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Arboricultural Report

7 The Grove
London
N6 6JU.

July 2021

Introduction

1. This is an Arboricultural Report written by Russell Miller, an arboricultural consultant engaged by the owner of 7 The Grove, London N6 6JU (hereafter, the property).
2. The author was instructed to inspect a large, mature hornbeam (*Carpinus betulus*) in the rear garden at the above property with a view to assessing any possible tree related issues associated with the proposed development set out in the plans of Lisa Shell Architects (document reference: GRO7 / GA / 002 / R).

Scope of Report

3. This is an arboricultural impact assessment regarding the above mentioned hornbeam and the proposed development. It does not consider trees elsewhere or other issues.

Limitations

4. Trees are constantly changing, living organisms. The observations in this report are valid for a limited period of 12 months. Further tree inspections are required if an accurate understanding is to be achieved at any future date.

Trees in Relation to Development

5. This report is written by an experienced, qualified arboricultural consultant and it relies on industry accepted standards. In particular it adopts guidance contain in *British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations*.
6. *BS587* specifies how to protect trees to be retained during development, including how to calculate root areas requiring protection. It should be noted that dimensions for Root Protection Areas (RPAs) specified in BS5837 are <u>minimum</u> areas considered necessary for a tree to remain healthy.
7. *BS5837* **Root Protection Area (RPAs)** are circular and represent theoretical root areas. Tree roots are however very variable and follow natural rather than theoretical patterns. Roots will proliferate

where soil conditions are favourable to their growth (i.e. water, air, nutrients). Roots cannot grow in very dry, compacted or anaerobic mediums. Therefore actual root areas for any tree may differ from BS5837 idealised circles.

8. Changes to ground level can adversely affect roots as can compaction or anything that changes sub surface conditions.

The Hornbeam

9. The hornbeam at 7 The Grove is an impressive mature tree that has the crown structure of a lapsed pollard.[1] It measures 1900mm girth @ 1.5m (stem diameter 605mm). Other dimensions are detailed in the Tree Schedule (below). The tree is over 100 years old and in good condition. It leans to the south with a dominant major limb resting on/touching the existing shed outbuilding. It has a useful life expectancy of over 40 years and is an A1 Grade tree according to *BS5837* criteria.

10. The tree is close to the existing house: approximately 4.5m from the corner of the house; 2.25m from the corner of the terrace balustrade; and 1m from the corner of the shed. The proximity of the tree to the house complicates matters requiring some deviation from basic *BS5837* guidance. This report makes specific provisions for protection of the tree. These are detailed below.

Roots and Root Protection Area

11. In accordance with *BS5837* the RPA radius for a 605mm diameter tree would be 7.2m, giving a circular RPA of 163m^2. However, in this case around 25% of this notional RPA is under hard surfaces, including the house itself, the terrace, out buildings and concrete paths. Another 25% or more is off site, beyond the boundary wall to 5 The Grove. Therefore, of the standard circular RPA only about 40% is in areas suitable for root activity and within the property boundary (see **Tree Protection Plan**).

12. Without the benefit of test pits or root radar it is very difficult to determine precisely where roots do or do not occur. However, it is very unlikely that the areas under the house and terrace contain live roots since such soil as exists (the house has a basement) is likely

[1] It is not known whether the tree was ever pollarded, and given its location close to an old mid-Victorian house this seems unlikely, however it could be a previously 'working' tree that has been incorporated into a garden landscape.

to be desiccated and unsuitable for tree roots.

Site Specific Root Protection Area (SSRPA)

13. Rather than simply consider the remaining 40% of the notional RPA a better approach to preserving the tree is to extend the RPA into areas where roots are actually likely to occur (i.e. the lawn and garden). The Tree Protection Plan (**TPP**) delineates a site specific RPA (SSRPA). This new RPA is equivalent to the 163m^2 notional RPA but in areas more likely to contain roots. Of this new RPA 136m^2 (83%) is on site, all of which is in soft landscaping.

Impact Assessment

14. Considering the proposed development, potential impacts on the hornbeam are:

- Loss of roots and root area;
- Loss of support from the shed;
- Direct damage during demolition and construction;
- Indirect damage during construction (e.g. due to soil compaction).

15. Three root related potential direct impacts need to be considered:

- Excavations for the new basement stairway;
- The terrace extension;
- The (bike) shed extension.

Excavations for the new basement stairway

16. Although it is unlikely that live roots exist in the area proposed for excavations a provision in the **Arboricultural Method Statement (AMS)** provides for the eventuality that roots are found and in that case are protected.

The Terrace Extension

17. The terrace extension could adversely impact on tree roots in so far as it extends over areas within the RPA which are likely to contain roots. Furthermore it extends very close to the tree, to within approximately 1.5m. The area very close to the tree is particularly critical since this is where larger, primary roots are likely to occur (see **High Priority Root Area** on the TPP).

18. The design of the terrace extension therefore takes account of the sensitivity of this area and no foundations will be dug outside the footprint of the existing terrace. Instead a cantilever design carriers the weight in this area. This greatly reduces risk of root damage. The AMS also provides for hand dig of those foundations (since they are technically within the notional RPA, though not the Site Specific RPA).

