	1	Mature	Good	None	None
26	Silver Birch	11	250	3	4	4	3	B2	3.0	2	Mature	Good	None	None
27	Silver Birch	10	210	4	4	3	3	B2	2.5	3	Mature	Good	None	None
28	Cherry spp	8	280	7	5	5	6	C2	3.4	0	Mature	Poor	Large stem cankers & pruning wounds	None
29	Silver Birch	11	250	3	3	4	3	B2	3.0	1.5	Mature	Good	None	None
30	Tulip Tree	16	500	6	5	7	5	A1	6.0	1.5	Mature	Good	2 stems from 3m but u-shaped fork	Raise to 5m over access

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	10	T10 Silver Maple **Details of methodology supplied separately**	3 (value of possible damage £2 000 – £20 000 if new house is built 7m from tree	P (property)	6 (1 stem down from a fully self-optimised tree)	1:30M An acceptable risk of harm	Compressing forks between co-dominant stems, but fairly upright (Ivy covered)	Sever Ivy to improve inspections. Reduce stems towards new house by 2-3m in height to sub-dominate to stems behind