19. Loss of the shrub bed and a small part of the path to the west will likely result in some loss of root area. It is not known whether there are roots in this area but once covered the area will dry out and may become unsuitable for smaller tree roots active in water and nutrient uptake. However larger conducting roots will survive provided they remain connected to a network of active smaller roots elsewhere.

20. The total area 'lost' (shrub bed plus path) is around 9m^2 and therefore a small percentage of the total RPA (9/163 = 5.5%). This is within acceptable limits and the priority is to protect roots from damage from foundations rather than this modest potential recruitment loss. Furthermore not all of this area is 'lost' since larger roots will survive.

Outbuilding

21. Similar considerations apply to the new bike shed. The new outbuilding extends about 2m further to the west than the existing shed and results in a theoretical loss of approximately 4m^2 of RPA. However, that area is currently under hardstanding and although likely to contain roots, because of its proximity to the tree, the priority is to avoid damaging these roots and their ability to convey water and nutrients from more distant feeder roots. The design and placement of foundation pads is therefore the critical factor.

22. The proposed foundation design uses five small concrete pads. This is intended to allow the building to move or 'float' in response to any root activity. It also requires minimal excavations within the RPA and crucially the High Priority RPA. The AMS provides for supervision of these excavations and the precise locations of the pad foundations by a suitably qualified arboricultural consultant.

23. The combined total RPA 'loss' is in the order of 13m^2 or 8% of 163m^2. Note these figures are indicative rather than actual measures of

root area and root loss. Although covering these areas will likely reduce active water and nutrient uptake in those areas, if constructed carefully, the development should not harm larger roots in these areas and therefore any impact on actual root mass should be less than 8%.

Loss of Support from the Shed

24. The south limb of the hornbeam is in contact with the guttering of the existing shed. It is not considered that the guttering or shed are providing support to this limb. There are no signs of significant force being transferred from the tree to the existing structure. However provision for future growth and possible sagging of this limb should be incorporated into the final design for the new bike shed roof.

25. If necessary a further inspection can be made of the point of contact once the existing shed roof and west wall have been demolished.

Direct or Indirect Damage

26. Even with a perfect design a tree can still be severely damaged or destroyed if the demolition and construction phase are not sufficiently aware of tree related considerations. The best way to avoid direct and indirect damage is to exclude all construction traffic, personnel and materials from the entire RPA for the duration of the project. However here much of the building work occurs within the notional RPA and a complete **Construction Exclusion Zone (CEZ)** would prohibit the build taking place. In this case risks to the tree will have to be managed.

27. The Tee Protection Plan cannot specify a Construction Exclusion Zone around the entire RPA (whether generic or specific) so instead it specifies two areas:

    - A CEZ excluding construction activity from that part of the garden not directly affected by the build (this comprises the vast majority of the new Site Specific RPA);
    - A High Priority Root Area (i.e. the part of the RPA likely to contain essential, primary roots) part of which cannot be fenced off by the CEZ.

28. An Arboricultural Method Statement (AMS) details how to protect

the tree when operating outside the CEZ. It specifies what can and cannot be done within the RPA and HPRA. A pre-commencement of works briefing and subsequent on-site supervision by a suitably qualified arboricultural consultant should emphasise the importance of the provisions of the AMS.

Recommendations

1. Pad foundations for the new bike shed are located in areas devoid of larger roots (diameter >25mm).
2. The roof of the new bike shed should provide for growth and movement of the south limb of the hornbeam.
3. All construction and demolition (including storage) to be excluded from the CEZ by secure, unmoveable fencing.
4. The Arboricultural Method Statement (AMS) sets out additional limitations and prohibitions to be followed within the RPA but outside the CEZ.
5. The AMS to be shared with contractors pre-tender and to be incorporated into contractual agreements.
6. Pre-commencement of works on site briefing and subsequent supervision by a suitably qualified arboricultural consultant.

Russell Miller

5 July 2021

GLOSSARY

AMS Arboricultural Method Statement – a specification for works written by a qualified professional who understands the requirements of trees.

CEZ Construction Exclusion Zone – area of no construction access, even on foot, without prior consultation with a qualified arboricultural consultant.

GPZ Ground Protection Zone – an area requiring temporary ground surfacing designed to avoid compacting the soil beneath.

High Priority Root Area - the part of the RPA likely to contain essential, primary roots part of which cannot be fenced off by the CEZ.

RPA Root Protection Area – the **minimum** area that must be protected if a retained tree is to survive; i.e. to avoid unacceptable root damage the entire RPA must be protected from trenching, digging, compaction, spillage and other construction activity unless as specified in an Arboricultural Method Statement.

Generic RPA – area around a tree defined by a circle of radius equivalent to 12 times the diameter of the tree (measured at 1.5m from the ground).

Specific RPA – root protection area defined by an arboriculturalist based on site specific conditions.

Tree Survey Schedule

Site	**7 The Grove, London N6 6JU**
Surveyor	**Russell Miller Arboriculture**
Survey date	**01/06/21**

Tree No.	SPECIES Scientific/Common	Height m	Stem Diameter @ 1.5m mm	Branch Spread m	Height of Crown Clearance m	Age Class	Physological Condition	Structural Condition	Management Recommendations/Comments	Grade	Years remaining	RPA radius m	RPA Area
	Carpinus betulus Common Hornbeam	12	605	N 5 E 6 S 7 W 6	N 3 E 3 S 2 W 3	Mature	Good	Fair		A1	40	7.2	163